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nel, a round clay basin probably used for industrial purposes and an unidentified installation were added to the shops at some stage. Such additions, introduced into the shops at an unknown time, suggest that the shops had been in continuous use for a long period.

Several rooms were exposed behind the shops, to their south; one was almost entirely excavated, while two others were only partially uncovered. Their walls, built of stones in secondary use, were constructed parallel to the shops, indicating that they were built simultaneously. Due to the limited excavations here, it is not yet clear whether these additional spaces represent the back rooms of the shops, presumably for storage, or whether they belong to a different structure constructed at the same time and in conjunction with the shops, but for another purpose.

The relationship between the shops and the recess, which, together with the nearby four polished worn pavers excavated in previous seasons, represents the entrance from the street into the *temenos* and the later shops, clearly indicates that the original gateway was blocked during construction of the later shops. No conclusive evidence has been found so far to indicate when the shops were added or when the main gateway was sealed off. The construction of the later walls, two of which align with the remaining stone pavers while the others cut through the bedding of the original floor, clearly indicates that the shops were built some time after the *temenos* pavement, or at least a good part of it, had been robbed. One retrieved coin, dated to 291–295 CE, was embedded in the plaster floor of the easternmost shop (locus 77.1859.1C; inv. no. 4251); if representative, it may serve as a *terminus post quem* for the looting of the stone pavers or, preferably, the construction of the shops some time in the early fourth century CE.

In the course of our work this season, it became clear that after the temple had been abandoned sometime in the fourth century CE., the area was used in the fourth and fifth centuries CE for other purposes, and that only in third phase — by the late fifth or early sixth century — was a church constructed in the vicinity of the deserted temple. Sections of the church, mainly its western side, were excavated over ten years ago. The continuation of some of the walls connected to the prayer hall was unearthed this season in several squares; the apse, which has not yet been exposed, is presumably located in the area east of the main hall.

Conclusions

This year's finds shed new light on Sepphoris and its architectural development from the Roman period through late antiquity. The stratigraphical analysis of the various excavated areas along the *decumanus* provides additional information about the monuments built along this road. The range of buildings constructed here highlights the importance placed on beautifying this route, which, we believe, was Sepphoris's main thoroughfare from the east into the city's civic centre. The discovery of the temple and the *temenos*, as well as the superimposed church, are extremely important to the ongoing study of ancient Sepphoris, its architecture, religious behaviour and intra-urban cultural connections.

ZEEV WEISS

Apollonia-Arsuf, 2006 and 2009

The eighteenth (2006) and nineteenth (2009) seasons of excavations at Apollonia-Arsuf were carried out on behalf of the Sonia and Marco Nadler Insti-

tute of Archaeology of Tel Aviv University. The 2006 excavations (7 August–8 September) were jointly directed by I. Roll and O. Tal. The 2009 excavations (5 July–7 August), directed by O. Tal, formed part of a National Science Foundation (USA) grant titled ‘III-CXT-Core Large: Computer Vision Research: Promoting Paradigm Shifts in Archaeology’, which is dedicated to the documentation of the site excavations, archaeological remains and finds by means of digital archaeology methods that began in 2007 (see Galor, Roll and Tal 2009: 14–23). Both seasons were a collaborative effort between Tel Aviv University and Brown University’s Joukowsky Institute for Archaeology and the Ancient World (K. Galor; 2006) and Division of Engineering (D.B. Cooper, B.B. Kimia and G. Taubin; 2007, 2009), and served as a study dig for Tel Aviv University undergraduate students.

There were 50 participants in each season, including students and local and foreign volunteers. Staff members were: T. Harpak (registrar); M. Edrey, K. Galor, N. Lecet, G. Lerner and N. Reshef (area supervisors); I. Shachar (coordinator); U. Birman and D. Shachar (administrators). The team also included: B. Arubas, D. Porotsky and S. Pirsky (surveying and drafting); and S. Pavel (photography). The excavations, conducted in the Apollonia National Park, received the full cooperation of the park’s director, H. Yohanan, and his staff. Foreign staff and volunteers were housed at the Tadmor Hotel (Herzliya). Finance for the Apollonia-Arsuf Excavations Project in 2006 and 2009 came from the Faculty of Humanities of Tel Aviv University, Brown University, the Israel Nature and National Parks Protection Authority and the German-Israeli Foundation for Scientific Research and Development.

The Excavations

Work in the 2006 and 2009 seasons was conducted in Areas F, L, M, O, P and R (fig. 1).¹

Area F

Work in the Crusader castle resumed after a hiatus since 2000.² Excavations focused on the western part of the castle, on top of the coastal cliff, in order to expose subterranean complexes and remove part of the dirt load from the cliff in order to facilitate better rainfall drainage. Work in this area was intended to slow down the disintegration of the coastal cliff and the architectural remains of the Crusader castle by preparing a system of better drainage of rainfall water off the castle, supplementing the newly-built sea wall at the foot of the castle. The excavations uncovered parts of the castle’s western façade and a subterranean hall, not yet fully exposed. Evidence was found for post-destruction (1265 CE) occupation — some elements of architectural decoration of the castle were found incorporated in later walls, built across the subterranean hall.

Area L (fig. 2)

Work in this area was previously restricted to the uncovering of the fosse of the Crusader walled town in the south-eastern corner by means of mechanical tools. Since it is apparent that the Crusaders

1 For a summary of the main discoveries of 17 seasons of excavations (1977–2004), see Galor, Roll and Tal 2009: 4–14.

2 Past excavations in the castle led to the declaration of the site as a national park in 2001, its recognition as one of the hundred most endangered world heritage sites by the World Monuments Fund in 2004, and its appearance in the tentative list of world heritage Crusader castles by UNESCO in 2006.



Fig. 1. Apollonia-Arsuf (2009): site plan

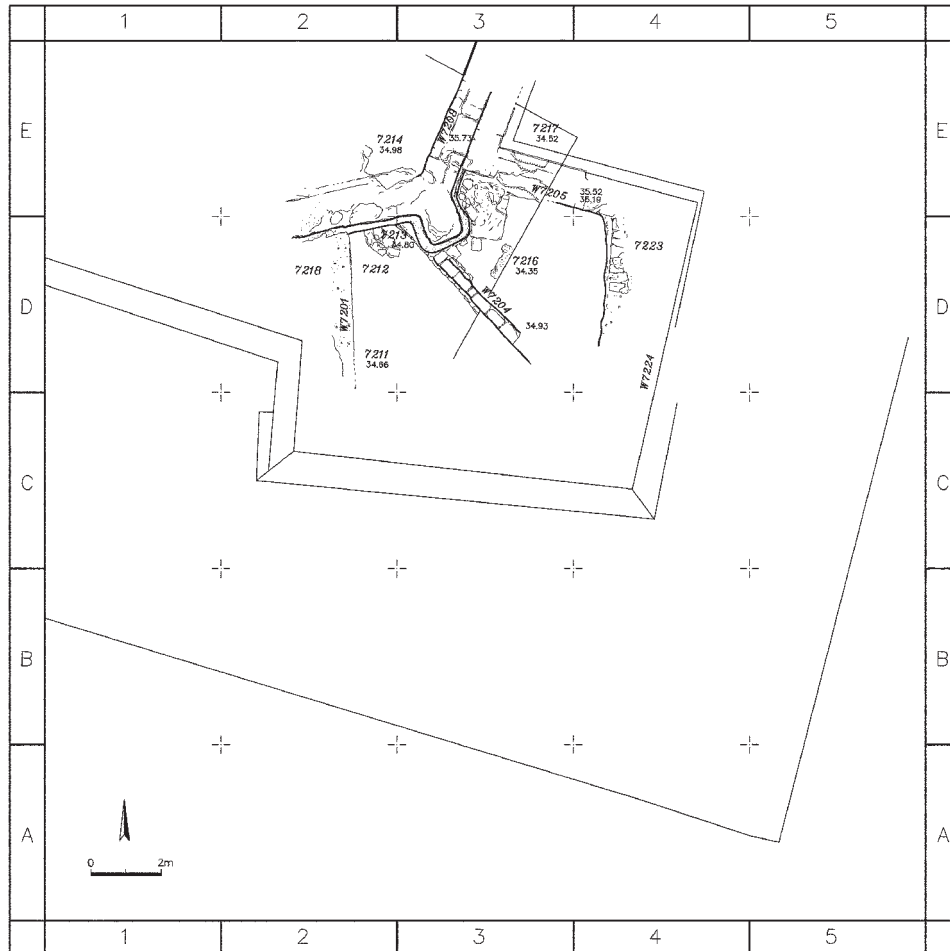


Fig. 2. Apollonia-Arsuf (2009): plan of Area L

made use of the Early Islamic fortifications, in addition to building their own, the aim was to determine the relation between the two fortification systems in one of the most strategic points — the south-eastern corner tower. Excavations have shown that the Crusader corner tower (W7201, W7205 and W7224) flanked the earlier Early Islamic corner wall (W7208). The latter is easily distinguishable as it was built differently with a plaster ‘glacis’ at its base (fig. 2). Both fortification systems were in fact constructed upon Byzantine

architectural remains, demonstrating yet again that the Byzantine settlement of Apollonia/Sozousa was the largest (and apparently most populated) throughout its occupational history.

Area M (fig. 3)

This area is located at the far southern end of the site, beyond the Roman peristyle villa (Area E) and the ravine enclosing the medieval walled town and to the west of the Mizpeh-Yam correctional facility (fig. 1). The goal of the excavations here was to

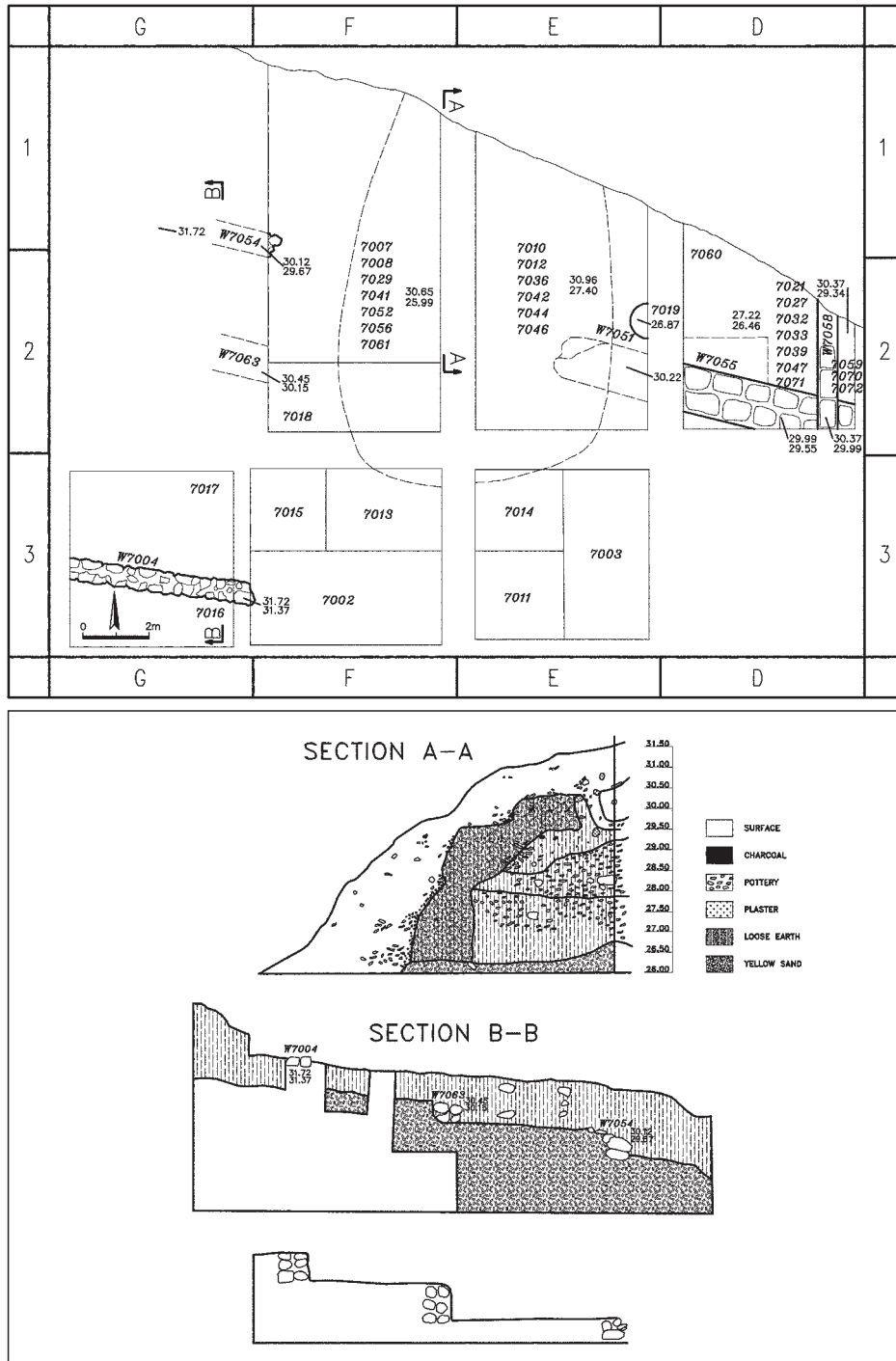


Fig. 3. Apollonia-Arsuf (2009): plan and sections of Area M

determine whether the Roman and Byzantine urban centre of Apollonia/Sozousa had extended to this area. Due to modern building activities, large quantities of sandy fills were bulldozed to this area over the years. In addition, an east–west pathway descending to the sea-shore was cut by a bulldozer along the southern edge of the ravine (forming the northern edge of the excavated area). Thus, prior to excavation, later fills (*c.* 4 m. thick) were removed by means of a mechanical tool down to some 32 m. above sea-level. In squares F2, E2 and D2, two strata were identified, belonging to two periods of occupation (fig. 3). One was represented by a round refuse pit — entirely excavated (*c.* 12 m. maximum preserved diameter; 4.50 m. deep) — containing substantial amounts of broken pottery (weighing some 15 tons) that accumulated in a series of superimposed layers in Late Byzantine (sixth–seventh centuries CE) times. The other occupational level, beneath the refuse pit, was represented by the lower end of a corner of two walls (W7055 and W7058; square D2), a small segment of another wall (W7051; square E2) and a series of fallen sandstone ashlar (square F2) (fig. 3). Much of the related pottery is Late Roman/Early Byzantine. A fourth–fifth-century CE hoard of some 40 bronze coins was also discovered in this level. Excavation in the two northern squares (F3 and E3) was stopped at a higher level once the natural yellow sand was reached. Excavation in the south-western square (G3) showed that the wall uncovered there (W7004) is just a one-layer retaining wall facing north, with a surface of *hamra* soil behind it. This wall, together with two other walls to its north, formed a series of three descending terraces, apparently built some 4 m. apart with an average height of *c.* 0.40 m. Thus, W7004 served as the retain-

ing wall of the upper terrace, W7063 of the middle terrace and W7054 of the lower terrace. If there were additional retaining walls further north, they were completely destroyed during the bulldozing of the pathway descending to the sea-shore. No tangible evidence has been found to indicate the nature of these terraces. The fertile *hamra* soil behind the upper retaining wall (W7004), however, may suggest that they formed part of a terraced garden. Whether this garden was related to the peristyle villa to the north or to the buildings in the east, not yet excavated, has not yet been clarified.

Area O

This area is located at the far north of the site, beyond the fosse of the Crusader castle and that of the medieval walled town (fig. 1). The 2006 and 2009 excavations here investigated whether there was indeed extra-mural occupation in Early Islamic times, as previously thought. A large mosaic floor of a wine press (9.8×7.5 m.) was uncovered, with a Greek inscription in the center of its treading floor. The inscription reads: ‘One God only, help / Cassianos together with (his) wife / and children and everyone’. The formula of the inscription, along with the finds uncovered, point to Samaritan ownership of the complex in Byzantine times (fifth–sixth centuries CE). Although the inscription was in fact uncovered during the 2006 season of excavations (Roll and Tal 2008), it was only in 2009 that we were able to identify the complex which it served (Tal 2009). Such dedicatory inscriptions are mostly known from Samaritan cult buildings (synagogues); it is possible that the wine press may form part of a larger structure of a public nature associated with cultic activity. The round collecting (fermentation) vat of the wine press (*c.* 3×2.2.5 m.) is among the largest

to be discovered in Israel. Our inquiry shows no occupation later than the seventh century CE; upper fills in the excavated area included pits with sixth–seventh-century CE pottery and fragmented glass vessels. Noteworthy is the considerable amount of raw glass production refuse (as well as secondary glass production refuse) found below the upper fills throughout the excavated area and right on top of the wine press. The wine-press complex was apparently relatively short-lived, as pottery and fragmented glass vessels found below it can be dated to the fourth and fifth centuries CE. Moreover, its large, round collecting vat includes substantial amounts of broken pottery and glass vessels of Late Byzantine date (sixth–seventh centuries CE), indicating that the wine press ceased to function during the early sixth century CE (possibly in relation to the Samaritan revolt of 529 CE). The wine press was damaged by an earthquake, apparently after its abandonment.

Area P

This area is located at the highest point of Apollonia-Arsuf (*c.* 37 m. above sea-level), within the southern medieval city-wall, where Early Islamic and Crusader structures were uncovered during the 2003 and 2004 seasons. The aim was to clarify the nature of these structures and to determine their chronology more precisely. In the nine squares opened thus far, three phases were discerned. The lowest, immediately above the natural sand, is a layer of reddish-brown fill with Byzantine pottery. On top of it were segments of badly preserved walls, apparently belonging to domestic structures; pottery found in relation to this level is dated to various phases of the Early Islamic period. The

later phase is a massive foundation, oriented south-east to north-west (average thickness: 0.60 m.; average width: 2.70 m.; overall length: 16.50 m.), made of solid concreted fieldstones. The foundation's upper surface is essentially plain, and its height is 34.93 m. above sea-level. Due to the lack of additional interpretive evidence, the purpose and nature of the massive foundation has not been entirely elucidated — it served either as the foundation of a monumental wall, of which all building stones have been robbed, or as a platform of a military nature, possibly for the movement of medieval artillery or other war machinery. Its location, a short distance behind the medieval city-wall, and its height in relation to the city wall seem to support such an interpretation. However, no parallels to such a device have yet been identified in Crusader Palestine. Pottery below the foundation dates from the thirteenth century CE, i.e., late Crusader times.

Area R

The decision to open this new area, in the centre of the medieval walled town, was based on the site plan drawn up the Palestine Exploration Fund in 1874, where a large vault is shown. Excavations uncovered a large structure with a paved white mosaic floor adjacent to the vault. We are not yet able to date the structure with any certainty or to define its function.

The excavation of Apollonia-Arsuf is an ongoing research project. We intend to continue excavations at the site in order to further our understanding of its economic basis and political affinity, as well as its cultural and economic interactions with other Mediterranean centres during its periods of successive occupation.

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OREN TAL

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OBITUARIES

DAN BARAG, who specialised mainly in ancient glass and numismatics, died suddenly on 22 November 2009 in Jerusalem.

Born in 1935 in London, to parents who would later become well-known Freudian psychoanalysts, and brought up in Tel Aviv, Dan Barag's interest in archaeology was kindled at an early age. In 1956 he moved to Jerusalem to study archaeology at the Hebrew University of Jerusalem.

His Ph.D., completed in 1971 under the guidance of Prof. Nahman Avigad and Prof. Donald Harden, was devoted to the study of glass vessels in ancient Palestine; this was followed by a long list of articles on the ancient glass industry. His publications and accomplishments in the study of ancient glass earned him international recognition, and he served a term as Vice-President of the Association Internationale pour l'Histoire du Verre. He was also interested in the study of ancient Jewish art.

His main specialisation, however, was the field of numismatics. He served for some 30 years as President of the Israeli

Numismatics Society and as the editor of its journal, *Israel Numismatic Journal*, since 1980.

Dan Barag participated in several Hebrew University excavations, including Tell Qasile, Hanita, Nahariya and Beth She'arim, and was involved in the publication of their finds. He headed the expedition that exposed the synagogue at 'En Gedi, a structure that served the local community from the third century CE until the end of the Byzantine period.

In 1968, upon his return from London, where he had worked on his Ph.D., he served as assistant to Prof. Nahman Avigad. In 1970, Dan Barag joined the Institute of Archaeology of the Hebrew University, and he continued to teach there until his retirement in 2003. He was a dedicated teacher, imparting to his students extensive knowledge in a wide variety of fields pertaining to the material culture of the Land of Israel, from the Hellenistic period to the end of the Byzantine period.

From 1969 to 1975, Dan Barag served in various capacities in *Israel Exploration Journal*, first as associate editor, then as co-editor with Prof. Michael Avi-Yonah, and from 1973 as editor. He served on the