A DIORITE NEW KINGDOM SCARAB FROM TEL LACHISH

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Abstract: *This paper presents a rare scarab made of diorite and set in a golden bezel that was excavated in a topsoil locus at Tel Lachish. Although it lacks a clear stratigraphic context, the scarab still presents important data on the Late Bronze Age at Lachish.*

Keywords: *Lachish, Egyptian Scarab, Egyptian 18*th *Dynasty, Theban Triad, Diorite, Color Symbolism*

Introduction

Lachish was one of the major city-states in Canaan. It is mentioned in a number of Egyptian historical sources and the Amarna archive. Over the years, three previous expeditions have worked at the site of ancient Lachish, located at Tell ed-Duweir. During the years 2013–2017 renewed excavations were conducted at the site by the Fourth Expedition to Lachish, under the codirection of Yosef Garfinkel of the Institute of Archaeology, the Hebrew University of Jerusalem, and Michael G. Hasel and Martin G. Klingbeil of the Institute of Archaeology, Southern Adventist University, USA. Our expedition was a five-year project aimed at examining Levels V and IV, the early occupation of the site by the kingdom of Judah (Garfinkel et al. 2013), and a previously unknown city wall of Level V was indeed uncovered (Garfinkel et al. 2019).

The expedition also uncovered important remains from the Middle and Late Bronze Ages in Area BB, in the northeastern corner of the mound. A unique scarab, embedded in the site's present topsoil, was exposed during the excavation of Square Rd12, Locus 7435, Basket 2526 (Fig. 1). Although it lacks a clear stratigraphic context, as a find from a known site it supplies additional information on the important relationship between Lachish and Egypt.

The Scarab

The complete scarab, made from dark blue diorite,[4] measures 20.6 mm in length, 14.5 mm in width and 7.7 mm in height (including the bezel, which is 1.5–1.7 mm thick) (Fig. 2). The method of manufacture included carving, abrading, drilling and incising. The workmanship of the scarab is excellent, and the design quality is good. The scarab is perforated, drilled from both sides, with linear engraving, and is set in a bezel made of gold.

The classification system or typology that relates to the Late Bronze Age (and later) scarab ***shape***[5] was defined by Alan Rowe (Rowe 1936: Pls. 32–35 = Keel 1995: Ills. 44, 46, 67). The typology is based on three features: Head and Clypeus (HC), Elytra and Prothorax or Pronotum (EP), and Side.[6] Our scarab's shape is defined by HC 9 (12th–ca. 25th Dynasty), EP 113 (18th Dynasty),[7] Side 22 (ca. 13th–26th Dynasty).

The ***design*** of the base consists of a vertical oval serving as a frame, within which are depicted, in two vertical columns, five deities (two of which are only named) and two hieroglyphic signs,[8] all facing right. The right-side column is wider and contains

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4 The preferable identification of the stone as diorite rather than basalt (see below) is supported by its significant color.

5 See diagrams showing the parts of the scarab beetle in Rowe (1936, Pl. 23); Ward (1978, Frontispiece); Uehlinger (1990, 62, Fig. 37); Keel (1995, 20, Fig. 1). The last is the most detailed, with the terms given in four languages: German, English, French and Italian. For a diagram showing the parts of the scarab, see Schulz (2007, 3).

6 Since 2010, Othmar Keel has been using Tufnell's MB typology (Tufnell 1984, 31–38) also for the Late Bronze and Iron Age scarabs and has even added some new head features that appear only on the later scarabs. However, the chart with the new additions was published only three years later (Keel 2013, xv, ill.1). In my view, it does not contribute at all to the relative chronology and adds an unnecessary confusion.

7 It seems that Rowe's dating was also based on the first appearance of Petrie's Type E scarabs (Petrie 1917, 5, Pl. 60).

8 The Egyptian hieroglyphic signs are referred here [in square brackets] as they appear in Gardiner's sign list (Gardiner 1973).

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four components, while the narrower left-side column contains only three. An imaginary vertical line separates both columns. The right-side column is divided into two short rows, one above the other, separated by an imaginary horizontal line.

Right-side column:

Upper row – The ideogram *sꜣ*, "protection" [V 17], and a seated figure of *Ỉmn*, the god Amun, with his double-plumed crown, behind.

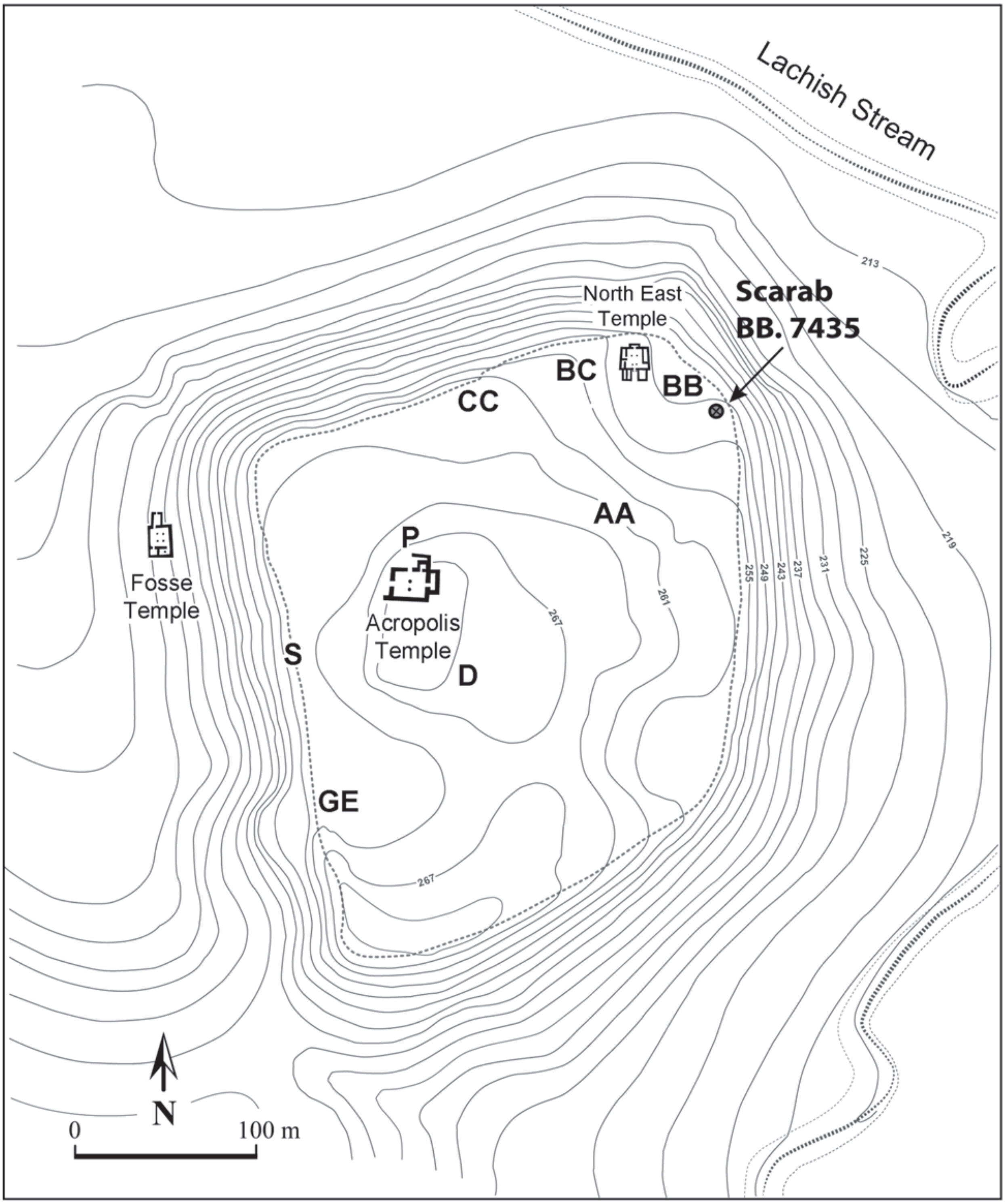

Fig. 1 Map of Tel Lachish and the location of the scarab (by I. Weissbein).

Fig. 2 The diorite scarab from Lachish: drawing by O. Dubovski; photographs by T. Rogovski. Regarding the petrography, note the white phenocrysts within the dark blue matrix and the irregular appearance of the phenocrysts.

Lower row – The name *mwt*, the goddess Mut (Gardiner 1973, 618), and a standing figure of *Ḫnsw*, the moon-god Khons, behind.
Left column: The ideogram or determinative *rʿ* – "sun," "day" [N 5] is on top of and behind Amun's crown. Below is the ideogram or determinative *wḏꜣt*, "the Udjat-eye – the sound (uninjured) protecting eye of Horus" [D 10], above a seated baboon with a crescent and a full moon above its head, one of the forms of *Ḏḥwty*, the moon-god Thoth.

It seems that we are dealing here mainly with the Theban Triad, consisting of Amun, his wife Mut and their son Khons, which was popular at Thebes especially during the 18th Dynasty. The reading order of the right-side column fits the inner hierarchy in the Theban Triad. This is also hinted at by an additional small dot above Amun's scepter, and two small dots below the name Mut. The reading order is, therefore, *sꜣ Ỉmn Mwt Ḫnsw* – "Protection [of] Amun, Mut [and] Khons."

The combination of the Theban Triad with the remaining left column needs some additional explanation. The raised position of the hieroglyphic sign *rʿ* behind the god Amun hints that its reading should be *Rʿ*, the god Re, so that the god Amun also appears in his combined form as *Ỉmn-Rʿ*, "Amun-Re." The same concept (similar to putting another sun-god behind Amun) is seen in the image of the Theban moon-god Khons that is followed by the moon-god Thoth. Thus, the suggested vertical reading of the left column is *wḏꜣt Ỉmn - Rʿ Ḏ ḥwty* – "Protection [of/by] the sound eye of Horus, Amun-Re [and] Thoth."

The last two gods that were added to the Theban Triad hint at the wider perspectives of its special owner who also worshiped alternative deities simultaneously (see below – *Date*).

As for its ***function typology***, this is an amulet scarab. The motif on the seal belongs to the categories "Scarabs bearing Mottoes, Good Wishes, &c." and "Scarabs bearing Names and Figures of Gods, &c." (cf. Newberry 1906, Pls. 39:1, 9–10, 12, 14; 40:13, 22; 41:12–13, 17). The scarab could also be defined as jewelry, due to its golden bezel.

With regard to the scarab's ***origin***, this is clearly an Egyptian product, based on both its extremely valuable raw materials (diorite and gold) and the locality of its religious subject. In view of the appearance of the Theban Triad, it was most probably made in Thebes.

The ***date*** of the scarab's production is clearly the 18th Egyptian Dynasty, based on the following:

– *Shape*: Its short period EP 113 type.
– *Design*: The depiction of the Theban Triad. This date can be limited more specifically to the days of Amenhotep III, based on the exceptional additions of the deities on the left column that hint at the presence of many different god-statues in his mortuary temple at Kom el-Hetan.
– *Color*: The characteristic choice of a blue color for the engraving of such a special scarab (see below).

Similarly, the bezel's high-grade gold (see below) can be compared to that of gold from the reign of Akhenaton (cf. Klemm and Klemm 2013, 41–50, Figs. 4.2 and 4.3).

Petrographic observations and analysis

The scarab was presented to the Geological Survey of Israel for petrographic determination and provenance. It is made from a dark blue rock bearing white spots and surrounded by a gold bezel. It has a porphyritic texture with white phenocrysts within an aphanitic black matrix (see Appendix 1 for a short glossary of geological terms). The scarab's rock was analyzed using a reflected light microscope and a scanning electron microscope (SEM) equipped with an energy dispersive X-ray spectroscope (EDS) for chemical elements analysis (Fig. 3) (see Appendix 2 for the SEM methodology).[9] Below are the results of the petrographic analysis, which examined three aspects: The phenocrysts, the matrix (groundmass) and the gold hoop.

The phenocrysts: White, anhedral, irregular rounded shape. No cleavage or crystal twinning observed. Lines in various directions are probably scratches caused by polishing. Size 0.2–2 mm. All the phenocrysts are surrounded by a well-defined

[9] It is impossible to perform destructive analytic methods, such as classical chemical analysis or optical petrographic analysis, on the scarab. The EDS analysis measures the elemental composition of the surface with a limited penetration of about 0.2–1 µm. Surface roughness hinders the accuracy of the analysis results. A qualitative accurate EDS analysis demands a highly polished surface that could damage the study object. The EDS method is very sensitive to surface contamination (e. g. dust, fingerprints).

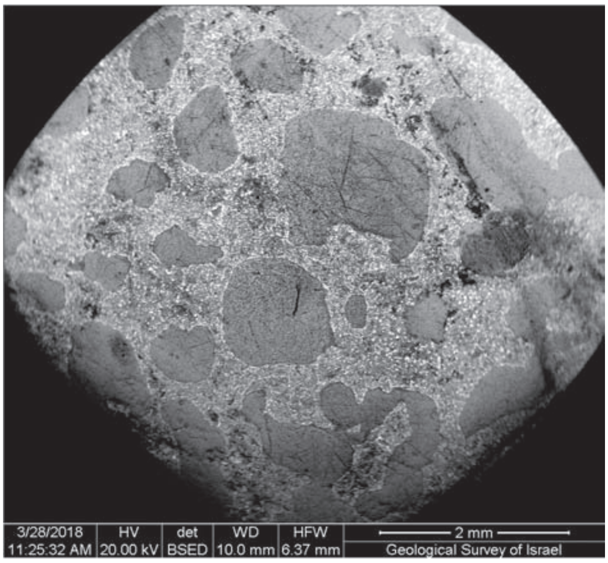

Fig. 3 A scanning electron microscope (SEM) BSED image of a 5 mm section on the scarab's dorsal side: Brown homogeneous phenocrysts with scratch marks surrounded by fine-grained matrix (see Appendix 2, SEM Methodology).

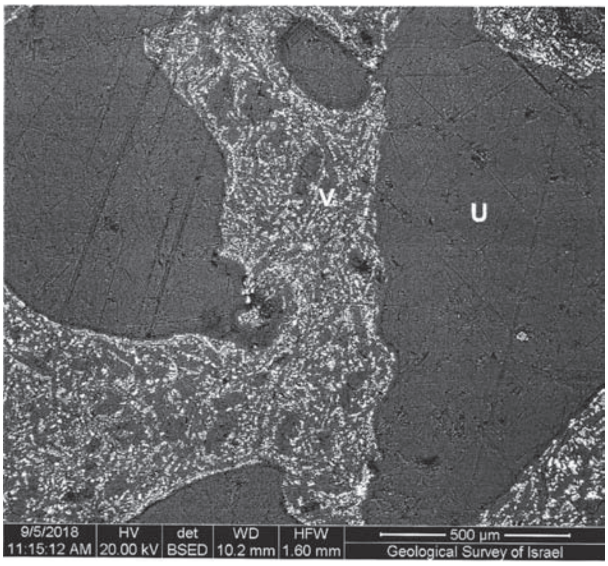

Fig. 5 An SEM image of spectral analyses locations: U = phenocryst and V = matrix.

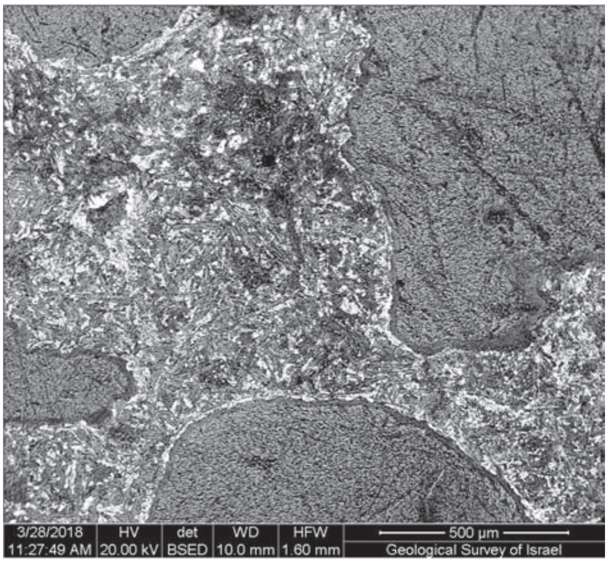

Fig. 4 An SEM image of a 1.6 mm section on the scarab; note the rim around the large brown phenocrysts.

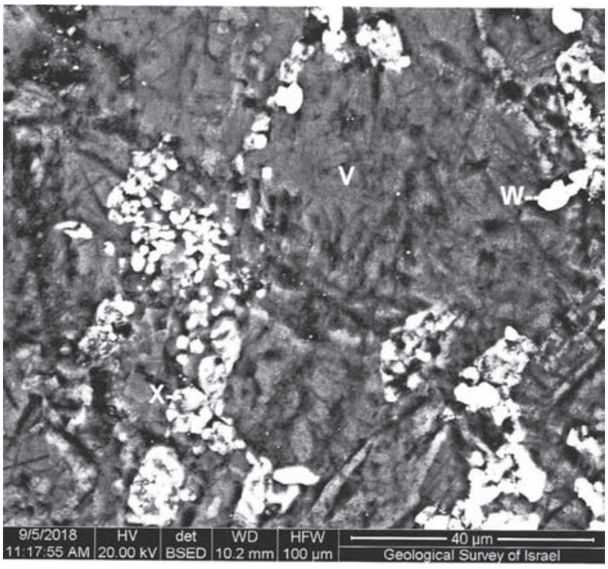

Fig. 6 An SEM image of spectral analyses on minerals within the matrix: X, V and W.

thin rim about 15 µm thick, in some cases widening up to 50 µm. The rim resembles a reaction or melting corona (Fig. 4).

The SEM analysis was performed on both the dorsal and ventral aspects of the scarab. The dorsal side is flat and engraved with the seal's design. The ventral side is convex and scarab-shaped. Both aspects are smoothed and highly polished (Figs. 5–6). Four phenocrysts were analyzed on both aspects and the chemical composition proved to be identical (Fig. 7). According to the elements detected, the mineral is aluminosilicate of calcium (Ca) and sodium (Na) of the plagioclase group. Its chemical composition is a mixture of $CaAl_2Si_2O_8$ and $NaAlSi_3O_8$. These minerals are typical of basic magmatic rocks like basalt or intermediate rocks like diorite (Deer et al. 1966; Le Maître 1989).

The matrix (groundmass): The matrix is composed of several different minerals, as follows:

1. Plagioclase appearing in irregularly shaped patches, 30–140 µm in size and having the same composition as the plagioclase in the phenocrysts (Fig. 8).

2. Pyroxene appearing in clusters of minute grains, 2–5 µm in size (Fig. 9).
3. Iron and titanium ore grains, 6–10 µm in size (Fig. 10).

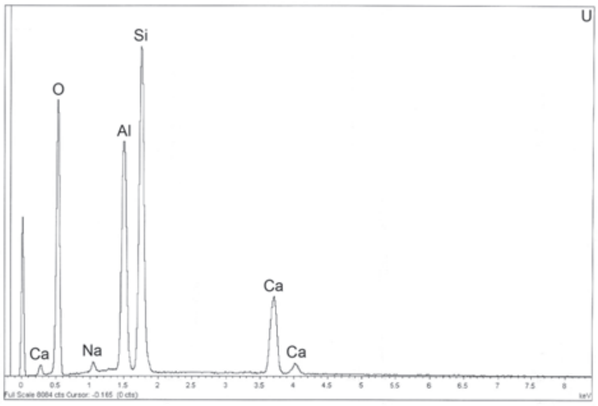

Fig. 7 An energy-dispersive X-ray spectroscopy (EDS) spectrogram of phenocryst U. It displays the chemical composition of a mineral of the plagioclase group: An aluminosilicate of calcium and sodium ($CaAl_2Si_2O_8$ and $NaAlSi_3O_8$).

The minerals constituting the matrix are arranged in a subophitic texture resembling the intergrowth of different minerals. Assemblages of minerals like the one described above are characteristic of basalt and diorite rocks.

The gold bezel: The composition determined by the EDS spectrogram is 99 % gold with 0.05 % silver (Fig. 11).

Petrographic Discussion

Data on numerous rock samples, scarabs and gemstones from Egypt and Sinai were scrutinized (Hall 1913; Abu Jaber et al. 2009). None of these conformed to the unique petrography of the Lachish scarab. The rock texture, the irregular shape of the phenocrysts, the reaction rim and the presence of a large amount of carbon, as exhibited in the EDS spectroscopic analysis, suggest that the scarab was subjected to fire and high temperatures that caused metamorphic changes and recrystalli-

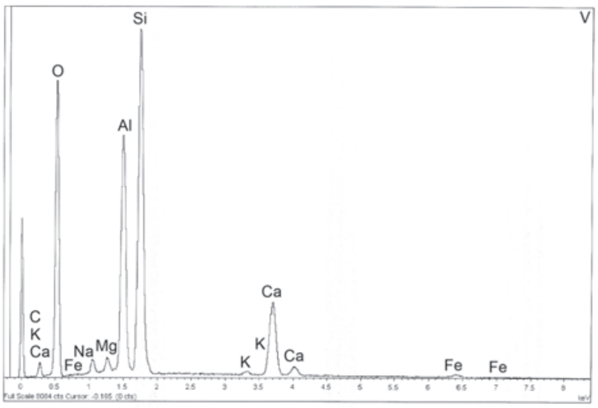

Fig. 8 An EDS spectrogram of small plagioclase crystals in the matrix (V).

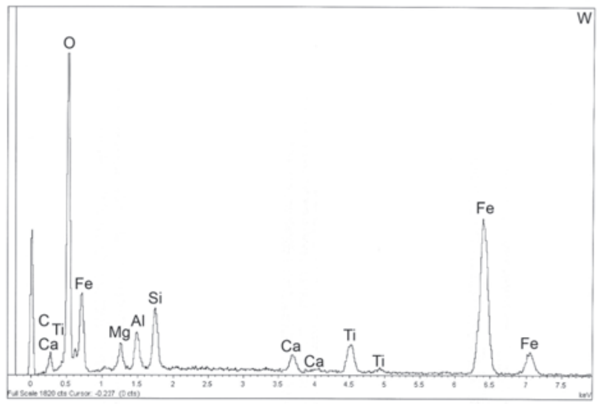

Fig. 10 An EDS spectrogram of an ore mineral in the matrix (W). Note the high concentration of iron (Fe) and presence of titanium (Ti).

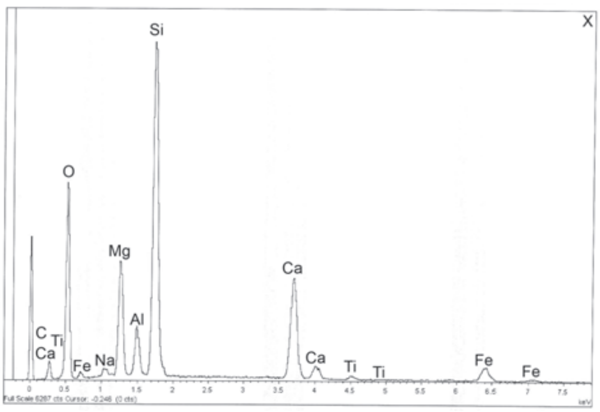

Fig. 9 An EDS spectrogram of a pyroxene group mineral in the matrix (X). Note the increase in magnesium (Mg), iron (Fe) and titanium (Ti).

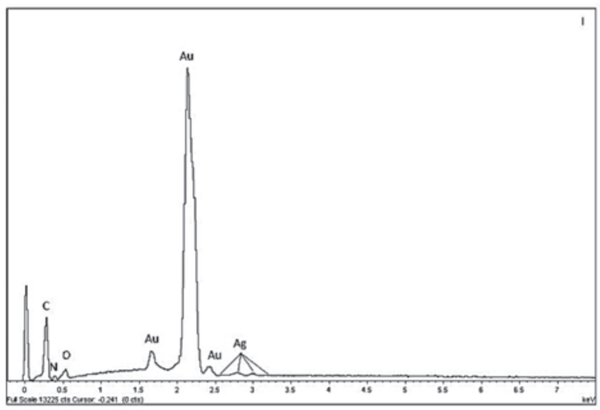

Fig. 11 An EDS spectrogram of the gold (Au) bezel around the scarab (I). Note the addition of a small amount of silver (Ag).

zation, resulting in changes to its original appearance. Burning of wooden structures can produce intense temperatures of about 700–800 °C. The gold hoop surrounding the scarab was not affected by the heat, as the melting point of gold is much higher (1064 °C). The original rock, prior to the thermal metamorphosis, was most probably an igneous rock of basic or intermediate petrographic composition. The rock could have been diorite or basalt, rocks that are abundant in Egypt and Sinai. It is identified as diorite due to its dark blue color (see above n. 4).

General discussion

The Rare Use of Diorite

It seems that the Egyptians used diorite in only a few periods, with long gaps in between.[10]

Predynastic and Early Dynastic periods (1st–2nd Dynasties)

During the late Predynastic and Early Dynastic periods, diorite was used for the manufacture of mace-heads, palettes and vessels, such as ‘closed bowls’ and jars (Lucas and Harris 1999, 408–410). Those objects were later plundered by tomb robbers and some of the items, especially closed vessels, found their way to Canaan as prestigious antiques. Among these are broken and complete vessels found at Tel Beth-Shemesh,[11] Tell Beit Mirsim[12] and Tel Yoqneʿam.[13] A piece of “Kephren diorite” was found at Tel Lachish, in addition to a fragment of a closed vessel,[14] whose raw material was not specified.[15]

Middle Kingdom, late 12th–13th Dynasties

The next period of use, the Middle Kingdom, is represented by two glyptic finds. The first is a bifacial plaque of *Rn.f-snb*, while the second is a cowroid of *Sꜣ-ḥtḥr*.[16] The simple shapes and rarity of these two seals among the group of seals bearing private names points to an alternative interpretation: These simple-shaped seals were perhaps made on fragments of earlier broken vessels.

New Kingdom (18th Dynasty)

Two gold-rimmed vessels, a kohl jar and a piriform jar, both bearing the *Prenomen* of Thutmose III on their lid, are kept in the Metropolitan Museum, New York.[17] These vessels are assigned to Tomb 1, located at the head of Wady D of Wady Gabbanat el-Qurud.[18] The vessels show a combination of diorite and gold, an esthetic feature that enhanced the luxurious appearance of these objects[19] and is also relevant to the Lachish diorite scarab.

Late Period (26th–30th Dynasties)

A very degenerate plain scarab is dated to this period.[20] Scarabs of a different type, attempting to be more naturalistic with the legs occupying the base and lacking any decorative motif,[21] appeared from the 26th Egyptian Dynasty onwards. A large number of these were made of faience, but a significant number were made of diorite. They are dispersed among various museums and collections.[22]

The Symbolism of the Scarab’s Color

The *very dark* blue color of the diorite scarab seems to reflect a certain symbolism that is connected to heaven (Wilkinson 1994, 107–108), as has already been suggested earlier for an Egyptian Blue scarab from Tel Miqne-Ekron,[23] and a lapis lazuli scarab from Beth-Shean.[24] The appearance of five deities on the Lachish scarab, especially Amun-Re and Thoth which were partially painted

10 Actually, only one quarry has been identified related to pre-Roman activity; see Aston et al. (2000, 30).

11 Grant 1931, Pl. 16 [upper right corner]; 1932, Pl. 47:3–4; Grant and Wright 1938, Pl. 54:65; 1939, 160–161.

12 Albright 1938, 56 § 65, Pl. 31:5.

13 Ben-Tor 1970.

14 Tufnell 1958, 72, Pl. 26:10.

15 For more early Egyptian vessels from Canaan, see Brandl (1984, 61–62, nn. 67–68).

16 Martin 1971, 69 No. 852, 102 No. 1312a, respectively.

17 Lilyquist 2003, 147–148 Nos. 89 and 92, 215 Figs. 137a–b, e, with previous bibliography.

18 Lilyquist 2003, 17 Fig. 3, 20 Fig. 6d, 25 Figs. 14–15, 78 Fig. 29.

19 Craig Patch 2005, 218–219. No 143c (= a color photograph of Lilyquist’s kohl jar, 89)

20 Śliwa 1999, 51 No. 53.

21 Ben-Tor 1989, 39, 76–77

22 Hornung and Staehelin 1976, 374 No. B 11; Ben-Tor 1989, 77 Nos. 13–15; Regner 1995, 51 No. 54.

23 Brandl 1998, 53, “The Base of the Scarab” (with earlier references).

24 Brandl 2006, 167, “Base Design” (with earlier references).

in blue (Wilkinson 1994, 107–108), further strengthens that celestial interpretation.

The Most Probable Period of Manufacture of the Lachish Diorite Scarab

On the basis of its EP 113 back feature, the Lachish scarab should be dated generally to the 18th Egyptian Dynasty. The Egyptian Blue scarab from Tel Miqne-Ekron and the lapis lazuli scarab from Beth-Shean were dated more specifically to the Amarna Period based on their motifs. It seems that these three blue scarabs were produced during a much shorter period, the last decade of Amenhotep III (1362–1353 BCE), the beginning of the larger Amarna period (see below).

Suggested Time of Arrival at Tel Lachish

Following the suggestion that the diorite scarab was produced during the days of Amenhotep III, we can speculate when this could have taken place during the 38 regnal years of that pharaoh. As a prestigious and rare object, it must have been part of the royal gift that also included several commemorative scarabs[25] sent to *Shipṭi-Baᶜlu*, the Canaanite ruler of Lachish. This ruler sent two of the Amarna Letters directly from his palace to Egypt.[26] The suggested date of the arrival of the diorite scarab at Lachish must be after the 30th regnal year of Amenhotep III – his first Jubilee (1360 BCE) – due to the newly suggested chronology for the manufacture of his Large Commemorative scarabs and the earliest Amarna Letter.[27] The more limited suggested date for the arrival of the diorite scarab may also fit the scarabs from Tel Miqne-Ekron and Tel Beth-Shean.

To sum up, the Tel Lachish diorite scarab is, for the time being, a unique find, not only in Canaan but also in its homeland of New Kingdom Egypt. As such, its arrival was connected to special relationships between these two political entities.

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[25] These include: One Large Commemorative scarab, three Medium Size Commemorative faience scarabs and one Medium Size Commemorative Cartouche scarab; see Brandl et al. (2013, 79 Table 1, C. Lion hunt), 80 Table 2 (Vertical and Horizontal), 81 Table 3 (B. Cartouches – also Fig. 5:2), respectively.

[26] For the direct connection between the local ruler and the Egyptian court, see Goren et al. (2004, 287–289).

[27] For the coexistence of the commemorative scarabs found in Canaan and the Amarna Letters see Brandl et al. (2013, 88–89 and Table 3; first column on the right).

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Appendix 1. A Short Glossary of Geological Terms

Anhedral crystals: Crystals not bounded by any of the original crystal faces.

Aphanitic texture: An igneous rock with mineral constituents too small to be observed with an unaided eye.

Chemical classification: Magmatic rocks are classified primarily according to the contents of silicon oxide-silica (SiO_2): Basic rocks contain 44–52 % of silica (= basalt), intermediate rocks contain 52–66 % of silica (= diorite), acidic rocks contain over 66 % of silica (= granite).

Phenocryst: A large crystal within a fine matrix (as in porphyritic rocks).

Plagioclase: A group of rock-forming minerals composed of aluminosilicates of calcium and sodium mixed in different proportions ($CaAl_2Si_2O_8$ and $NaAlSi_3O_8$).

Porphyritic texture: Igneous rock containing large crystals within a fine-grained matrix (groundmass).

Subhedral: Refers to crystal grains bounded partially by original crystal faces.

Subophitic texture: Laths and patches of plagioclase lie in a matrix of subhedral pyroxene.

Texture (petrographic): Geometric relationships between the minerals in a rock and their size and shape.

Appendix 2. Scanning Electron Microscope (SEM) Instrument and Methodology

The investigation was conducted using a Scanning Electron Microscope (SEM), model FEI Quanta 450.

Detectors

1. Everhart Thornley detector (secondary electrons). Purpose – surface topology.
2. Backscattered electron detector (backscattered electrons). Purpose – differences in elemental composition.
3. Energy-dispersive X-ray spectroscopy (EDS): Oxford Instruments X-max 20 SDD (Silicon Drift Detector). Purpose – elemental analysis and chemical characterization.

The results are presented in three ways:

1. Secondary electron image (labeled LFD or ETD on the bottom of the image caption), which displays surface texture, morphology and surface roughness.
2. Backscatter electron image (labeled BSED on the bottom of the image caption), which displays differences in atomic/molecular density and highlights chemical composition differences. The shade of gray in a backscatter image indicates the molecular/atomic density. Heavier elements are lighter and lighter elements are darker.
3. The EDS spectra of the number (intensity) and energy level of X-rays allow elemental composition to be determined.