APPENDIX E

QUARRY MARKS AND MASONS' MARKS ON PLS. XI AND XII

In addition to the levelling lines, vertical lines for the horizontal measurements of the rooms were also found on the limestone core-walls of the Mycerinus pyramid temple, accompanied in three cases by written notes (see Borchardt, *Ne-weser-re*, p. 153), as follows (see Pl. XI, Copied by Mr. Alan Rowe):

- iv. In room (24), north wall, second course, 95 cm. from the dressed end of the stone in (22); triangle pointing west; red painted.
- xii. In room (27), east wall, second course, 898-903 cm. (about 17 ells) from the main E-W axis of the temple, painted red line, 5 cm. wide, accompanied by the word rsy "south," levelling lines of 5th and 6th ells, and crew-name (see below). The levelling line for 5th ell was drawn over crew-name, the word rsy and the vertical mark.
- xiv. In great court (5), west wall, first course, about a meter north of the north end of the portico (7), with crew-name and remains of 2-ell line; painted.
- xix. In room (10), north wall, first and second courses, at 95 cm. from the dressed northwest corner of the room; with triangles pointing east; all incised; see No. xx.
- xx. In room (10), south wall, first course only, at 25 cm. from undressed southwest corner of room; incised and painted red. Nos. xix and xx are opposite each other, 24.6 meters west of the line of the c.b. casing in the court (5), and may have marked the face of the projected granite casing of the west wall of room (10).
- xxvb. On the same stone as No. xiv, on the south face in portico (7), at 210 cm. (4 ells) from the eastern face of the stone; painted line, 5 cm. wide; triangle, pointing west.
- xxvii. Corridor (13), north wall, second course, first stone (after upright end stone) from west; painted red; with red ell-lines of 5th and 6th ells and black sloping line marking top of second course of the projected granite casing; beside the vertical line is the word m3 (perhaps remains of \$m3^{\circ}\$). The vertical line and the 6-ell line are drawn over older graffiti, which seem to be the idle sketches of a skilled workman. The m3 is of the time of the vertical line (fresher than the graffiti).
- xxviii. In the great court (5), north wall, first course, second and third stones from east end of wall; at 5.25 m. (10 ells) from the inner northeast corner of the core-walls, and 3.68 m. (7 ells) from the projected face of the granite casing in that corner; at 42 ells from the face of the granite casing on the west side of the court and 23.1 m. (44 ells) from the face of the core-wall on the western side; painted vertical line, and painted 3-ell line. To the east of the vertical line and under the 3-ell line, a red painted inscription: $\pm \frac{3}{2} (t m^2 h^2 t \dots (?))$. Underneath is written from east to west "46 ells, 45 ells, 44 ells." East of the inscription is a sloping upright line with an irregular triangle on the east side, 60 cm. from the vertical line. On top of the 3-ell line is a short vertical line 24 cm. from the long vertical line. At 80 cm. west of the long vertical line, is drawn a flight of three steps behind which is written "1 ell" (perhaps the difference between the figures 44, 45, 46.)

Nos. xix and xx were incised with a fine point, and No. xx was overpainted in red. All the other vertical lines were red painted, usually about the same width as the levelling lines but Nos. xii and xxvb were 5 cm. wide. Triangles were drawn on the side in Nos. ix, xix, and xxvb (see also xxviii) and may have been drawn originally on all vertical lines. Such triangles are well-known (see Borchardt, Nefer-ir-ke-re, pp. 52–55), but their significance is unclear. Perhaps they mark the direction from which the distance was measured when the vertical line was set.

In mark No. xii, the word rśy "South," if it belongs to the vertical line, must indicate the southern wall of the room which was to stand north of that line and was never built (at any rate in stone). It is possible that the word is the distinguishing mark of the crew-name (see below).

No. xxviii is the most interesting of these marks. For the interpretation of the note, see Borchardt, Ne-weser-re, p. 153. Borchardt translates the mark reproduced in No. xxix: "Südliche Richtlinie des Grabhauses." Our inscription, which was weathered, gives the word $\pm m^2 t$ quite clearly followed by a sign which is not any of those used for the cardinal points but may be the sign $\frac{1}{2}$ or $\frac{1}{2}$. The next word is $m^c h^c t$, referring to the court or the temple; and was possibly followed by another sign. The "46 ells, 45 ells, 44 ells" appear to refer to the limestone corewall at the NW angle of the court, for the distance from the vertical line to the eastern face of the western core-wall of the court is 44 ells. Possibly the stepped figure indicates that this wall was to be stepped to permit a batter in the granite casing of that wall. It is, I take it, only an accident that the distance southward to the main E-W axis of the temple (noted by Mr. Rowe) is 45 ells while it is 44 and 46 ells respectively to the sides of the paved pathway.

In addition to the horizontal levelling lines and the vertical base lines, every limestone block in the core-walls seems once to have borne a crew-name. This name was written in red paint on both sides of each stone and originally may also have been written on the top. Mr. Rowe noted two cases, Nos. i and xii, in which the levelling lines had been drawn *over* the crew-name; and after a joint examination, we were both agreed that the crew-names were written on the stones previous to their being set in the walls. A confirmation of this conclusion is found in the limestone block on the eastern side of doorway (14) which is set on end with the strata vertical instead of horizontal, an abnormal position, and on this stone the inscription stands also on end, having been written along the horizontal strata as in all other stones.

i. On north face, in room (13).

Most of the crew-names which were preserved were found behind the crude-brick casing. The copies, made by Mr. Alan Rowe, are reproduced in Pls. XI and XII, as follows:

(1) Wall between rooms (13) and (24), second course, second stone from west, on each side of western end of stone:

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ii. On south face, in room (24).
        Inscription: \(\capprox prw Mnk\)\(\frac{dt}{dt} \) w\(\frac{dt}{dt} \) w\(\frac{dt}{dt} \) s\(\frac{dt}{dt} \).
        Distinguishing mark: antilope (?).
 (2) Wall between rooms (13) and (24), second course, first stone from west, on each side of western end of stone:
        iii. On north face in room (13).
        iv. On south face in room (24).
        Inscription: cprw Mnk3wrc-thw nds (?) s3.
        Distinguishing mark: the sign w\underline{d}^{\epsilon}.
 (3) Wall between rooms (13) and (15), first course, first stone from east; a block set on end:
         v. On northern side in room (15); inscription, upright.
        Inscription: (prw Mnk)wr(-thw ndś (?) s).
        Distinguishing mark: an ibis (?).
 (4) Wall between rooms (13) and (15), second course, third stone from west, on east end of stone:
        vi. On south face in room (13).
        The only legible mark is the sign s?.
 (5) Wall between rooms (14) and (26), second course, third stone from north end of wall:
        vii. On the east face in room (14).
        Inscription: \(\forall prw Mnk\}wr^\ceit-thw nd\(\sigma\) \(s\).
        Distinguishing mark: not preserved.
 (6) Wall between rooms (20) and (36) to (37), same wall as last-named, second course, second stone from north:
       viii. On east face in room (20).
        Inscription: \(\forall prw Mnk\} wr \(\forall -thw w\} \) dt s\}.
        Distinguishing mark: jackal with feather (Cynopolis nome?).
 (7) Wall between rooms (20) and (37), same wall as last two, second course, first stone from north:
         ix. On east face in room (20).
         x. On west face in enclosure (37N).
        Inscription: \(\capprox prw Mnk\)\(\frac{d}{d} w \)\(\frac{d}{d} t \)\(\sigma\).
        Distinguishing mark: the sign f (3tp).
 (8) Wall north of rooms (16) to (20), second course, second stone from west:
        xi. On south face in room (19).
        Inscription: \(\(\text{prw } Mnk\)\(\text{wr}\)\(\text{-thw } n\)\(\delta\)\(\frac{1}{2}\)\(\text{s}\).
        Distinguishing mark: ibis (?).
 (9) Wall between rooms (22) and (27), second course, third block south of doorway (25):
        xii. On west face in room (27), with end of inscription invisible behind the masonry of the later north wall of (27);
        for levelling and vertical lines, see above, p. 273.
        xv. On east face in room (22).
        Inscription: \(\(\text{prw } Mnk\)\(\text{wr}\)\(\text{-thw } w\)\(\text{dt } s\)\(\text{3}.
        Distinguishing mark: w3t ("road"), not visible in No. xii.
(10) Wall between rooms (10) and (37S), second course, third stone from south:
       xiii. On west wall in enclosure (37S).
        Inscription: \(\forall prw Mnk\)\(\forall wr^\cup-\forall mrw w\)\(\forall dt s\)\(\forall \).
        Distinguishing mark: d? (?wd??), see drawing.
(11) Wall on west side of court (5), north of portico (7), first course, first stone at corner of portico:
       xiv. On east face in court (5).
        Inscription: ^{\epsilon}prw \ Mnk \} wr^{\epsilon} - thw \ n\underline{d} \acute{s} \ (?) \ s \end{cases}.
        Distinguishing mark: ibis (?).
      xxva. On same face higher up to left, a 5-ell line.
     xxvb. On south face in portico, vertical line and 3-ell line.
        For No. xv, see above No. 9.
(12) South wall of room (10), second course, third stone from west:
       xvi. In middle of north face, above 5-ell line.
        Inscription: \( prw Mnk\}wr^\ceimrw nd\( s\) \( e^2 \).
        Distinguishing mark: not preserved.
      xxiii. On same face, east end, 5-ell line and mark.
      xxiv. On same face, west end, 5-ell and 6-ell lines and marks.
(13) Pyramid G III-a (see Vyse, The Pyramids of Gizeh, II, p. 48):
       xvii. On roofing slab in burial chamber.
        Inscription: cprw Mnk3wrc-thw w3dt (?) s3 (?).
        Distinguishing mark: not preserved (?); the restoration was suggested by Mr. Rowe.
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Before discussing the crew-names, I continue here the list of marks on Pls. XI and XII, to permit a complete view of the material:

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xviii. Room (10), south wall, second course, second stone from west.

Lines and marks for 5-ell, 6-ell, and 7-ell levels.
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xix. Room (10), north wall, first and second courses, near northwest corner.

Incised vertical line and painted lines and marks for 2-ell, 3-ell, 5-ell, and 7-ell levels.

xx. Room (10), south wall, first course, at 25 cm. from undressed southwest corner.

Vertical line, incised and painted (see p. 273).

xxi. Room (10), north wall, first course, second stone from west. Ell-mark for 3-ell level.

xxii. Room (10), east wall, second course, first stone from north.

Line and mark for 4-ell level,

xxiii. See No. 12, above.

xxiv. See No.12, above.

xxv. See No. 11, above, for both a and b.

xxvi. Room (13), south wall, second course, third stone from west (near unset granite block, S a 1).

Inscription: the sign sm3-t3wy written twice, 80 cm. apart; and over the western sign, the word hmwt. The latter word is anomalous on limestone. The sign sm?-t}wy might be a distinguishing mark.

xxviii. See p. 273, above.

xxix. For comparison with No. xxviii, from Ne-weser-re, p. 153.

xxx. Room (36), south wall, second course, near doorway to room (26); Dyn. VI. Obscure marks.

xxxi. Room (29), southern foundation wall of kernel structure, south face, fourth stone from east; Dyn. IV. The sign (in, twice, once upside down; white limestone.

xxxii. Room (34), east face, small block of white stone in third foundation course of kernel structure.

Perhaps a date; the black outline is the edge of the stone; Dyn. IV.

xxxiii. Room (13), south face, under granite block S a 4, on limestone (in foundation platform).

Three disconnected signs: mr, cin, and nfr.

xxxiv. Room (29), limestone foundation block under granite pavement, on west face, seen in thieves' hole.

The sign nfr(?) and an obscure mark.

xxxv. Room (34), east face, fourth foundation course of kernel structure.

The sign in written vertically.

xxxvi. Room (33), south wall, first course, third stone from west.

The sign gs and an ibis (?); Dyn. VI masonry; perhaps an older block reused.

The following were found on limestone blocks in Pyr. G III-a and its temple and copied by Mr. Rowe:

xxxvii. Pyr. G III-a, south face, a block in one of the lower courses.

The word wmt(?) between two gs-signs, irregularly placed.

xxxviii. Pyr. G III-a, east face, a block about half way up; a triangle with four vertical strokes inside it.

xxxix. Pyr. G III-a, west side, about half way up.

xl. Pyr. G III-a, north face, near base: gs . . .

xli, Temple of G III-a, room (12), north side, limestone foundation block, = gs mhty and an obscure mark.

Returning to the subject of the crew-names, the words cprw Mnk3wrc-thw obviously mean "The workinggang (named) Mycerinus-is-drunk"; and 'prw Mnk3wr'-smrw, "The working gang (named) Mycerinus-is-onewho-excites-love" (see Prof. Sethe in Borchardt's Sahure II, pp. 85-86). The meaning of the word cprw is fully exposed by Prof. Sethe (loc. cit.) as "boat's crew" and "working gang," and in the temple of Sahura, such gangs are represented with implements in their hands. Mr. Rowe has collected the following names of cprw:

- (1) Dyn. II, Nefer-ka, Barsanti, Annales, VII, pp. 266-281.
 - (a) $\langle prw \ Nfrk \rangle \langle b \rangle \rangle \dots \langle nhw \dots$: Inscription No. 1. cprw Nfrk? \$b} nd\$ (?) \$} ...: Inscription No. 28.

See also Inscriptions Nos. 41, 49, and 55.

"The gang, Neferka is a teacher (?).

(b) cprw Nfrk}-śmrw šrrw: Inscriptions Nos. 19 and 20. "The gang, Neferka is friendly"

(2) Dyn. IV, Cheops, found by Mr. Rowe in small chambers above the burial chamber; all the crew-names were written on the limestone blocks in the side walls.

(a) cprw Hr-mddw-wcb-t3wy: Inscription C 4, chamber 3, west wall. "The gang. The Horus Mededuw-is-the-purifier-of-the-two-lands."

(b) cprw Hr-mddw-wcb: Inscription C 35 (chamber 4, west wall), C 51-56 (chamber 4, south wall). "The gang, The Horus Mededuw-is-pure (or the purifier)."

(c) *\(\text{prw Hwfw-\section}\) Hwfw-\section C 82, top chamber roof block. "The gang, Cheops-excites-love."

(d) cprw hdt-Hnm-hwfw-shm(t) . . .: Inscription Nos. 1 (chamber 2, W), 5 (chamber 3, W), 36 (chamber 4, W). 40-48 (chamber 4, N), 87-88 (chamber 5).

"The gang, The-white-crown-of Khnumkhuwfuw-is-powerful"

(3) Dyn. IV, Mycerinus; see above.

(a) cprw Mnk}wrc-thw: Nos. i-xii, xiv, xv, xvii. "The gang, Mycerinus-is-drunk."

- (b) cprw Mnk3wrc-smrw: Nos. xiii and xvi. "The gang, Mycerinus-excites-love."
- (4) Dyn. V, Sahura; Borchardt, Sahure II, pp. 85-86.

 (a) \(\chi_{prw} \) \(\hat{hr} \chi_{prw

 - (c) cprw Shwr špśśw: "The gang, Sahura-is-splendid."
- (5) Dyn. V, Neweserra: see loc. cit.
 - (a) cprw Nwsrrc-smrw: "The gang, Neweserra-excites-love."
 - (b) cprw Nwsrrc-mrw: "The gang, Newserra-is-beloved."

The nomenclature of the boat watches was transferred to the watches or companies of priests and workmen, and the names of these are preserved in Old Kingdom texts, in the tomb of Mereruka (see Daressy, *Mem. de l'Inst. Egypt.*, 1900, p. 555) and in the mastaba D 47 (see Mariette, *Mastabas*, p. 306). The list is as follows:

	Ship-parts	Watches	Watches
	M.K.:	Meri, O.K.:	D 47, O.K.
Starboard	The House Control of the Land Control of the Advance of the Control of the Contro	000000 3 TO 10 00 00 00 00 00 00 00 00 00 00 00 00	shd hm-k} s} imy wrt.
Port	t} wr	t? wr s?	śhd hm-k3 s3 t3 wr.
Bow	w 3 $\underline{d}t$	w } $\underline{d}t$ s}	$\hat{s}hdhm-k$ s $\hat{s}w$ $\hat{s}d$ (and w $\hat{s}d$ s \hat{s})
Stern			śḥd ḥm-k} s} ndś.
		imy nfrt s}.	

The fifth watch, s? imy nfrt, occurs also on an obelisk from Saggarah (Urk. I, p. 58).

The third element of these crew-inscriptions is the mark which I call the distinguishing mark. It was of a slightly larger size than the other signs of the inscription, and was irregularly placed on the stone, usually after the rest of the inscription but in two cases (Nos. vii and xii) before, in two cases (Nos. ii and x) underneath, and in one case (No. xiii), before and behind but lower down.

The classification and distribution of the inscriptions was as follows:

- I. The crew, Mycerinus-is-drunk; nine stones found in walls of E-W axis of temple.
 - (a) The bow-gang (w)dt s, found on four stone, p. 274, Nos. 1, 6, 7, 9.
 - (1) Distinguishing mark: antilope: (?); one stone, No. 1.
 - (2) Distinguishing mark: jackal with feather; one stone, No. 6.
 (3) Distinguishing mark: f3(3tp); one stone, No. 7.
 - (4) Distinguishing mark: whiteroad; one stone, No. 9.
 - (b) The stern-gang (nds s3), found on five limestone blocks, p. 274, Nos. 2, 3, 5, 8, 11.
 - (5) Distinguishing mark: wd^c; on one stone, No. 2.
 - (6) Distinguishing mark: ibis (?); on three stones, Nos. 3, 8, and 11.
 - (7) Not preserved on one stone, No. 5.
 - Stone No. 1 (bow-gang) and stone No. 2 (stern-gang) adjoin each other in the wall between rooms (13) and (24). In the wall south of rooms (14) and (20), in the second course, the first and second stones are marked "bow-gang" and the third, "stern-gang." The other stones are isolated. The three "ibis (?)" blocks were also far apart.
- II. The crew, Mycerinus-excites-love; two stones both in walls south of E-W axis of temple.
 - (a) The bow-gang (w3dt s3), found on one stone, No. 10.
 - (8) Distinguishing mark: d3(wd3?); stone No. 10.
 - (b) The stern-gang (nds s3), found on one stone, No. 12.
 - (9) Distinguishing mark: not preserved.

It is clear that the whole construction force which built the temple was divided into crews (^{c}prw) of which the names of two are here preserved. For Cheops, we have the names of four, and for Sahura, three. The number of crews used by Mycerinus is therefore not necessarily limited to these two. Each crew was divided into "watches" (s) of which normally there would be four or five, here represented by two names, the bow-watch (w) and the stern-watch (n). The numbers of workmen included in these organizations were extremely large. I would estimate 200–250 men to each "watch," or 800–1000 to each "crew." Gangs of 200–250 men are unwieldy unless subdivided in working gangs of 10–50 men, suitably led by overseers (see p. 11, gangs of 18 men used in removing granite blocks from above inner temple). I suggest therefore that the distinguishing marks are the designations of the smaller gangs which composed each of the "watches." ¹

The inscriptions on the granite blocks were also in red but were very different from those on the imestone blocks (see Pl. XII). Each seems to have contained four elements which were written as if they were separate marks, not parts of a sentence. The fullest inscriptions were usually on the front face of the stone but the blocks S a 1 (unset) and S a 3 had a full set of marks both in front and on top; and marks were found on the undressed tops and sides of other stones. The list is as follows (written from right to left unless otherwise stated):

¹ These signs may have formed sentences; but I do not believe that the circumstances permit the assumption that these distinguishing marks were used to mark the place of the stones on the architect's plan as in the case of the Abusir pavement (see Borchardt, Sahure II, pp. 91–96).

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Corridor (13).
  Block:
    Na 1. gś...imy wrt...hmwt...mark, cin written above, twice.
    N a 2. g \le ... imy wrt... hmwt smyt... mark, b, above.
    N a 3. gs...imy wrt...hmwt smyt...mark, it written above, twice.
              On top, the sign św or nśwt.
    Na 4. gś...imy wrt...The mark, m3...hmwt smyt.
              On top, the sign, m?.
    Sa 1.
             = S b o: on the east side,
             hmwt \ smyt...ibis \ (?)...imm \ (?)...g$ (reversed direction).
             On top, mark, ibis (?)...hmwt smyt...gś...imn (?)...mark, ibis (?), upside down.
            On front, the mark, d^{\epsilon}m.
             On undressed east face, g \dot{s} \dots the mark, \underline{d}^{\epsilon} m.
    S a 3. On front, written on its side and crossing plaster of joint, hmwt smyt...imn (?)...the mark, w}ś, written vertically
              and apart, above the other signs.
             On top, the mark, w}s...gsimn (?)...hmwtsmyt.
            gś...hmwt smyt...imn (?)...mark, ib, to the left.
    Sa4.
    Sa 5.
             imn (?) . . . rest illegible except for mark (?), h3t (?), above.
    S a 6.
            Illegible.
            On front, mark, wr(hw) followed by two strokes...g$...$w$ (or n$w$t) with tr (?) under it...tm (?) with hmwt
              under it . . . smut.
             On the undressed west face, the mark, wr (?)...g\dot{s}...imn (?), written twice upside down and once from left to
              right.
    S b 1. Mark, \pm n \dots \pm n smyt...g\pm imn (?).
            g \le \dots \le w (n \le wt) with tr (?) under it ... mark, d^c m \dots hmwt \ smyt \dots imn (?); and out in front, d^c m, upside down.
     S b 3. Mark, šndwt (?)...gś...św (nśwt) tr (?)...hmwt smyt. The mark is repeated on the top and on the west side.
Portico (7). South end: the isolated black granite block has a vertical line and a star on the face.
Room (24). On the front and west faces stands g\hat{s} and \underline{d}^{\zeta}m. On the front is also an obscure sign which may be imn (?).
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The word $g\acute{s}$ is a constant element and may be assumed to have stood on every block. The term, $hmwt \, smyt$ "desert workshop" (or similar), is also a constant element occurring on every block on which the inscription is legible. The phrase, $imy \, wrt$, stands on each of the four blocks set together on the north side of room (13), and follows the word $g\acute{s}$, but is not grouped with it. On the southern side of that room, the corresponding word is $imn\ (?)\ (\ \ \)$ hawk on a standard) which appears in ten inscriptions on seven stones (S a 1, S a 3, S a 4, S a 5, S a 7, S b 1 and S b 2) and is probably merely illegible on S b 3. But an additional element, $\acute{s}w\ (?n\acute{s}wt?)\ tr\ (?)\ (tr\ written\ under <math>\acute{s}w$), is introduced after $g\acute{s}$ in S a 7 (front), S b 2, and S b 3, in two cases and probably in all three, in addition to $imn\ (?)$. The sign, $\acute{s}w\ (?n\acute{s}wt?)$, occurs also inexplicably on top of N a 3. Finally every block had a fourth, a variable, element, that which I call the distinguishing mark as in the limestone inscriptions. The marks of N a 1 to N a 4 read from right to left: $m\emph{3}\ it\ b(w)\ (in)$. Those of S a 2 to S a 7 read also from right to left: $wr\ (?hw?)\ ...\ h\emph{3}t\ ib\ (det.?)\ w\emph{3}\acute{s}\ d\emph{c}m$. And those of S b 0 to S. b 3 read also from right to left: $\emph{s}ndwt\ d\emph{c}m\ \emph{s}n\ \emph{b}\emph{3}\ (?\emph{3}ht?)$. These rows of signs could be fitted into sentences but the attempt seems futile in view of the paucity of the material. The sign $d\emph{c}m$ occurs twice in corridor $(13)\ (S\ a\ 2\ and\ S\ b\ 2)$ and a third time in room (24).

In spite of Professor Borchardt's clear evidence of the use of setting sentences for casing and paving slabs, I am unconvinced of the application of that principle to the explanation of the "distinguishing marks." The absence of any designation of the courses, the fact that the casing had been begun in 32 places (including 77 stones in the first course, and four stones of the second course, and the very small gaps in the east wall of the court casing), all seem to me to be objections. The mere fact that the temple required at least five courses of about 215–250 stones each, with a total of 1200 to 1500 granite blocks, seems to me to make the suggested procedure impractical. I am unable, however, to suggest any very clear explanation, and must leave the facts for future consideration.