

ANNUAL REPORT
of the
RAVENSWORTH
EXPEDITION

THE SEASON OF 1908–9

BEING AN ACCOUNT OF THE SURVEY AND EXCAVATION OF THE
NECROPOLIS RIDGE AT RAS EL-QAUS, IN THE WESTERN DESERT
ABOVE THE BEND OF QENA, UPPER EGYPT

by

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with contributions by

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AND A NOTE BY THE REV. CANON H. B. STARLING



WITH TWELVE PLATES AND THREE FIGURES IN THE TEXT

PRINTED FOR THE COMMITTEE

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PROF. E. A. RAVENSWORTH	Director; in charge of the clearance of the ridge and of the tomb-groups.
MR. A. J. M. COLQUHOUN	Surveyor and draughtsman; the plans, sections and levels are wholly his.
DR. F. L. AMBROSE	Physician to the camp; the meteorological and instrumental observations of §§ 47-52.
MR. T. R. HALLOWAY	Assistant; the pottery register and the drawing of the corpus types.
MISS C. E. LATHAM	Photographer; the whole of the plates were taken and developed by her in camp.
MR. STEPHEN OKE-BARRY	Volunteer, Michaelmas Term; the clearance of Trenches D and E.
SELIM EFFENDI GIRGIS	Inspector of the Service des Antiquités for the Qena district.

The excavation was carried through by sixty-two men and thirty-eight boys, under *Reis* MUHAMMAD ABU ZEID of Qûft, with *Reis* AHMED HASSAN EL-BADRI as his second; the practised men were of Qûft and Ballas, the basket-boys of the villages of Naga el-Qaus and Deir el-Barsha el-Bahri. The Committee desires it to be recorded that the work of these men was uniformly patient, honest and exact, and that not one object of the season was lost to the register through their hands.

INTRODUCTORY LETTER FROM THE DIRECTOR

*To Sir Aubrey Lister-Hume, Bart., F.S.A.,
Chairman of the Committee.*

Camp at Ras el-Qaus, 2 April 1909.

DEAR SIR AUBREY,

I have the honour to lay before the Committee the report of our first complete season upon the ridge at Ras el-Qaus, together with the registers of pottery and of small objects, three figures drawn upon the ground by Mr. Colquhoun, and the description of the twelve plates which Miss Latham has prepared from her negatives.

It will be seen that the season has been, by the ordinary measure of such work, a modest one. We opened forty-one shafts upon the ridge, of which twenty-nine had been plundered in antiquity and seven again in the last century; we recovered no gold, and of inscribed material very little. Against this must be set the group from Tomb R.14, which was found sealed, and which has yielded, besides an undisturbed burial and a sufficient pottery series, the painted limestone stela numbered 41 in our register. I have thought it proper to devote to that single object rather more space than its dimensions would seem to warrant.

I ought also to give notice, in advance of §§ 45–55, that a series of optical appearances was observed over the mouth of R.14 upon nineteen mornings between the 3rd of February and the 9th of March. Dr. Ambrose has furnished the instrumental record; I have set it down as it stands, without conjecture beyond what the figures will bear. I am aware that a report of this kind is not the place for the discussion of curiosities, and I have kept the section short. It seemed to me, however, that to suppress an observation because it is inconvenient is a worse fault in a surveyor than to record one which may afterwards be explained away.

The division of the finds was made at Cairo on the 24th of March, in the presence of M. Legrain's deputy and of Selim Effendi Girgis, upon the usual terms. The stela, No. 41, was ceded to the Expedition and has been shipped to England, where it remains for the present in the keeping of a subscriber to the Fund who has asked that his name be withheld; it will be available to students upon application at the Office. The remainder of our portion is distributed as set out in §§ 56–58.

It remains only to thank the Service des Antiquités for the courtesy of its officers, our subscribers for a patience which two indifferent seasons have tried, and the men of Qûft, without whom no work of this kind is possible at all.

*I am, dear Sir Aubrey,
your obedient servant,*

E. A. RAVENSWORTH

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The twelve plates are described in §§ 42-44 and are not bound with this copy; they are issued separately to subscribers of the second class and upwards.

I. THE SITE: SITUATION, GEOLOGY AND APPROACHES

§ 1. The ridge which we have called, from the name borne by its southern headland, the necropolis of Ras el-Qaus, lies upon the west bank of the Nile in the great bend above Qena, some eleven miles by camel-track from the river and about four hundred yards north of the mouth of the Wâdi el-Ghurâb. The Arabic name, which the fellahin of Naga el-Qaus render indifferently as *the headland of the bow* or *the bent place*, appears to refer to the curve which the scarp describes as it turns westward into the wâdi; we have retained it, since no ancient name for the place is at present known to us.

§ 2. The site consists of three members: the wâdi mouth, with its fan of gravel and its two ruined shelters; the limestone scarp which stands above it upon the north, rising in a single face to 68 m. above the cultivation; and, behind the scarp, a low spur of marl and broken chip, running north-north-east for rather more than half a mile, in which the tombs are cut. It is this spur, and this only, that is meant hereafter by *the ridge*.

§ 3. The limestone is of the middle Eocene, well bedded, of a close pale-buff grain, and parts readily along the horizontal joints; the ancient cutters plainly worked to these joints, and the chambers of the better tombs have flat ceilings without any labour of dressing. Above the limestone lies from 0.40 to 1.15 m. of *tafl*, a grey-green marl which turns to a slippery paste after rain and to a fine bitter dust in the dry months, and above that a surface armour of angular chip and desert gravel, wind-polished, of a uniform dark brown. The contrast of this brown surface with the pale rock beneath is the readiest guide to a shaft: wherever the ancient diggers threw out clean chip, the patch has remained pale, and may be seen from the crest of the scarp at a distance of half a mile.

§ 4. There is no water upon the ridge. The nearest well is that of Bir Umm Shâwish, 1¾ miles to the south-west, whose water is brackish and was used only for the animals; our drinking water was brought up daily upon four donkeys from the canal at Naga el-Qaus, in *zîrs* slung in nets, and was reckoned at rather more than three gallons the man for all purposes.

§ 5. Three approaches exist. The first, and that used by the Expedition, leaves the river at the village of Naga el-Qaus, follows the field-bank to the desert edge, and then ascends the gravel fan of the Wâdi el-Ghurâb: an easy road for camels of two hours and fifty minutes, practicable for a light cart as far as the fan and no further. The second is the old track from Deir el-Barsha el-Bahri along the crest of the scarp, shorter by a mile but bad going, with two places where a laden animal must be unloaded and led. The third is the desert road from the north, by which the Ababda bring charcoal; it enters the wâdi three miles above its mouth and is of no use for stores.

§ 6. The climate during our months requires a word, since it governs the hours of work. From the middle of December to the end of January the nights were cold, the minimum in camp falling on three occasions below 4° C., and the days clear and still, with a maximum in shade of 22° to 26° C. In February the wind set in from the north-west, and from the 20th of that month we lost, in all, nine working days to *khamzin*. In the true *khamzin* the air does not so much blow as thicken; the sun stands as a pale disc without rays, the temperature rises twelve or fifteen degrees within the hour, and a fine sand, quite unlike the coarse grains of the surface, is driven into every box and every negative-holder. On the 27th of February the sun was not visible at all between 10 and 3, and we recorded at noon a shade reading of 39° C. with a wet-bulb depression of 21°.

§ 7. In the middle hours of the ordinary day the ridge is not to be surveyed. From about half-past nine the heat shimmer rises off the chip in a continuous tremor, and the cross-hairs of the level cannot be laid upon a staff at two hundred feet; the staff itself appears to boil and to be cut through at the base.

By eleven the shimmer has become mirage in the strict sense: the low ground to the east carries a false sheet of water, upon which the scarp and the men working at its foot stand inverted, and a man walking upon the flat is seen at the waist only, his legs being taken up into the false water. Mr. Colquhoun therefore levelled between 6 and 9 in the morning and again after 4, and no measurement taken between those hours has been admitted to the plans.

§ 8. The dawn upon this ridge deserves the notice of any one who may work here after us, not for its beauty, which is nothing to the purpose, but because it is the one hour in which the surface may be read. For some twenty minutes before the sun clears the eastern hills the whole scarp takes a flat rose colour without shadow; then, as the light comes level along the ground, every hollow of a filled shaft, every ancient spoil-heap, and every robbers' trench throws a shadow of its own, and the plan of the cemetery may be read off the ground as from a drawing. Eleven of our forty-one shafts were first identified in this way, and the reader is asked to bear the quality of this light in mind when he comes to §§ 45-55.

§ 9. The ridge was divided for record into five hundred-foot squares, lettered A to E from the south, and the shafts numbered consecutively within the whole cemetery as they were opened, with the prefix R. Thus R.14 is the fourteenth shaft opened in the season, and lies in square C, 62 ft. east and 141 ft. north of the datum peg set by Mr. Colquhoun at the southern headland (level 61.8 m. above the cultivation).

II. THE CAMP, THE WORKMEN, AND THE CONDUCT OF THE SEASON

§ 10. The camp was pitched on the 9th of December 1908 upon the gravel of the wâdi fan, 340 yards from the foot of the scarp and clear of the flood channel, at a point where two ruined shelters of dry stone, probably of the Coptic period, gave some shelter from the north-west. It consisted of four tents for the staff, a double-fly tent used as office, register-room and dark-room, a stone-and-matting hut for stores, and the lines of the men, who built themselves the usual walls of loose chip roofed with matting. The whole was struck on the 30th of March 1909.

§ 11. The antiquities were housed in a chamber of the eastern shelter, re-roofed with planking and provided with a door and an English lock, of which the Director and Selim Effendi Girgis held the keys. No object was permitted to leave the ground without an entry in the register, made at the trench-side in the presence of the finder; the numbers so given are those used throughout this report and inked upon the objects themselves.

§ 12. Work began at sunrise, with an hour's rest at nine and a second at noon, and ended an hour before sunset; on Fridays the men worked to noon only. The rate was P.T. 3 the day for the practised men of Qûft, P.T. 1½ for the basket-boys, with the customary *baksheesh* upon objects, assessed by the Director at the value the object would have fetched from a dealer, and paid on the spot in the sight of the whole gang. This system, which we have used now for three seasons, is not the cheapest, but it is the only one which keeps the small objects out of the market.

§ 13. *Reis* Muhammad Abu Zeid had charge of the ridge, and it is right to say that the discovery of R.14 was his and not ours. He had marked the place upon the second morning of the season, on no better evidence than the pallor of a patch of chip some nine feet across and the report of his stick upon it, and returned to it twice, against the Director's judgment, before leave was given to open it on the 26th of January. *Reis* Ahmed Hassan el-Badri had charge of the trenches in squares D and E and of the sieving of the spoil, by which method eleven of our beads and two of the scarabs were recovered.

§ 14. Of the forty-one shafts opened, twenty-nine had been entered in antiquity, the blocking broken and the burial thrown out; seven more had been re-opened in the last century, and in three of these we found cigarette papers and a copy of a Cairo newspaper of 1897. Four shafts were sterile, having apparently never been finished. One only, R.14, was found with its blocking entire.

III. THE EXCAVATION OF TOMB R.14

§ 15. R.14 was opened on the 26th of January and cleared to the floor on the 11th of February, sixteen days having been spent upon it, of which four were lost to wind. The shaft is cut wholly in the limestone, its mouth pierced through 0.85 m. of tafl and gravel. It measures at the mouth 1.55 by 1.52 m. and at the floor 1.51 by 1.50 m., the sides being carried down with an inward batter of about one in eighty, and is 4.22 m. deep from the ancient surface to the floor. The tool-marks of the adze are everywhere plain upon the walls, running in courses of about 0.18 m., and there are two pairs of foot-holes cut in the north and south sides.

§ 16. The filling of the shaft was recorded in five members, which are lettered upon Fig. II: (*a*) 0.64 m. of loose drift sand with modern rubbish, being the surface hollow; (*b*) 0.90 m. of limestone chip mixed with sand, containing sherds of the XVIIIth dynasty, three of which are entered in the register as Nos. 1-3; (*c*) 0.95 m. of compact marl and tafl, plainly water-laid in its lower part, and sealed by a thin crust of gypsum; (*d*) 0.86 m. of clean angular chip, without sherd or bone, which we take to be the spoil from the cutting of the chamber, returned upon the completion of the burial; and (*e*) 0.87 m. of fine silt upon the floor, undisturbed, in which lay the pottery Nos. 19 and 22. The presence of member (*d*) beneath member (*c*) is decisive of the tomb having remained closed.

§ 17. The chamber opens from the west side of the shaft at floor level, through a mouth 1.06 m. wide and 1.22 m. high, which was found blocked with limestone rubble set in a mud mortar, the whole entire and bearing upon its face the impressions of two mud sealings, too far decayed to yield a device. The chamber itself is a rough rectangle, 2.24 m. from east to west by 2.56 m. from north to south, with a mean height of 1.34 m., and a small niche, 0.40 by 0.44 m., cut in the north wall at a height of 0.90 m.

§ 18. The air within, upon the first breaking of the blocking, was cold and quite dry, and a candle burnt in it without difficulty at every part of the floor. There was no smell of decay. Miss Latham's flashlight negatives (Pl. VI, VII) were taken before anything whatever was moved, and Mr. Colquhoun's plan (Fig. I) was drawn upon the ground on the following morning, the objects being left in place for thirty hours for that purpose.

§ 19. The burial lay a little south of the middle of the chamber, contracted upon the left side, the knees drawn up to within 0.24 m. of the chin, the head to the north and the face to the east. It was that of a man of middle age; Dr. Ambrose, who examined the bones upon the ground, reports the stature at 1.63 m., the teeth much worn but sound, a well-united fracture of the left clavicle, and marked eburnation of the right hip. No coffin was present, but a stain of dark brown, 0.04 m. broad, ran under and about the body, and in three places carried the impression of a coarse matting of halfa grass, of which fragments are entered as No. 46.

§ 20. The pottery stood in two groups: eleven vessels ranged along the north wall, of which four were found still stoppered with mud, and six upon the floor at the feet of the burial. Two large jars had fallen forward and were broken in place, but complete. In the niche of the north wall were the two alabaster kohl-pots, Nos. 33 and 34, and a small heap of natron.

§ 21. The stela, No. 41 of the register, was found standing upright against the eastern wall of the chamber, that is to say against the wall pierced by the doorway, and immediately to the north of it, its foot resting in a shallow socket cut for it in the floor and packed with chip. It faced west, across the body, and had therefore been the last object to be set in place before the blocking was built. Its position is marked upon Fig. I and upon Fig. II at S.

§ 22. This position is, so far as our reading goes, without parallel among the private tombs of the district, where such stelae as occur are set in the west wall, facing the doorway, or are built into the chapel above ground. A stela set against the east wall and facing west looks, from the position of the burial, towards the place of the setting sun; whereas the face of the dead man, turned to the east, was directed upon its back. We record the fact and offer no explanation of it.

§ 23. The stela was removed on the 9th of March, after the chamber had been photographed a second time, and was carried down to camp upon a stretcher of two poles slung between four men. It was found on lifting that the socket beneath it contained a deposit of clean quartz sand, unlike any sand upon the ridge, to a depth of 0.06 m., with a single bead of blue frit (No. 47) at the bottom. A sample of the sand has been retained.

§ 24. The tomb yielded no inscribed material besides the stela, the two scarabs (Nos. 30, 31), and the linen mark upon a fragment of cloth (No. 44). On the evidence of the pottery and of the scarabs we place the burial in the earlier part of the XVIIIth dynasty, and probably in the reign of Amenhetep II or thereabouts; the stela, for reasons given in § 36, may be somewhat older than the burial in which it was found.

IV. REGISTER OF THE POTTERY

§ 25. The pottery is registered below in the order of the numbers inked upon it, which is the order of its recovery. The types are quoted, where they can be quoted, from the corpus of the Naqada and Ballas volumes and from Prof. Petrie's Diospolis tables, with the sequence-date where the form admits of one; the great mass of the R.14 group, being of the New Kingdom, lies of course beyond the sequence and is described by ware and form only.

§ 26. Three wares are distinguished throughout: (i) the rough brown ware of the Nile silt, straw-tempered, unevenly fired, and often black at the core; (ii) the marl ware of Qena, hard, ringing, pale buff to greenish, thrown fine and frequently self-slipped; and (iii) the polished red ware, silt-based, with a haematite wash burnished before firing. Where a vessel is called *drab* the ware is marl under-fired.

§ 27. Measurements are given in centimetres, the height first, then the greatest diameter, then the diameter of the mouth. Findspots are given by the members of the shaft filling (§ 16) or by the position in the chamber.

REGISTER A.—POTTERY FROM TOMB R.14 AND ITS SHAFT

No.	Form	Ware	Ht. / Diam. / Mouth (cm.)	Findspot	Condition
1	Sherd, jar rim	Rough brown, straw-tempered	— / 21.0 / 16.4	Shaft, (<i>b</i>)	Fragment only
2	Sherd, ring base	Rough brown	— / 9.2 / —	Shaft, (<i>b</i>)	Fragment only
3	Bowl, hemispherical	Marl, drab, self-slipped	6.8 / 14.2 / 14.2	Shaft, (<i>b</i>); see Fig. I	Rim chipped; two-thirds
4	Jar, ovoid, pointed base	Marl of Qena, hard buff	48.6 / 21.3 / 8.4	Chamber, N. wall	Complete; mud stopper
5	Jar, ovoid, pointed base	Marl of Qena, hard buff	47.1 / 20.8 / 8.1	Chamber, N. wall	Complete; stopper broken
6	Jar, ovoid, smaller	Marl, greenish	34.2 / 17.0 / 7.6	Chamber, N. wall	Complete
7	Bowl, carinated	Polished red ware	7.4 / 16.6 / 15.0	Chamber, N. wall; Fig. I	Perfect
8	Bowl, carinated	Polished red ware	7.1 / 16.2 / 14.8	Chamber, N. wall	Perfect
9	Dish, flat, string-cut base	Rough brown	3.6 / 18.4 / 18.4	Chamber, N. wall	Chipped at two points
10	Dish, flat, string-cut base	Rough brown	3.4 / 18.0 / 18.0	Chamber, N. wall	Perfect
11	Beaker, tall, flaring	Marl, drab	16.8 / 9.4 / 9.4	Chamber, N. wall; Fig. I	Complete; surface salted
12	Beaker, tall, flaring	Marl, drab	16.1 / 9.2 / 9.0	Chamber, N. wall	Cracked, mended in camp
13	Jug, one handle	Polished red, burnished	18.6 / 12.4 / 5.2	Chamber, N. wall	Handle lost in antiquity
14	Jar, globular, ring base	Marl, pale buff	22.3 / 19.6 / 9.8	Chamber, N. wall; Fig. I	Complete; contents natron
15	Saucer lamp, pinched	Rough brown	2.8 / 10.4 / —	Chamber, floor, E.	Burnt at the lip
16	Saucer lamp, pinched	Rough brown	2.6 / 10.1 / —	Chamber, floor, E.	Burnt at the lip
17	Bowl, deep, round base	Marl, drab	9.4 / 15.2 / 13.6	Chamber, at the feet	Perfect
18	Bowl, deep, round base	Marl, drab	9.1 / 15.0 / 13.2	Chamber, at the feet	Rim chipped
19	Jar, tall, two ledge handles	Rough brown, thick	52.4 / 24.2 / 11.6	Shaft floor, (<i>e</i>); Fig. I	Fallen and broken; complete
20	Stand, cylindrical	Rough brown	14.6 / 13.4 / 13.4	Chamber, at the feet	Complete
21	Cup, small, plain	Polished red ware	5.2 / 7.4 / 7.4	Chamber, in niche	Perfect
22	Jar, ovoid, small	Marl, greenish	19.4 / 11.8 / 6.2	Shaft floor, (<i>e</i>); Fig. I	Complete; sealed, empty
23	Sherds, assorted (17)	Rough brown and marl	—	Surface, above shaft	Fragments; S.D. 63-72 for two

§ 28. The group is homogeneous and gives no ground for supposing a second interment. The two large marl jars (Nos. 4, 5) are of the ordinary wine form of the earlier XVIIIth dynasty and had been stoppered with mud over a pad of grass; the contents had gone entirely, leaving a dark ring within. No. 14 contained natron to a depth of 0.09 m.

§ 29. Nos. 1-3, from member (*b*) of the filling, are of the same period as the chamber group and are best explained as sweepings returned with the spoil at the time of the burial. The seventeen surface sherds, No. 23, include two of a predynastic wavy-handled ware which cannot come from this tomb, and are noted here only because they were found in the hollow above it.

V. REGISTER OF THE SMALL OBJECTS

§ 30. The small objects are registered in a single series continued from the pottery, beginning at No. 30 in order that the two series may not be confused in the field notes. All are from Tomb R.14 unless otherwise stated.

REGISTER B.—SMALL OBJECTS

No.	Object and material	Dimensions (cm.)	Findspot	Remarks
30	Scarab, steatite, glazed green	1.8 × 1.3 × 0.8	On the right hand of the burial	Base: scroll border about a <i>nefer</i> sign. Perfect.
31	Scarab, steatite, glaze lost	1.6 × 1.1 × 0.7	Chamber floor, S. of burial	Base: <i>Men-kheper-Ra</i> , roughly cut. Chipped at back.
32	Amulet, <i>wedjat</i> eye, blue frit	2.2 × 1.4	At the throat	Pierced for suspension; glaze much decayed.
33	Kohl-pot, alabaster	5.4 h. × 4.2 d.	Niche, N. wall	With kohl to half its depth. Perfect.
34	Kohl-pot, alabaster, smaller	4.1 h. × 3.6 d.	Niche, N. wall	Lid lost; rim bruised.
35	Kohl-stick, haematite	8.6 l.	Niche, N. wall	Complete, polished.
36	Beads, blue frit, ring type (214)	0.4 d. each	At the neck and left wrist	Strung as found; two strings restored.
37	Beads, carnelian, barrel (11)	0.9 – 1.4 l.	At the neck	Perfect.
38	Pendant, gold foil over plaster	1.6 × 1.1	At the neck	Foil torn; core sound.
39	Adze blade, copper	9.4 × 4.6	Chamber floor, at the feet	Much corroded; edge traceable. Wood gone.
40	Chisel, copper, tanged	12.8 × 1.2	Chamber floor, at the feet	Corroded; tang complete.
41	STELA, painted limestone	78.0 × 49.0 × 11.0	Upright against the E. wall of the chamber, facing W.	See §§ 33–38, Fig. III, and Pl. IX–XI. Round-topped; three registers; pigment in part preserved. Sound but for one lacuna.
42	Model vessel, limestone	3.4 h.	Chamber floor, N.	Perfect.
43	Whetstone, quartzite, pierced	7.2 × 2.4	At the left hand	Worn hollow on both faces.
44	Linen, fragments (9)	largest 21 × 14	About the body	One bearing an ink mark in hieratic, unread.
45	Reed, cut, with pitch stopper	16.4 l.	Chamber floor, E.	Split; contents (?) resin.
46	Matting, halfa grass, fragments	largest 18 × 11	Beneath the body	Carbonised in part.
47	Bead, blue frit, single	0.6 d.	In the socket beneath No. 41	Perfect. See § 23.
48	Sand, clean quartz, sample	— (0.06 m. deep)	Socket beneath No. 41	Retained for examination in England.

§ 31. The two copper implements, Nos. 39 and 40, are of the ordinary funerary quality, thin and never sharpened, and are of interest only as fixing the man's condition; he was buried with the tools of a craftsman, and the eburnation of the right hip noticed by Dr. Ambrose is consistent with a life spent at a bench or a wall.

§ 32. There remains the object which gives this report whatever value it may possess.

THE STELA OF THE BOW (NO. 41)

§ 33. The stela is a slab of the local limestone, round-topped, 0.78 m. high, 0.49 m. broad and 0.11 m. thick, dressed upon the face and the two edges and left rough at the back. The face is sunk within a

plain raised border of 0.015 m., and is divided into three registers, of which the uppermost occupies the lunette.

§ 34. In the lunette is a winged disk, executed in shallow sunk relief, the wings extending to the border on either side and the feathering rendered by simple incised strokes, seven to each wing. The disk itself retains a wash of red ochre, and the wings traces of a blue which has in most places decayed to a grey.

§ 35. The middle register carries the device from which we have named the piece. Upon a single horizontal chord, incised the full width of the sunk field, two forms are set. Below the chord is the hull of a barque, drawn as a shallow crescent of the usual solar type, the interior filled with close vertical hatching in the manner employed elsewhere for the binding of a papyriform hull, and terminating at either end in an upturned stem finished with a small disk. Above the chord, and springing from precisely the same two points, is a bow: recurved, the limbs of unequal thickness, the string carried straight between the tips, and the whole rendered with the three-part construction of the composite bow of the New Kingdom, in which the wooden core, the horn belly and the sinew back are distinguished upon the original by three parallel incised lines running the length of each limb. Within the arc of the bow, and above the string, is a second disk, sunk and formerly painted red, from which no rays proceed.

§ 36. The workmanship of this register is not that of the lunette. The cutting is deeper, the line more assured, and the surface within the sunk field has been rubbed down with a fine abrasive which has left a series of parallel scratches running north-east upon the stone as it stood. It is possible that the middle register is the earlier work and that the stela was re-used; the point cannot be settled from the stone alone.

§ 37. The lowest register carries three lines of incised text, much worn, of which the Director can read with confidence only the words *tp duat* ('at the first hour of the morning') at the beginning of the first line, the sign for *pet* ('sky') three times repeated in the second, and, in the third, a group which appears to be a determinative of stretched or drawn material following a word lost in a flake. A squeeze and two photographs have been sent to Prof. Bramhall, whose reading will be printed in the next report, and no translation is here attempted. The Rev. Canon Starling, to whom the squeeze was also shown, observes that the association of the bent bow with the sky is not unfamiliar in another literature, and desires his note to be printed as an appendix in due course.

§ 38. The pigments were examined in camp by Dr. Ambrose so far as the means allowed. The red is an ordinary red ochre; the blue, where it survives in the wing-feathers and in a narrow band along the string of the bow, is the artificial frit commonly called Egyptian blue, and under the lens is seen to be coarsely ground, the particles standing up as small glassy crystals which take the light strongly at a low angle. Upon the morning of the 14th of February, the stela having been brought out of the chamber to the mouth of the shaft for photographing, this band of blue was observed by three of us to throw a very distinct spectrum upon the paper of Miss Latham's focussing screen. The circumstance is mentioned here for completeness, and is returned to in § 51.

VI. THE PLANS AND SECTIONS

§ 39. The three figures which follow were drawn upon the ground by Mr. Colquhoun at a scale of one in ten, and are reproduced here from his originals without reduction other than that of the process. The hatching in Figs. I and II denotes rock cut away; the broken line in Fig. I denotes the limit of the sunk field of the chamber ceiling, which is not everywhere carried to the walls.

§ 40. In Fig. I the position of the stela is shown by the solid black bar against the eastern wall, and the numbered circles are the findspots of the pottery of Register A. In Fig. II the letters (*a*) to (*e*) are the members of the shaft filling described in § 16; S. marks the stela, b. the burial, and r. the blocking of rubble.

§ 41. Fig. III gives the elevation and section of the stela as recovered, with the lacuna hatched. The three parallel lines upon the limbs of the bow, mentioned in § 35, are too fine to be shown at this scale and should be sought upon Pl. X.

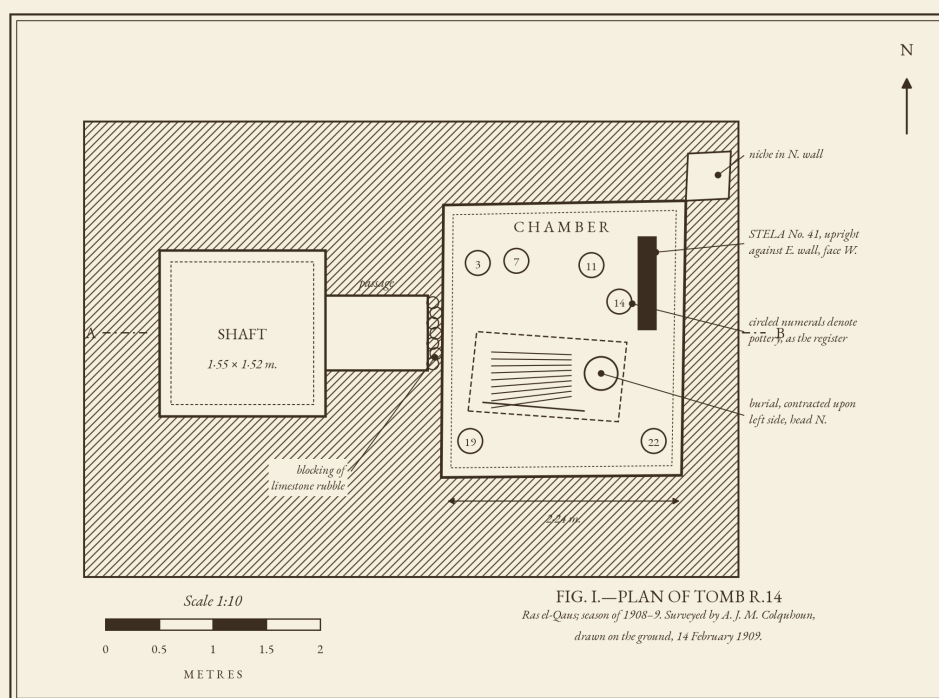


FIG. I.—PLAN OF TOMB R.14, AT 1:10. From the original survey of A. J. M. Colquhoun.

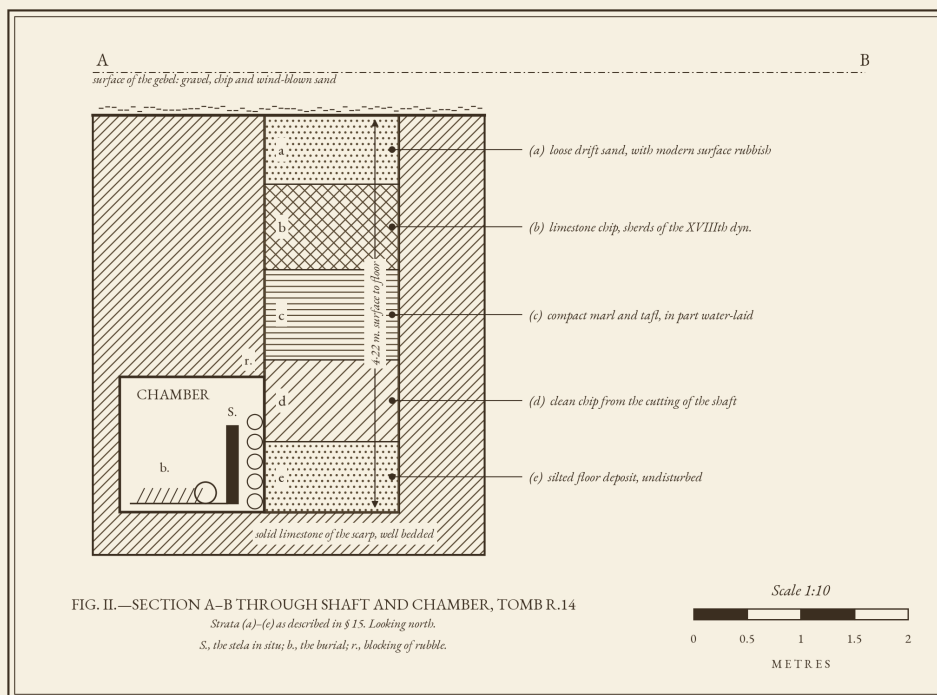


FIG. II.—SECTION A-B THROUGH THE SHAFT AND CHAMBER OF TOMB R.14, AT 1:10.

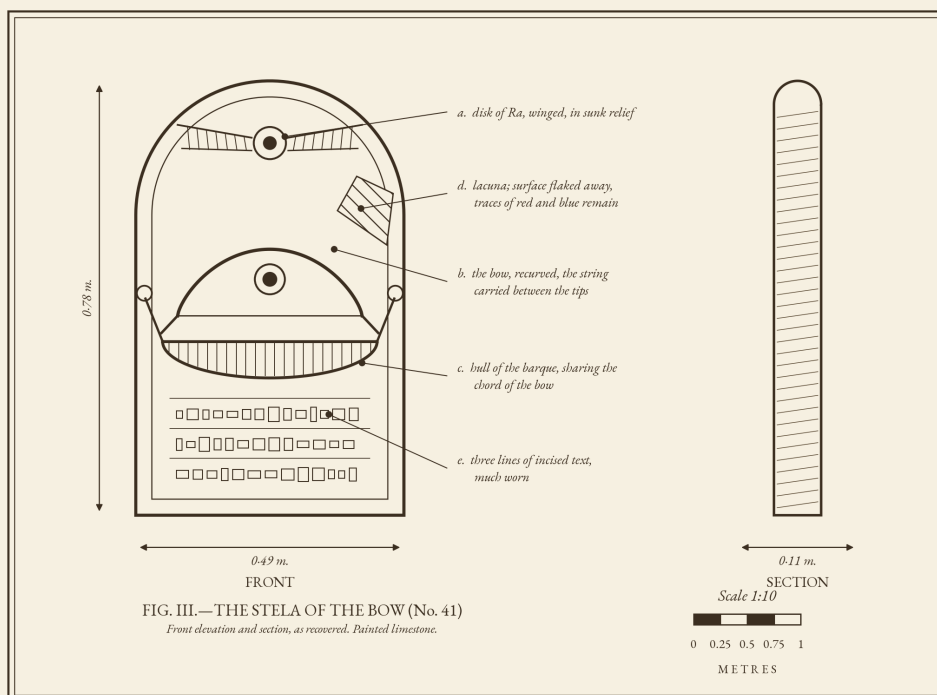


FIG. III.—THE STELA OF THE BOW (No. 41): FRONT ELEVATION AND SECTION, AT 1:10.

VII. DESCRIPTION OF THE PLATES

§ 42. The twelve plates were taken by Miss C. E. Latham upon Imperial Flashlight and Ilford Empress plates, developed in camp with pyro-soda at a temperature which could not always be kept below 24° C., and are reproduced in collotype by Messrs. Chalmers & Wray. Where the negative has suffered from the dust of the khamsin the fact is stated.

§ 43. The plates are of the following subjects:

- PL. I. General view of the ridge from the south-east, taken from the datum peg at the headland at 6.40 a.m. on 4 January 1909. The scarp occupies the upper third of the plate; the pale patches upon the darker gravel, of which eleven may be counted, are the mouths of shafts. The two figures upon the skyline are *Reis* Muhammad and a basket-boy, and give the scale.
- PL. II. The mouth of the Wâdi el-Ghurâb, looking west, with the camp in the middle distance and the ruined shelters upon the right. Taken in the afternoon light; the tremor of the air is visible along the foot of the scarp and has softened the outline of the further tents.
- PL. III. The camp: the office and dark-room tent, with the register table set out under the fly, and the store hut behind. The boxes upon the left are those in which the pottery was packed with dry chaff.
- PL. IV. The gang at work upon square C, with R.14 in the foreground before clearance. The line of baskets is that used for carrying the spoil to the dump, a distance of forty-two yards. The negative is dusted in the upper left corner.
- PL. V. The mouth of the shaft of R.14, cleared to member (c), showing the crust of gypsum broken away upon the north side and the two pairs of foot-holes. A two-foot rule is laid upon the lip.
- PL. VI. The chamber of R.14 upon the breaking of the blocking, taken by flashlight through the doorway before anything was moved. The burial lies in the middle ground; the jars of the north wall are seen at the right; the stela stands at the extreme left of the plate and is there partly out of the field. This is the record negative of the group.
- PL. VII. The same, taken from within the chamber against the doorway, the camera standing upon the floor at the west wall. The stela is here seen entire, upright against the east wall, with the pottery of the north wall at the left and the head of the burial at the bottom of the plate.
- PL. VIII. The burial, cleared, from above. The contracted attitude, the position of the right hand upon which the scarab No. 30 was found, and the stain of the matting are all plain. Scale of two feet at the head.
- PL. IX. The stela, No. 41, as it stood against the east wall, taken by flashlight at 0.90 m., the axis of the lens level with the middle register. Some distortion at the head of the plate could not be avoided in the space available.
- PL. X. The stela, No. 41: the middle register, enlarged four diameters from a negative taken in oblique morning light at the shaft mouth on 14 February. The three incised lines upon each limb of the bow, discussed in § 35, are here distinctly to be seen, as is the abrasion of the sunk field. The band of blue frit along the string appears in the plate as a white line, an effect of the plate's sensitiveness and not of the pigment.
- PL. XI. The stela, No. 41: the lower register, with the three lines of text, taken in a raking light from the left. A squeeze of the same is in the hands of Prof. Bramhall.

PL. XII. The socket in the floor of the chamber after the removal of the stela, with the quartz sand in place and the bead No. 47 exposed at the bottom. Taken at midday with the mirror; the light is poor and the plate is admitted only for the record.

§ 44. Plates VI, VII and X are the only ones which the Committee considers of first importance. Should the funds of the coming season allow, it is proposed to issue an enlargement of Pl. X separately, at cost, to institutions.

VIII. OBSERVATIONS UPON THE REFRACTION PHENOMENA AT R.14

§ 45. It is with some reluctance that the Committee prints this section, and it does so upon the Director's representation that an observation withheld is an observation lost. What follows is a record and nothing else. No hypothesis is advanced beyond those set out in §§ 52-54, and the Committee will be glad to receive from any competent person a physical explanation which the facts will bear.

§ 46. Upon the morning of the 3rd of February 1909, at about twenty minutes before sunrise, Mr. Halloway, going up to the ridge to set out the day's work, observed over the mouth of shaft R.14 an arc of coloured light, and reported it to the Director as 'a bit of rainbow in a clear sky'. The Director and Dr. Ambrose reached the place at 5h 51m and observed the same appearance for eleven minutes. The sky was without cloud from horizon to horizon; the aneroid stood at 996.4 mb., the dry bulb at 7.2° C., the wet at 4.1°, giving a relative humidity of 34 per cent. No rain had fallen upon the ridge since the 11th of November.

§ 47. The appearance was as follows. An arc of about 12° 30' of angular length and some 40' in breadth stood in the air above the shaft mouth, its chord horizontal, its convexity upward, and its lowest point about 2.1 m. above the ground as estimated against a staff afterwards set up. The colours were in the ordinary order of the spectrum, red without and violet within, that is to say reversed as against the primary bow. The whole was faint but perfectly definite, and could be occulted by the hand at arm's length. It was not a projection upon any surface: two observers standing eight feet apart saw it in the same place with respect to the ground, which a projection upon suspended dust would not permit.

§ 48. The appearance was observed upon nineteen mornings between the 3rd of February and the 9th of March. It was invariably first seen between eighteen and twenty-five minutes before local sunrise and was never seen to persist for more than fourteen minutes, the mean duration of the nineteen observations being nine minutes and forty seconds. It was never observed at any other hour, though a watch was kept at sunset upon eleven evenings and through the night of the 21st of February. It was not seen over any other shaft upon the ridge, nor over the two shafts (R.29, R.33) which were opened experimentally to the same depth in the same week.

§ 49. Dr. Ambrose made the following instrumental examinations. (i) The bearing of the centre of the arc was taken upon nine mornings with the prismatic compass and found constant within 1° 30' at 284°, that is to say a little north of west, and therefore directly opposite the point of sunrise, which moved through some 4° during the period. The bearing of the arc did not move with the sun. (ii) The altitude of the lowest point was measured with the theodolite from a station 30 m. to the south and found to be 3° 51', giving a height above ground of 2.02 m., agreeing with the estimate. (iii) A direct-vision spectroscope was directed upon the arc upon four mornings. Dr. Ambrose reports a continuous spectrum, without dark lines that he could detect and without the bright lines of any luminous gas known to him, and adds that the red end appeared to him abnormally extended. (iv) A

Nicol prism was interposed. The light was found to be strongly plane-polarised, extinction being nearly complete at one position of the prism; the plane of polarisation was tangential to the arc throughout its length.

§ 50. The air was sampled for suspended matter upon three mornings by drawing a measured volume through a moistened filter, with the following result: on the 8th of February, when the arc was bright, 0.0021 grammes to the cubic metre; on the 12th, when it was very faint, 0.0094; and on the 19th, when it was not seen at all, 0.0131. That is to say, the arc was brightest when the air was cleanest, which is the contrary of what would be expected upon any hypothesis of suspended dust.

§ 51. Two further circumstances are to be recorded. First, the spectrum thrown by the band of blue frit upon the string of the bow, noticed in § 38, was seen only upon the two mornings on which the stela stood at the mouth of the shaft, and could not afterwards be reproduced in camp, either in the sun or with the magnesium ribbon. Secondly, upon the 9th of March the stela was removed to camp, as recorded in § 23. The arc was observed that morning, before the removal, for six minutes. It was not seen upon the 10th, nor upon the 11th, nor upon any of the eighteen following mornings up to the striking of the camp, although the watch was kept by Dr. Ambrose and by Mr. Halloway alternately, with the instruments ready, and although the conditions of temperature, pressure and humidity upon the 13th and the 22nd of March were within one per cent. of those recorded upon the 3rd of February.

§ 52. Three explanations have been considered. (a) *Ice crystals*. The prismatic arcs of high latitudes are produced by hexagonal ice crystals in the upper air. But the phenomenon here was at a height of two metres, in air at 7° C. and 34 per cent. humidity, and no frost was recorded upon the ridge at any time. The explanation must be dismissed.

§ 53. (b) *Suspended silica dust*. It was at first supposed by the Director that the fine wind-borne silica of the tafl, of which the particles are angular and in part vitreous, might act as a dispersive medium at a low angle of incidence. The filter readings of § 50 are against it, and the fixity of the bearing given in § 49 (i) is fatal to it: a dust bow, like a rainbow, must stand opposite the sun and must move as the sun moves. This one did not.

§ 54. (c) *A local body of air of differing density*. Dr. Ambrose inclines to the view that the shaft, being cut in rock and open, may discharge at dawn a column of cold and very dry air of a density sensibly different from that of the air about it, and that the boundary of such a column might act as a prism of large aperture. This will account for the height, for the constancy of position, and for the hour; it will not account for the polarisation, which is proper to reflection or to scattering and not to simple refraction, nor for the cessation of the appearance after the 9th of March, the shaft remaining open and the weather unchanged.

§ 55. The Committee therefore records the facts without an explanation. It is proper to add that no member of the staff attaches any significance whatever to the coincidence of the cessation with the removal of the stela, beyond the obvious one that a mass of stone, removed from a socket of quartz sand at the mouth of a chamber of constant temperature, may alter the convection of the shaft in ways which cannot now be tested. The point can be settled next season by returning the stela, or a slab of the same dimensions, to the socket, and this the Director proposes to do.

IX. DIVISION OF THE FINDS; THE COMING SEASON

§ 56. The division was made at the Museum at Cairo on the 24th of March 1909, upon the usual terms, the Service taking first choice. To the Museum were assigned the pottery Nos. 4, 5, 7, 13, 14 and 19; the scarabs Nos. 30 and 31; the alabaster Nos. 33 and 34; the copper Nos. 39 and 40; and the beads No. 37. To the Expedition were ceded the remainder of the pottery, the frit beads No. 36, the amulet No. 32, the miscellaneous Nos. 42-48, and the stela No. 41.

§ 57. Of the Expedition's portion, the pottery series has been divided between the Ashmolean Museum, the Fitzwilliam, the Manchester Museum and the collection of University College, according to the scale of subscription; the beads and the amulet go to Aberdeen; the linen, the matting and the sand samples are retained at the Office for examination.

§ 58. The stela, No. 41, was shipped from Alexandria in the *S.S. Manora* on the 2nd of April in a case of the Expedition's making, packed in dry chaff and sawdust, and is now in England. At the request of the subscriber into whose keeping it has passed, and who has borne the cost of its removal, his name is not printed here; the object is entered in the Expedition's books as *on deposit from a private holding*, and application to see it should be made in writing to the Honorary Secretary at 41 Bloomsbury Square, who will forward it. The Committee wishes it to be clearly on record that the stela was ceded to the Expedition by the Service des Antiquités at the division of the 24th of March 1909, that it left Egypt lawfully and with the proper papers, and that this report is the first publication of it.

§ 59. For the season of 1909-10 the Committee proposes: to continue the clearance of squares D and E, some sixty shafts remaining unopened; to make a complete photographic survey of the scarp face, in which two rock-cut chapels have been noticed but not examined; to re-open R.14 and to replace in the socket a slab of the dimensions of No. 41, with the observations of § 55 in view; and to keep, from the first day of the season, a continuous dawn watch upon the ridge with the instruments listed in the Appendix.

§ 60. The estimate for the season is £740, of which £512 has been promised. Subscriptions of one guinea and upwards entitle the subscriber to the Annual Report; of five guineas and upwards, to the Report with the plates; of twenty-five guineas and upwards, to the Report with the plates and to a share in the division of duplicate pottery. Cheques should be crossed and made payable to the Honorary Treasurer.

§ 61. The Director desires finally to record his obligation to *Reis* Muhammad Abu Zeid, who found R.14 and who has now worked with him for seven seasons; to Selim Effendi Girgis for a vigilance which never once became an obstruction; and to Miss Latham, whose negatives were made under conditions of heat and dust which would have excused a far poorer result.

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