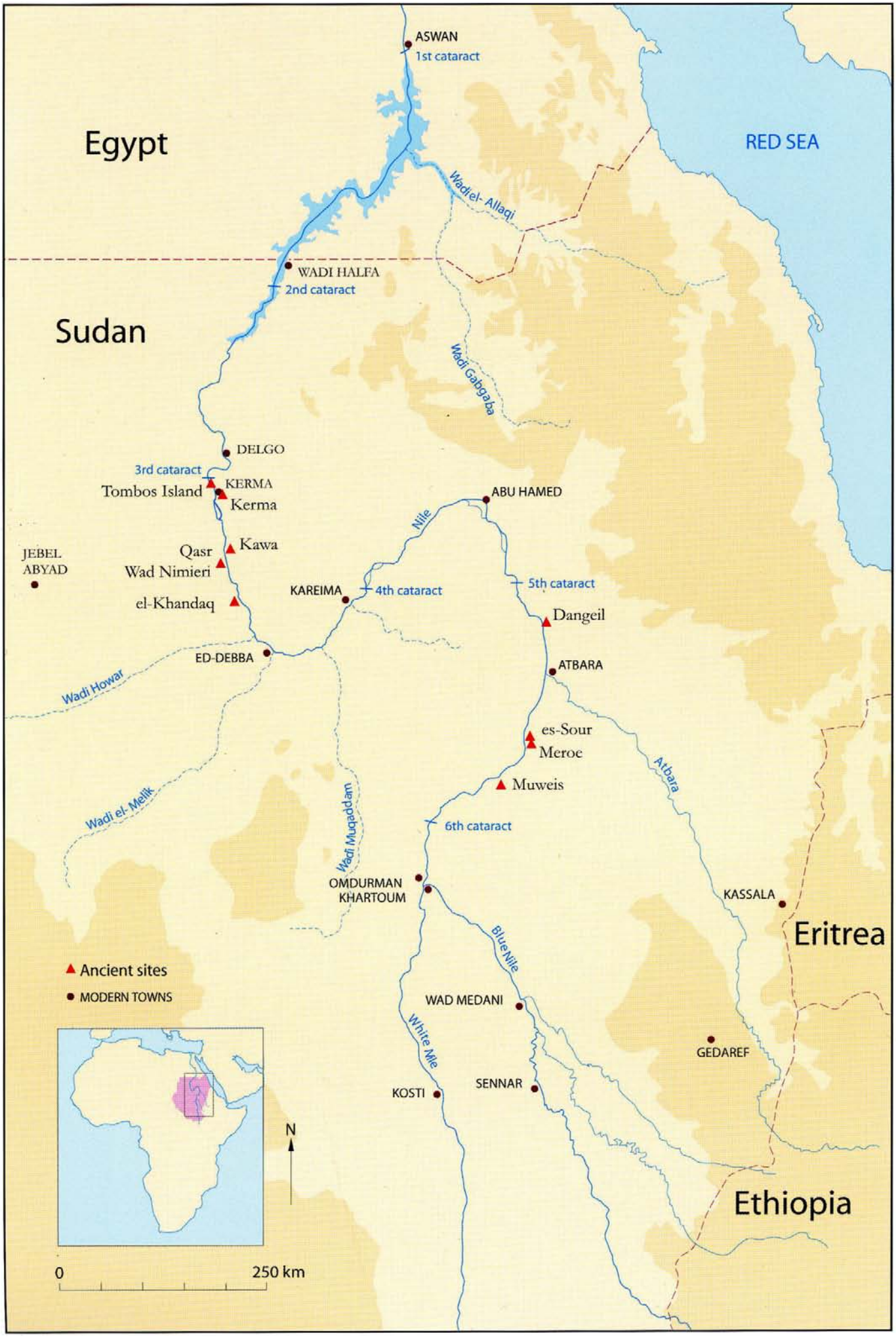
SUDAN & NUBIA

The Sudan Archaeological Research Society

Bulletin No. 12 *2008*


ASWAN
1st cataract
Egypt
RED SEA
Wadi el- Allaqi
WADI HALFA
2nd cataract
Sudan
Wadi Gabgaba
DELGO
3rd cataract
KERMA
Tombos Island
Kerma
ABU HAMED
Nile
JEBEL
ABYAD
Qasr
Wad Nimieri
Kawa
el-Khandaq
KAREIMA
4th cataract
5th cataract
Dangeil
ED-DEBBA
ATBARA
Wadi Howar
es-Sour
Meroe
Atbara
Muweis
Wadi el- Melik
Wadi Muqaddam
6th cataract
OMDURMAN
KHARTOUM
KASSALA
Eritrea
Blue Nile
Ancient sites
MODERN TOWNS
WAD MEDANI
White Nile
GEDAREF
KOSTI
SENNAR
N
Ethiopia
0
250 km

SUDAN & NUBIA

The Sudan Archaeological Research Society

Bulletin No. 12 *2008*

Contents

Kirwan Memorial Lecture

The Linguistic Position of Meroitic. New Perspectives for Understanding the Texts *2*
Claude Rilly

Reports

Pottery from the Neolithic site of es-Sour (Central Sudan) *13*
Azhari Mustafa Sadig

North of the Lower Wadi Howar – A first reconnaissance in the area between Jebel Abyad and the Nile Valley *17*
Friederike Jesse

Tombos and the Viceroy Inebny/Amenemnekhu *25*
W. Vivian Davies

The Northern Dongola Reach Survey. Excavations at Kawa, 2007-8 *34*
Derek A. Welsby

The Kushite Kiosk of Dangeil and Other Recent Discoveries *40*
Julie R. Anderson and Salah Mohamed Ahmed

Excavations in Palace M 750S at Meroe *47*
Krzysztof Grzymski and Iwona Grzymska†

The Meroitic royal city of Muweis: first steps into an urban settlement of riverine Upper Nubia *52*
Michel Baud

The origin and use of ceramics on the islands of Mis and Umm Muri, in the Late Meroitic to Christian periods *64*
Ross Thomas

The Archaeological and Cultural Survey of the Northern Dongola Reach, Western bank, from el-Khandaq to Hannek. First Season Report 2007 *74*
Intisar Soghayroun Elzein

The Wadi Halfa to Kerma Railway, Survey February 2008 *79*
Derek A. Welsby

A Chemical and Mineralogical Comparison of Nubian and Egyptian Style Ceramics and the Implications for Culture Contact: Preliminary Report. *90*
Julia Carrano, Jeffrey R. Ferguson, Gary H. Girty, Stuart T. Smith and Carl J. Carrano

Meroitic and Tocharian – from the point of view of a Tocharianist *99*
Starostin A. Burlak

Miscellaneous

Obituaries -

Osama Abdel Rahman Elnur (1942-2007) *104*
Jacques Reinold

Glencairn Balfour-Paul (1917-2008) *106*
John Alexander

Reviews -

Claudia Näser and Mathias Lange (eds) 2007. *Proceedings of the Second International Conference on the Archaeology of the Fourth Nile Cataract. Berlin, August 4th -6th, 2005.* *107*
Julie R. Anderson

Jacques Reinold 2007. *La nécropole néolitique d'el-Kadada au Soudan central. Volume I. Les cimetières A et B (NE-36-O/3-V-2 et NE-36-O/3-V-3) du kôm principal.* *111*
Donatella Usai and Sandro Salvatori

Front cover: Rescuing rock art from the Sudan Archaeological Research Society's concession at the Fourth Nile Cataract. This collaborative project between the British Museum, Iveco and New Holland was undertaken in November 2007 and resulted in the removal, from the SARS concession, of over 50 boulders bearing rock art or used as rock gongs. The pyramid, offering chapel and enclosure wall from site 4-F-71 were also relocated. Here the work is being filmed by a cameraman from the Italian TV news channel Rei Due (photo D. A. Welsby).

The Wadi Halfa to Kerma Railway, Survey February 2008

Derek A. Welsby

Brief history of the railway

The history of the railway, which ultimately would extend from Wadi Halfa to Kerma, a little upstream of the Third Cataract, began in 1860 when the Egyptian viceroy, Said Pasha (1854-1863), proposed to connect the Sudan with Egypt by a rail. Construction began in 1873, a British firm undertaking to build the first 100 miles (161km) of 3 ft 6 in gauge railway. By 1877, the line had only reached Saras (33½ miles - 54km) and the road bed, excluding bridges, was complete for a further 21 miles (34km), 8 miles (13km) to the north of Ambigol (Sandes 1937, 99-100). Apparently, the route was ill-chosen and some of the gradients were extremely steep, so that the railway never functioned properly. Work was then brought to a halt, owing to financial difficulties, by the Governor-General of Sudan, Charles Gordon (Hill 1885, 315-6).

The Gordon Relief Expedition

At the start of the Gordon Relief Expedition, the railway was extended using old material available at Saras. The Halfa-Saras section was made good and the rolling stock put in good order. By the middle of November 1884, there were two trains daily transporting troops and supplies to the railhead. After the Gordon Relief Expedition moved southwards, refurbishment of the existing line was continued and the railway gradually extended to Akasha, reached probably in July 1885. With the withdrawal of the Anglo-Egyptian troops to the Sudanese/Egyptian border the Mahdist forces tore up the rails between Akasha and Ambigol Wells (Budge 1907, II, 261) and thereafter destroyed the track as far north as Saras where by April 1887 they had established themselves (Wingate 1891, 315).

The Dongola Campaign, 1896

The Dongola Campaign of 1896 saw a resurgence in the fortunes of the railway, which by then was in a sad state of repair. Most of the sleepers had been removed, or burnt and many of the rails, nuts and bolts had been carried away. At Saras, the fort had been remodelled in 1894 and contained barracks and the headquarters of Colonel Archibald Hunter, commander of the district. It was from Saras that the army advanced south, beginning on 18th March reaching Akasha on the 20th. Here, an entrenched camp was built and fortified posts were established along the river.

The extension of the railway was begun by reusing material. Old and bent rails were straightened and relaid while 'rails were dragged out of mud huts where they had for many years done service as rafters, railway fastenings used as kitchen grates were collected, and everything of the least use was hunted out and worked in.' (Arthur 1920, 193-4). These were supplemented by sleepers procured from Turkey and Egypt and fastenings made in Alexandria and Cairo. A railway battalion, 800 strong, was recruited from Egyptians and Sudanese, among them Dervish prisoners, to undertake the work. The railway pushed south of Saras towards the end of March 1896 and reached Ambigol on 21st May, being constructed at a rate of ½ mile (800m) per day (Churchill 1899, 126, 165).

Following the defeat of the Mahdist forces at the Battle of Firka, on 7th June 1896, the railway was advanced to Akasha, by 26th June and railhead was established at Kosha on 4th August. It was here that the gunboat, Zafir, which was brought in sections on the railway, was assembled and launched.

On 25th and 27th August the worst storms for 50 years hit the region with torrential rain, which swept away 12 miles (19km) of tracks north of Saras and damaged other sections, but with the aid of 5000 troops, all was made good by 6th September.

With the advance to Kerma, occupied on 19th September, and the capture of Dongola, the campaign was at an end. The railway was then extended, work beginning at Kosha on 9th October, with battalions of troops distributed along the line to undertake construction of the embankment. Work was severely hampered by the state of the engines. Notwithstanding these difficulties, the line reached what was to be its terminus at Kerma on 4th May 1897 (Churchill 1899, 167), a total distance from Wadi Halfa of 201 miles (323km).

In *The Egyptian Sudan* E. A. Wallis Budge describes, in graphic detail, the perilous journey he made in 1897 by rail from Wadi Halfa, travelling in what was known as the Yellow Maria, a four-wheeled coach, originally made for Ismail Pasha (Budge 1907 I, 87-98).

After the railway reached Kosha, it was used by local merchants to transport sacks of dates to Halfa, but it was not well located as an artery for trade. By 1903, the line was in such bad condition that it required considerable investment and as it had been running at a loss, the decision was taken to remove the rails between Kerma and Kosha. These, having only been recently laid, were in good condition and were dispatched to Atbara for the construction of the Atbara to Port Sudan railway, or for the Abu Hamed to Kareima line, whilst the sleepers were stockpiled at Kosha (Budge 1907, I, 96-7, 464; Sandes 1937, 400).

Although the line was officially closed on 31st December 1904, trains ran twice daily from Halfa to Gemai, apparently a popular picnic spot, until 1908. Until 1924, sleepers were torn up by locals and floated down to Wadi Halfa, for sale to the Railway Department (Sandes 1937, 186).

The railway and associated installations today

The railway ran along the river from Wadi Halfa to a little

south of Saras, then turned inland up a wadi to pass through the Batn el-Hajar, avoiding the very broken terrain alongside the river. It approached close to the river again at Akasha, but then swung into the desert to skirt the massifs of Jebel Dal and Jebel Firka. Rejoining the river at Firka, it followed it closely as far as Kosha. Here, where the Nile course comes from the west, the railway headed up a wide wadi, due south, only rejoining the river immediately downstream of Delgo. From Delgo to Kajbar, it was close to the river, but again, when the river's course runs west-east, the railway once again continued southwards cutting off the bend at the Third Cataract, pointing south-west directly into the heart of the town at Kerma. It is best preserved between Kosha and Delgo and Kajbar to Kerma.

To hasten the laying of the track, the embankment followed where possible the wadis, which resulted in large sections being washed away by the rains. The course of the railway is generally marked, either by its embankment, or by cuttings. The embankment is characteristically of earth and gravel, sometimes laid on a bed of large stones. In places, rough stone pillars are buried within the embankment, perhaps to act as reinforcement, or as a guide for the railway gangs in adhering to alignments set out by surveyors. This feature is particularly clear at Locus 44 between Ambigol Wells and site 59 (see Figure 1). Rarely is the embankment revetted in stone, as at Loci 20 just north of Murrat Wells and 142 mid way between Kosha and Delgo, as well as in the first phase embankment by the bridge at Kajbar (Locus 230).

The railway line and the military installations along its line are now, being over 100 years old, protected as antiquities by the Antiquities Ordinance of 1999. Since its demise, in 1904, it has been damaged by natural forces, by car and lorry tracks, by the expansion of irrigation and the northern part has been obliterated by Lake Nubia (Nasser). The rails, girders from the bridges, sleepers etc. were either systematically removed for reuse on other railway projects, or were removed by the locals. Over the last few years, the construction of the Dongola to Wadi Halfa tarmac road is causing considerable damage in certain sectors and this is set to continue as the construction progresses. In the light of these threats, it appeared timely to undertaken a survey to record what still survives before much is lost. Accordingly, between the 6th and 15th of February 2008 a team of three archaeologists[1] travelled along the surviving course of the line. A further four days were devoted to recording and studying the finds collected. The finds were handed over to the Sudan National Museum, in Khartoum, at the end of the project.

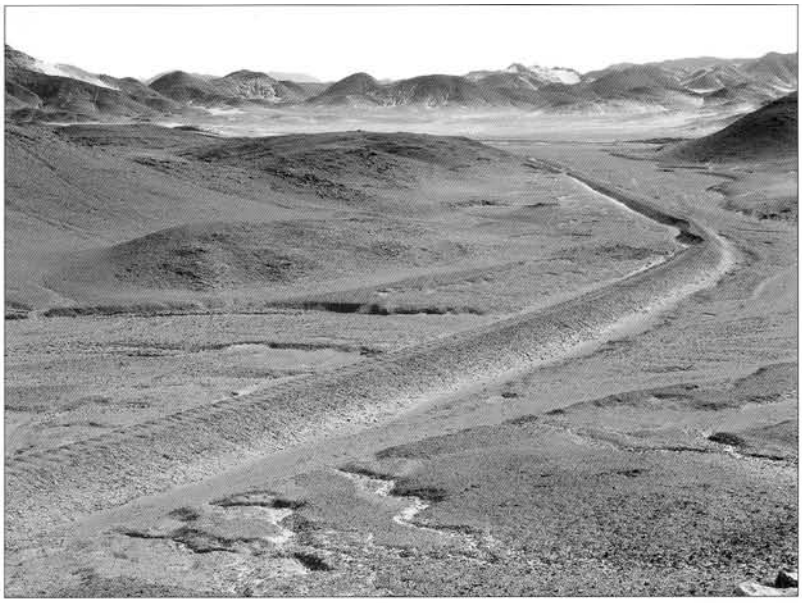


Plate 1. The railway embankment at locus 65 between Ambigol and Akasha.

The principal objective of the project was to make a photographic record of the remains of the surviving railway embankment and associated structures (Plate 1). The first 60km of the railway from Wadi Halfa now lies submerged beneath the waters of Lake Nubia. It emerges from the lake immediately to the east of the Middle Kingdom fortress of Shelfak; the terminus was at Kerma, where passengers and goods would disembark from the train and immediately embark upon the Nile steamers, moored nearby (Figure 1).

During the survey, the surviving traces of the railway were extensively photographed, the co-ordinates of each image being recorded. Locations from which photographs were taken were given loci numbers, as were all the associated sites.

As well as the railway itself the following structures were also recorded photographically and in some cases measured sketch plans and elevations were made.

Military forts and associated watchtowers	4
Isolated watchtower	1
Isolated redoubt	1
Construction camps	25
Railway huts	3
Station	1
Ticket office	1
Bridges	2

The railway line

In many of the areas most prone to flood damage, no trace of the line remains. On the section south of Kosha, two phases of construction can clearly be seen in three places

[1] The team, led by the writer from the Department of Ancient Egypt and Sudan at the British Museum, also consisted of Isabella Welsby Sjöström, archaeologist, and et-Tayeb el-Jak Ruwei, Antiquities Inspector from NCAM.

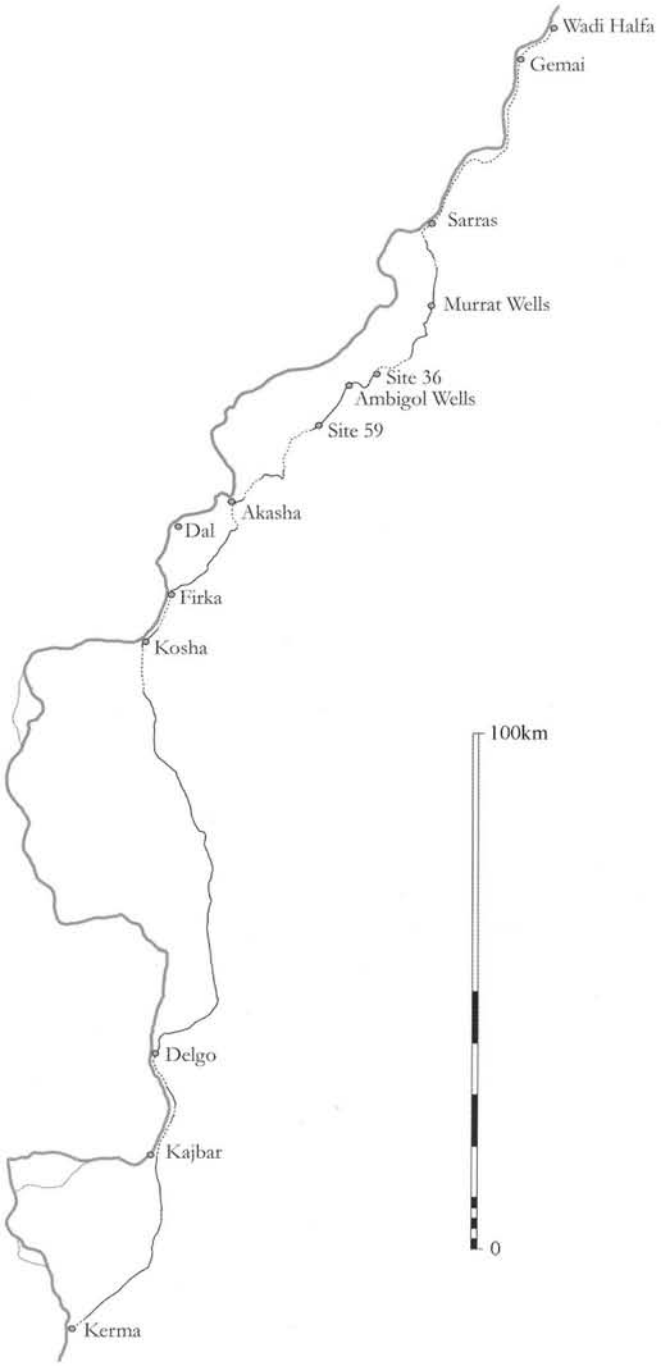


Figure 1. The course of the Wadi Halfa to Kerma railway as it survives today.

where initially the line was constructed in haste but was then realigned over new bridges, two of which still survive (see below). At a point 8km 'as the crow flies' south-south-west of Murrat Wells, it appears that the surveyors made a serious error resulting in the abandonment of the alignment after the construction of almost 3km of track up a wadi which, although heading directly towards Ambigol Wells, turned out to be impassable.

At Ambigol Wells, a single rail remains close to the modern track and several lie within the village at Akasha, showing evidence for reuse. Yet others, held together with joint bars, support the roof of the veranda on the north side of the *souk* at Delgo. By the fort at Ambigol Wells is an axle and two wheels from rolling stock (Plate 2) bearing the inscription J. BROWN & Cº. Another axle and two wheels of much smaller diameter (460mm, over flange 510mm) lie 1.25km to the west of the line at Kosha.

Plate 2. Site WHKRS 54. Axle and wheels made by J. BROWN & Cº by the fort at Ambigol Wells.

Bridges

Site WHKRS 230. Here, a kilometre to the south east of the Kajbar rapids, a second phase of railway building saw the construction of a bridge bearing the inscription 'Founded in 1897' The steel girder bridge was of four spans 2.95m, 5.14m, 5.4m and 3.09m in size (Plate 3). The piers, set at a pronounced angle to the rail bed, so as to align with the wadi, had sharply pointed cutwaters, both upstream and downstream and massive stone abutments. Each pier was approximately 2.94m thick and about 8m in length. Three

Plate 3. Site WHKRS 230. The bridge at Kajbar constructed in 1897.

chamfered mouldings reduce the pier dimensions by 100mm each time. The piers survive in excess of 5m in height above the sandy wadi fill. They are well-constructed, of small, dressed, blocks of yellow sandstone, set in a lime mortar, with red sandstone used for the mouldings. Curved grooves on the upper faces of the piers were made when the metal girders were dislodged presumably during the organised demolition of the line soon after 1904.

In the vicinity are three mud-mortar bonded stone buildings.

Building A. A single-roomed structure entered by one doorway 775mm wide in its south-west wall and by another, 1.32m wide, subsequently blocked, in its south-east wall. It measures externally 4.7-4.68 x 3.8-3.75m and survives to a height of 2.76m. There is a window in the south-west wall, another in the north-west wall and a low mastaba along the exterior face of the south-east wall.

Building B. A single long room, entered by a 1.13m wide doorway placed towards the centre of the east wall. It measured externally 22.3-21 x 6.78-6.65m and had walls between approximately 470 and 500mm thick surviving to a maximum height of 1.71m. No windows were preserved.

Building C. Rectangular single-roomed structure, surviving to a maximum height of 2.36m. It was entered by a centrally-placed door 1.4m wide through the east wall which was flanked by two windows. A further two windows were spaced along the south wall and another, 635mm wide, was set in the centre of the west wall. The north and south walls were 450mm thick, the east and west walls 530 and 580mm thick. Two wall stubs project very slightly to the south, from the south-east and south-west corners of the building.

Site WHKRS 197. The remains of a substantial bridge lies approximately 16km north east of Delgo. It has eight stone piers and segmental arches of fired brick 230 x 115 x 60mm in size (Colour plate XXXII). The brick-faced arches are 750mm thick. A sample of the stone courses measured 225, 220 and 205mm in height. The spans range between 7.29 and 7.41m, supporting the road bed approximately 4.3m in width. The piers have pointed cutwaters both upstream and downstream and are about 1.85m thick. The whole of the piers and the lower parts of the spandrels were dressed in stone, against the concrete core. The stone is carried to a height of four courses above the tops of the cutwaters, above which the facing is of brick. The total surviving height measured above the sandy fill of the wadi is about 3.4m. Both abutments are faced in stone.

Set in the wadi bed close to the bridge was a circular kiln for firing the red bricks. A *mescid* or *msalla* approximately 10 x 7.5m in size, presumably for the benefit of the Egyptian or Sudanese soldiers/workmen, was laid out to the west of the railway and a rectangular single-roomed building with dimensions *c.* 5.7 x 4m, constructed from rough blocks of red sandstone was close by. The quarry for the stone (red Nubian sandstone) was found some 3km to the south at Site WHKRS 199.

Construction camps

A total of 25 construction camps were noted on the ground. Following the fieldwork, a detailed study of the Google Earth imagery has allowed the recognition of a further 11 construction camps. Some of those noted on the ground are invisible on Google Earth, even when their position is precisely known. The camps were particularly well-preserved in the section between Kosha and Delgo, and here they were also particularly large and complex in plan. The tents would be erected in precise lines, with 'streets' between the rows, and the perimeter of the tent circles is mostly clearly visible (Plate 4). In many cases the location of the tents was represented by a low ring of pebbles and stone fragments; in others, circles of stones remain. In some instances, larger stones were used to secure the guy-ropes and these were chosen in alternating white and black. Often within the tent were one to three low, raised platforms, approximately the length of a man, with a further raised area for the head. Effort was sometimes made to form a roughly flagged floor, with small stones. The most elaborate have pebble mosaic floors. One had an indistinct swirling pattern made from white pebbles and black stones. The finest had a very well laid checkerboard pattern of white and black squares (Colour plate XXXIII). This tent base was set aside from the rest of the camp, with a path leading up to it.

Plate 4. Site WHKRS 136. General view over the remains of Camp 6.

Many camps had traces of more elaborate structures. At Camp 9 was a large rectangular cleared area, with 'gateways' marked by large stones around its perimeter. In Camp 6 is a large rectangle, with a central circular area – tent base – from which radiate four streets, meeting the enclosing rectangle in the centre of each of its sides (Plate 4). The most unusual camp, if that is what it was, is Camp 12. Here is a number of carefully laid out streets, which run on a wide range of alignments and cut each other (Plate 5). No associated tent bases were noted.

At several of the camps hearths with wind breaks were found on the south side, presumably to minimize the risk

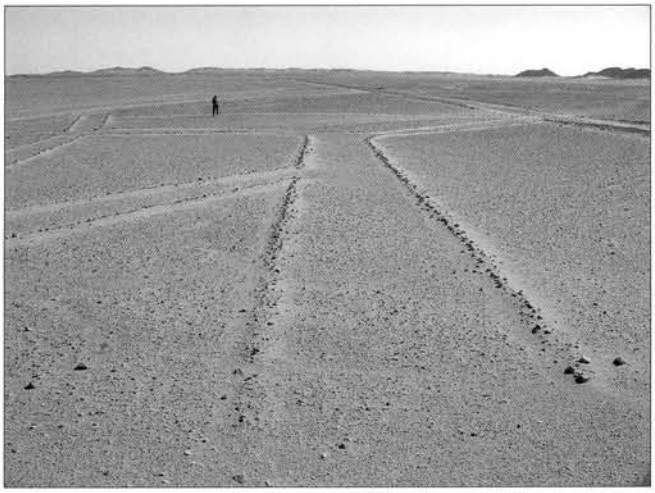


Plate 5. Site WHKRS 157. Camp 12.

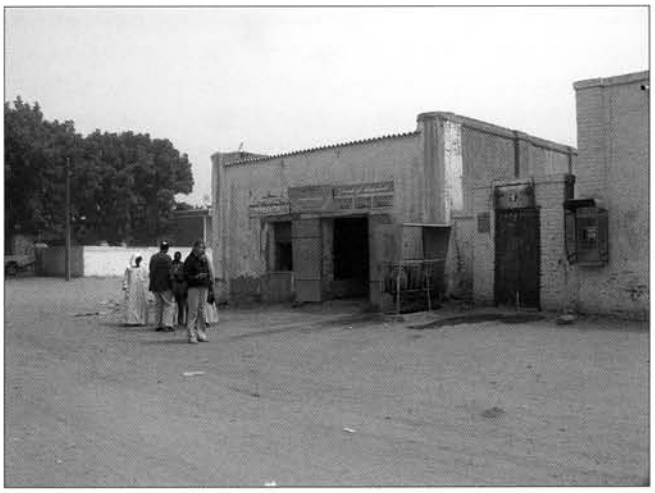


Plate 6. Site WHKRS 267. The former ticket office at the railway terminus, Kerma.

of fires breaking out from the cooking fire sparks, the prevailing wind coming from the north. Occasionally there were dry-stone walled huts on the limits of the tented areas.

A few isolated tent bases were found along the line. In 1897, Budge, travelling by train on the section between Kosha and Delgo, wrote 'we passed a tent on the right side of the line, and soon after saw a young Royal Engineer officer, Lieut. Micklem, I think, engaged in taking levels and inspecting portions of the line. The appearance of this solitary officer in the heart of the desert was a convincing proof of the constant vigilance with which the Sirdar caused his line of communication to be watched.' (Budge 1907 I, 97)

Railway huts

Site WHKRS 16. A well-built rectangular stone hut. A single doorway facing towards the railway gave access into a rectangular room with a *mastaba* approximately 600mm in height along its southern wall. On the north side of it was another room, or enclosure, now much ruined.

Site WHKRS 196. A single-roomed hut, three walls of which are very denuded. It is built of *jalous* with many large quartzite pebbles and some stones set into it. The single doorway is set slightly off centre in the wall, facing towards the railway.

Ticket Office

Site WHKRS 267. A local informant identified a rectangular single-roomed whitewashed building (Plate 6) on the main street in Kerma as the ticket office. It lies just north of the main *souk* area, across from the Police Station and across the street from the banks of the Nile. The building today houses the offices of a bus company. The only thing which sets it apart from modern structures is the presence of a rectangular niche in one corner of the room.

Military installations

The military installations, described below, all appear to date to the 1896 campaign. No remains of earlier installations constructed during the Gordon Relief Expedition and in its immediate aftermath were noted during the survey although, with the aid of maps and plans which have been consulted in the National Record Office at Kew, it may be possible in the future to recognise traces of the earlier defensive works.

Murrat Wells (Site WHKRS 23). Here, there are several structures which includes five isolated watchtowers, a redoubt, an area of tent bases and linear walls, partly closing off the approaches to the living accommodation. The redoubt is set on the hilltop which falls off very steeply down to the wadi. On the reverse slope of the hill, a central street is flanked by tent bases, four to the west and five to the east opening onto the street (Figure 2, Colour plate

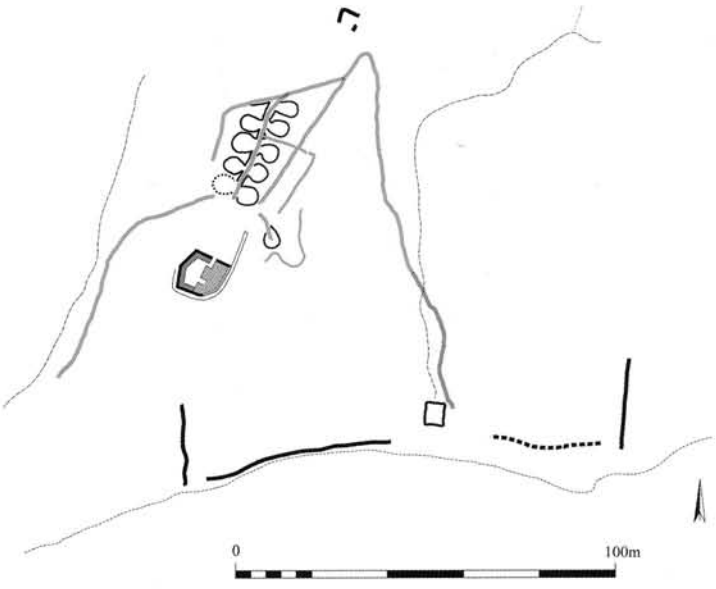


Figure 2. Site WHKRS 23. Murrat Wells, sketch plan of the fort.

XXXIV). Additional paths lead up to the redoubt and to additional tent bases set to one side. The central street and a number of the paths, along with the tent bases, are covered with white quartzite pebbles. The main path down to the wadi is terraced into the side of a valley and where it debouches into the wadi it is protected by a rectangular building set into a wall running along the base of the hill. This wall returns up the very steep slope at both ends until the slope becomes too steep for construction to continue.

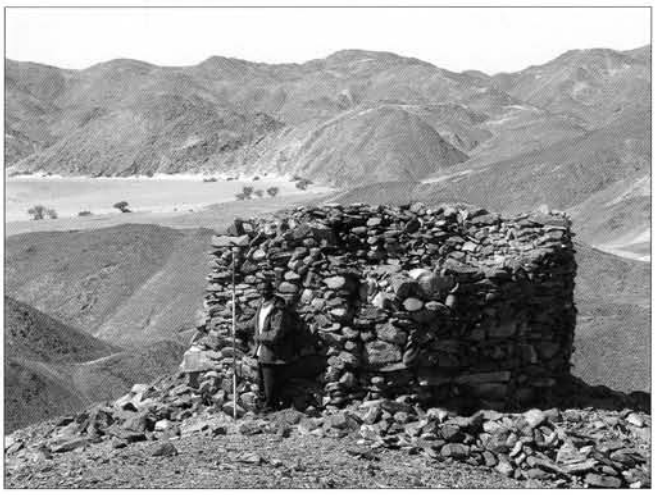


Plate 7. Site WHKRS 23. Murrat Wells, Watchtower 3.

The watchtowers vary in design. Watchtowers 1 and particularly 2 are poorly constructed with the wall describing a U-shape facing out from the edge of the hill. Watchtower 4 is of a similar construction but is almost totally enclosed with walls of a greater elevation. Watchtowers 3 (Plate 7) and 5 are well constructed cylindrical structures, like that at site WHKRS 36. Watchtower 3 may have an entrance with its sill about 1m above the external ground surface. There is a well-defined scarcement extending around the interior walls of Watchtower 5.

The redoubt is roughly rectangular, approximately 12m in length and tapering from 10.5 to 6m wide. Around the southern part of the west wall, the south wall and along the east wall the walls are constructed on a terrace used to level up the hilltop, which, at this point, is sloping steeply downwards. The platform extends a maximum of 1m beyond the wall lines. The redoubt is entered by a single doorway 1.17m wide, a little east of centre in the north wall. This gives access, via a right-angled passage, into the western part of the building. From there, a ramp or stairway 1.45m wide gives access onto a raised platform 1.1m above the floor level and 460mm above the level of the banquette which runs around the walls on the western side of the building. The banquette, 640mm above the floor level, is approximately 1.2m wide and the parapet, 700mm thick, is preserved to a height of 1.04m above it. From the north-east angle a wall extends for several metres to the north.

Ambigol Wells (Site WHKRS 54). The curtain wall approximately 900-760mm thick links together four small knolls, each crowned by a redoubt (Figure 3, Plate 8). Each of these was presumably an emplacement for an artillery piece: it is described by Churchill as a four-gun fort (1899, 126). Those at the north and east angles are not well preserved and their plans are ill-defined. The north and east redoubts occupy rocky outcrops, the ground falling off steeply into the wadi.

The west redoubt (Figure 4.1) is well constructed with straight walls delimiting a trapezoidal area, the west wall being extended to the north and then turned to the east to provide an angled entrance. The northern third has a small room (2.02 x 1.53m, internally), constructed within it and built from stones, set in mud mortar and liberally rendered in similar material. Around the side and back of the room runs a banquette, whilst on its south side the wall is incorporated into the platform, 1.1m above the internal floor surface, filling the whole of the rest of the redoubt. Along the north wall the parapet survives to a maximum height of 940mm above the banquette.

The south redoubt (Figure 4.2) is much more irregular in

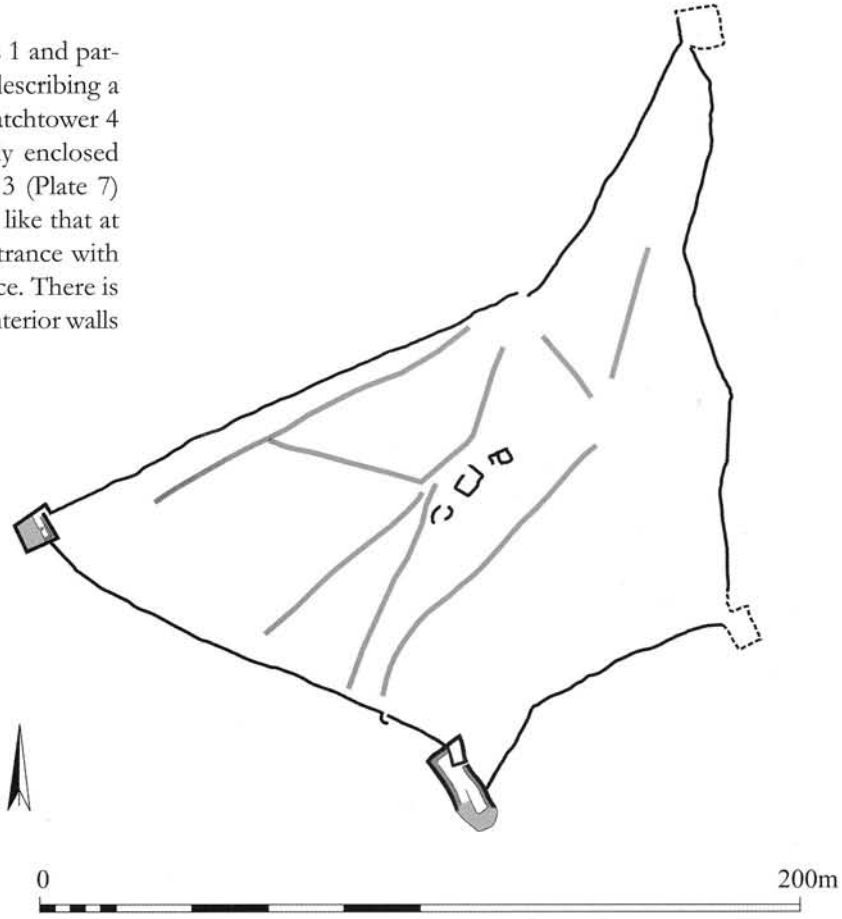


Figure 3. Site WHKRS 54. Ambigol Wells, sketch plan of the fort.

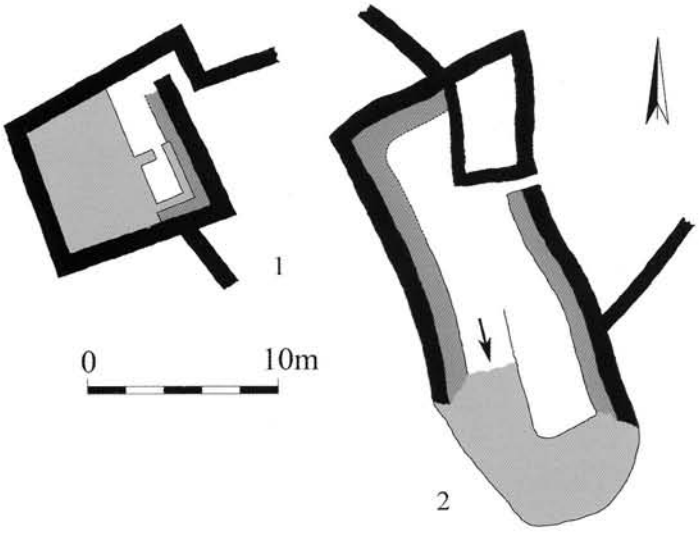


Figure 4. Site WHKRS 54. Ambigol Wells, sketch plans. 1. The west redoubt. 2. The south (Berkshire) redoubt as reconstructed in 1896.

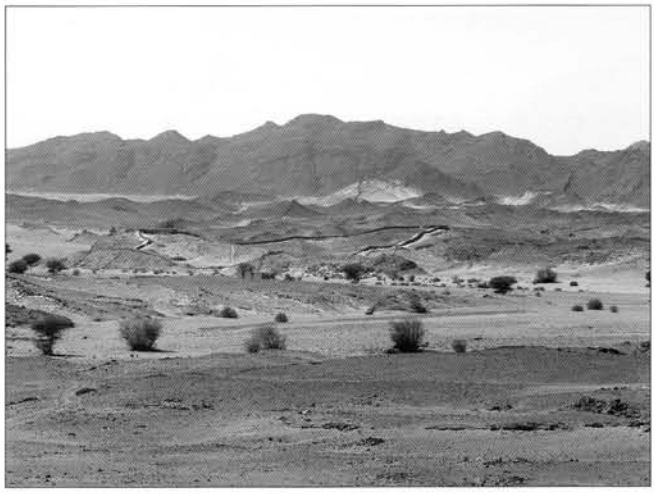


Plate 8. Site WHKRS 54. The fort at Ambigol Wells.

shape to conform to the steeply sided knoll which it occupies and it reflects the plan of the Berkshire redoubt built here late in 1885. It is entered by a very narrow doorway, only 590mm in width, which retains no trace of fittings for a door and has no jambs, the same situation as observed in the western redoubt. The north-east angle is occupied by a roughly rectangular room, measuring internally 5.24-4.8 x 3.22-2.74m. This is abutted by the banquette on the western part of the north wall. The banquette, fronted by a parapet surviving to a maximum height of 1.14m, runs along the east and west walls merging into the platform which occupies the southern part of the redoubt and is accessed by a 2.55m wide ramp.

The enclosure is entered by at least three gates. The one to the north is a simple gap through the wall at a point where the wall alignments are staggered, leaving an opening at right angles to the wall line. Another gate is in the south-west wall close to the south redoubt. It is a narrow postern gate protected on the exterior by a curved wall. The east gate is very poorly preserved.

The interior is occupied by three roughly constructed stone buildings in the centre, by carefully laid out pathways and by tent bases in serried ranks where the topography permitted such a regular arrangement (Colour plate XXXV).

Akasha (Site WHKRS 84a). The fort is built on a high ridge and on the steep slope down to the wadi to the east (Figure 5, Colour plate XXXVI). The curtain wall, between 760 and 900mm thick, only survives along the ridge; whether it continued down the steep slope and along the edge of the wadi is uncertain from the remains on the ground today. A photograph taken early last century shows that there was not a substantial wall here but what may be a slight mound or the edge of a terrace is visible (Sudan Archive SAD 466.14.39). The wall terminates at its south-east end with a right-angled return into the fort, extending for 2.4m from the inner face of the curtain. At this point there

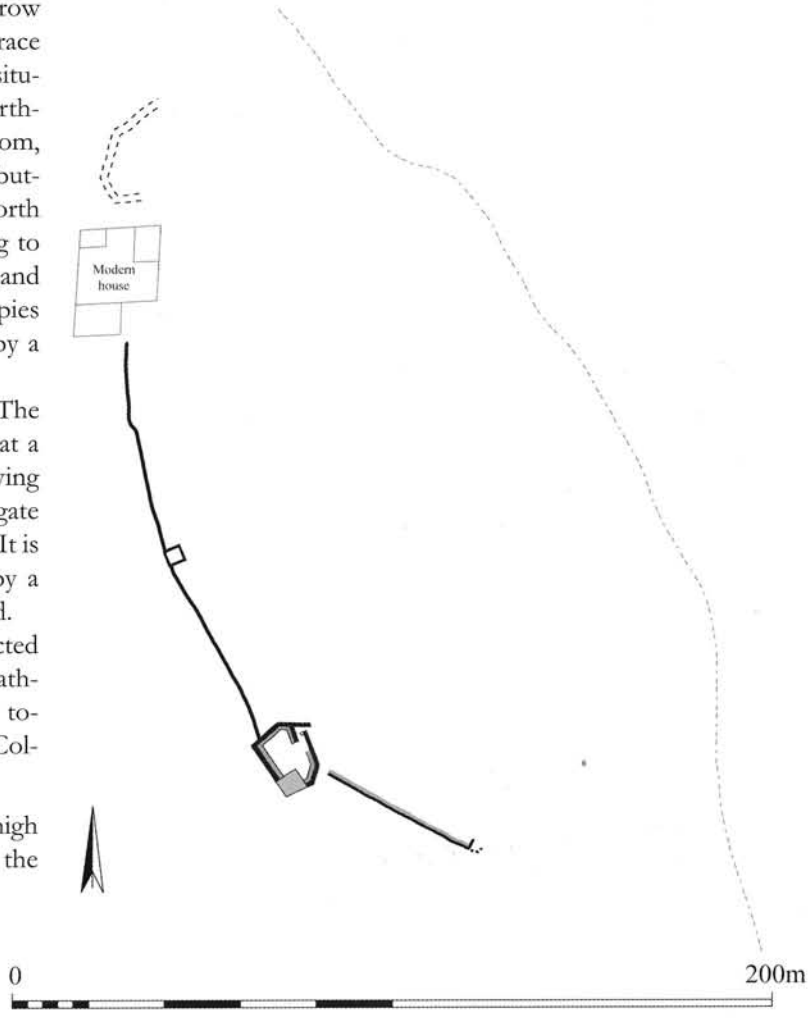


Figure 5. Site WHKRS 84a. Akasha, sketch plan of the fort.

Plate 9. Site WHKRS 84a. Akasha, the south wall of the fort showing the banquette.

Figure 6. Site WHKRS 268. Dal, sketch plan of the military camp.

are traces of a curved foundation, perhaps the remains of a small D-shaped post. On this section of curtain the line chosen is overlooked by sloping ground. Here a banquette, approximately 780mm wide, has been provided along the whole length of wall which steps down the slope (Plate 9). The parapet stands to a maximum height of 1.34m. The most northerly of the two redoubts is almost completely destroyed. There is a modern house immediately adjacent to it and a large metal water tank occupies its interior. The south-western redoubt is in a much better state. The walls describe an irregular hexagon, with an angled entrance from the north east. The south-west angle is occupied by an earth-filled platform, the walls of which are revetted in mud. This was the lower part of what was a substantial high tower. A banquette runs around the rest of the walls, perhaps with steps on the south side giving access onto the top of the platform. The parapet survives to a maximum height above the banquette of 610mm.

Part way along the west curtain is a small, roughly square room which appears to have been incorporated, or possibly inserted into, the curtain wall. It measures 4.97 x 4.75m over the walls, which are between 750 and 660mm thick.

Dal (Site WHKRS 268). This small camp is far from the railway on the banks of the Nile, a little north of Jebel Firka. It was defended by a stone wall on the east side and along the steep slope down to the wadi. Towards the river, it has an earthen bank which turns through a gentle curve before running up to the base of the rocky hill where no additional defences had been constructed (Figure 6). There is a gate in the east wall, no details of which survive, leading up to which from the exterior is a cleared track. There is another gate through the earth mound by the north-west angle. Traces of possibly two rectangular buildings can be seen within the camp. The interior has recently suffered from the depredations of antiquities thieves(?), many small holes having been dug across the area of the camp, seemingly at random, but possibly guided by the use of a metal

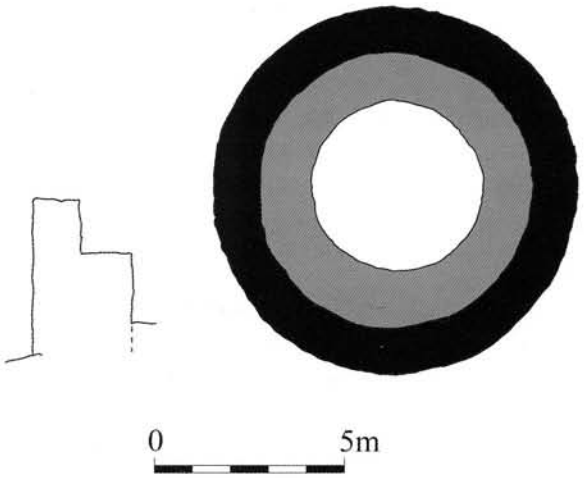


Figure 7. Site WHKRS 36. Sketch plan and elevation of the watchtower.

detector. Two or more previously invisible Islamic period graves, one of a juvenile or infant, have been disturbed.

Isolated watchtower (Site WHKRS 36). This watchtower occupied the summit of a low flat-topped hill 750m west of camp 2. It was a well-built circular structure 5m in diameter, surviving to a height of 2.05m, measured from the external ground surface. In the centre was a circular 'well', 2.2m in diameter, surrounded, at a height of about 1.35m, by a scarcement 700mm wide, topped by a parapet varying from 720-600mm thick and surviving to a height of 700mm (Figure 7). There was no entry at ground level. The central well was presumably roofed over with timber.

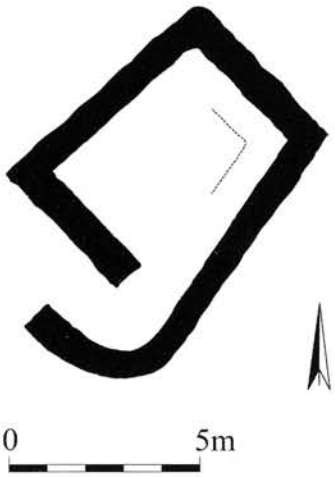


Figure 8. Site WHKRS 59. Sketch plan of the redoubt.

Isolated redoubt (Site WHKRS 59). Occupying the summit of a prominent hill, at a point where the railway was forced to cross a low saddle between the hills, it enjoys excellent views along the line to north and south. The north, west and south walls delimit a rectangular area 4.9 x 6.75m in size, but the east wall is angled so as to pass beyond the end of the south wall, leaving a doorway 1.51m wide beyond which the wall curves round to the west to protect the doorway (Figure 8). The walls, of rough stone, range in thickness from 700 to 860mm. Around the interior, but only clearly visible towards the north-east angle, is a banquette 850mm wide. Immediately to the south of the redoubt are several rectangular depressions 2.7 x 1.15m in size, with sides sloping down to a flat horizontal bottom. Set on the sloping hillside they are cut to a maximum depth of about 600mm.

At one point on the line there is evidence of an explosion, presumably of a wagon containing ammunition and other explosives. Exploded and intact shells were abundant and parts of the rolling stock, buckles, tins, and a twisted donkey shoe, still with a nail in it, were found.

Pyramids

At various points along the route of the Sudan campaigns small war memorials in the form of pyramids were constructed. These all bore an identical inscription

TO THE MEMORY
OF
BRITISH OFFICERS AND MEN
WHO DIED HERE
IN THE
ANGLO EGYPTIAN CAMPAIGNS

Plate 10. Site WHKRS 82. The pyramid at Akasha.

These pyramids were noted at Akasha (Plate 10), Kosha, near Fareig and at Merowe. Another stood close to the battlefield at Kirbekan but this had been destroyed totally at some time before 2002 when visited by the author.

The finds

A surface collection of material was made along the line of the railway, in the construction camps and military installations and on the site of the explosion. Among the more interesting pieces are the following:

Railway materiel

SF:23 and 24. Joint bars, one stamped with the letters S and R, flanking a star and crescent (Plate 11).

SF:81 and 82. Two axle covers made by Brown, Marshall and Company of Saltley, Birmingham, in their Britannia works,[2] one in 1882, the other in 1885 (Plate 12). The former bears the word CAPE, indicating that the rolling stock from which it came was initially made for South African railways, which shared the 3' 6" gauge.

Weaponry

SF:48. Two live rounds from the .45" calibre Martini Henry rifle (Plate 13). Some of the cartridge cases

[2] Details of this company and the identification of the objects were kindly provided by Mr John Clarke of the National Railway Museum, York.

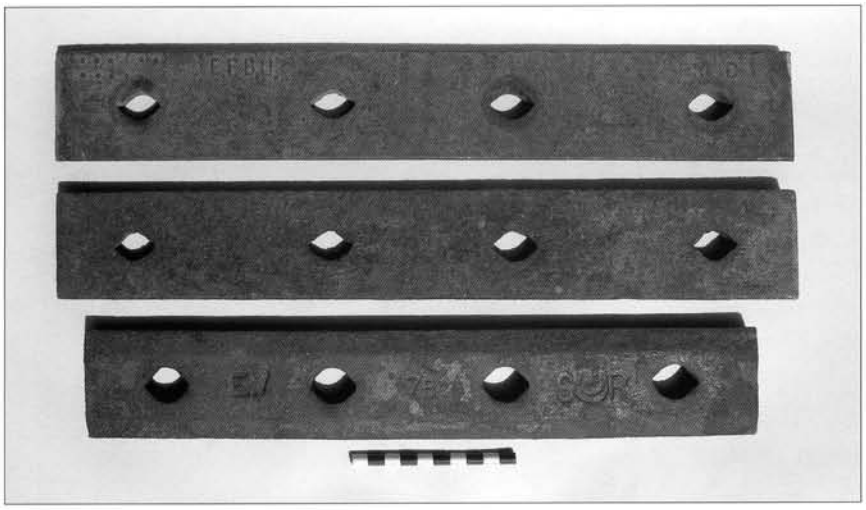


Plate 11. The joint bar stamped with the logo of Sudan railways.

Plate 13. Live rounds from an 0.45" calibre Martini Henry rifle.

Plate 12. Axle covers made by Brown, Marshall and Company.

found on the survey were manufactured by the firm of George Kynoch of Birmingham (marked G.K on the base).

SF: 66 and 67. 9-pounder shells from rifled muzzle-loading artillery manufactured by the Royal Laboratories at Woolwich (R L on the base). From the dates on the shell cases they appear to have been issued between December 1876 and October 1884 (Plate 14).

Both the Martini Henry rifle and muzzle-loading artillery were obsolete by the late 19th century and were no longer used by the British Army. However, they were still issued to the Egyptian and Sudanese troops.[3]

Personal items

SF:9. A snake belt-buckle (Plate 15)

SF:40. Buttons bearing a star and crescent on the obverse and the legend J. HAMMOND & C° · NEW-

[3] Information on this material was kindly provided by Keith Miller, Head of Weapons, Equipment and Vehicles, National Army Museum, London.

Plate 14. 9-pounder shells from rifled muzzle-loading artillery.

CASTLE UNDER LYME on the reverse (Colour plate XXXVII).

SF:4. Buttons bearing a star burst on the obverse and the legend H·D·H&C^{o} · SUPERIOR or PEIN above the fixing ring, W and P flanking ring and a motif below on the reverse (Colour plate XXXVII).

SF:8. Parts of a tea service made in the Imperial workshops at Nimy near Mons in Belgium (Plate 16).

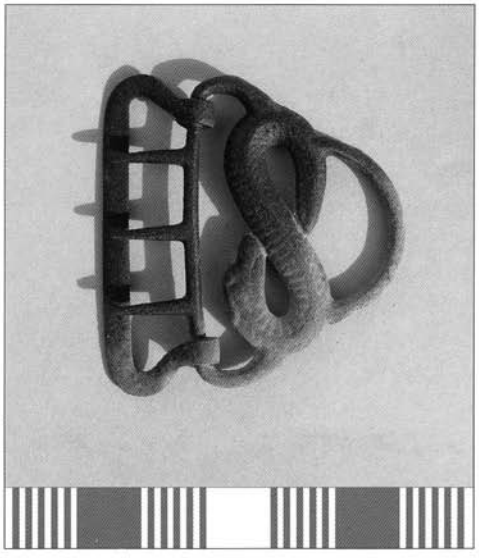


Plate 15. Snake belt-buckle.

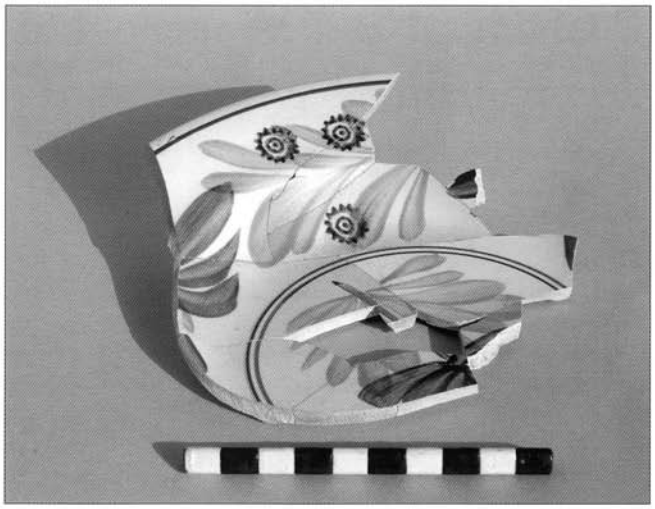


Plate 16. Dish from a table service manufactured at the Nimy workshops.

Bibliography

Arthur, G. 1920. *Life of Lord Kitchener.* 3 vols. London.

Budge, E. A. W. 1907. *The Egyptian Sudan.* 2 vols. London.

Churchill, S. W. 1899. *The River War, an Historical Account of the Reconquest of the Sudan.* 2 Vols. London.

Hill, G. B. (ed.) 1885. *Colonel Gordon in Central Africa 1874-1879.* London.

Sandes, E. W. C. 1937. *The Royal Engineers in Egypt and the Sudan.* Chatham.

Wingate, F. R. 1891. *Mahdiism and the Egyptian Sudan: being an account of the rise and progress of Mahdiism and of subsequent events in the Sudan to the present time.* London.

Colour plate XXXII. Wadi Halfa to Kerma Railway survey. Site WHKRS 197. The eight-arched stone and red-brick bridge in the desert north east of Delgo.

Colour plate XXXIII. Wadi Halfa to Kerma Railway survey. Site WHKRS 139. The pebble-mosaic floor at Camp 7.

Colour plate XXXIV. Wadi Halfa to Kerma Railway survey. Site WHKRS 23. Murrat Wells, the redoubt and tent lines.

Colour plate XXXV. Wadi Halfa to Kerma Railway survey. Site WHKRS 54. Ambigol Wells, the western part of the fort interior.

Colour plate XXXVI. Wadi Halfa to Kerma Railway survey. Site WHKRS 84a. Akasha, the fort with the modern village in the foreground.

Colour plate XXXVII. Wadi Halfa to Kerma Railway survey. Buttons, obverse and reverse.