The Adam Park Project

Metal Detector Survey Report No.6

2 Adam Park
9th – 12th November 2010

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Introduction

This metal detector survey took place between 9/11/10 to 12/11/10 at 2 Adam Park. The tenants had kindly agreed to host a team of archaeologist for a metal detector survey of the area in front of the house across the access road. The aim of the survey was to recover any artefacts that may be associated with the fighting that took place at Adam Park from the 13th to 15th February 1942 and the use of the estate as a POW camp from March 1942 until the end of the Japanese occupation of Singapore in 1945.

It appears from the research into the history of the fighting at Adam Park that No.2 was defended by the men of the AA platoon of the 1st Battalion of the Cambridgeshire Regiment and D Company and as such held the line against concerted Japanese incursions between for the duration of the occupation of the estate. Despite constant pressure and aggressive patrolling by the Japanese, the line at this point was not breached. The defenders provided valuable fire support for their neighbouring battalion, 1/5th Sherwood Foresters until the latter were forced to retreat on the afternoon 15th February 1942.

The house was later used as an accommodation block for POWs from the 8th Division Signals, AIF and may have been used as an overflow for the camp hospital as the numbers of sick POWs increased as the months of hard labour, poor diet and regular beatings took its toll.

The objectives of this survey were three fold:

1) To prove through the archaeological record that this house was a part of the perimeter and was defended by British troops
2) To find evidence of the occupation by POWs and possibly the location of the overflow hospital
3) To assess the potential for battlefield and POW archaeology on the rest of the estate.

This was the second survey carried out in conjunction with local volunteers from the British Association and local residents so time was also used to train those new to the methodologies. Four days were allocated to the survey and it was hoped that the much of the lower platform could be covered in that period.

The Survey Criteria and Area of Interest

Six 2m wide transects (No.s 0 – 5) were set out, ranging in length between 28m to 30m. The first two transects surveyed (2 & 3) were initially laid across a line of four features thought to be the remains of slit trenches (Trenches 1-4). Each feature was approximately 2.00m long and a 1.2m across and ran along the lip of a platform facing southwest. Three lay to the south east of a large tree and were separated by approximately 4.0m. The fourth was set approximately 10m to the north beyond the large tree and faced west. See Appendix 2 for a sketch map of the site.

Fig 1 – T1 and T2 ran between the two lengths of string in the centre of the picture. The tree probably dates back to the battle as the trench features appear to have been placed around it. The Trench No2 immediately to the SE of the tree is clearly visible in the foreground under the fallen branch. Trench 1 lies behind the tree.

To the north east of the trenches the ground was flat for approximately 6 to 8m before climbing a bank up to the road level. To the south west of trenches the ground fell away, initially at a steep angle, down towards a drainage ditch and overgrown hedgerows at the bottom of the small valley that runs between Adam Park estate and the neighbouring condominium. It was noted that if the depressions were indeed trenches the occupants would look out over extremely good fields of fire assuming the current foliage had not been present during the fighting.

Fig 2 – This picture has been taken from a position down the bank and to the south west of Trench No.2 looking back up to the house and roadway.

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Fig 3 – The Google earth image of the site showing the location of the transects in Area 1

An initial sweep of the proposed transects was carried out on each day before the full survey began using the 'all ferrous' setting on the metal detector and a multitude of returns were registered. Therefore a full survey of all ferrous returns was deemed to be inappropriate given the time constraints.

A White's Prizm Mk 2 metal detector was used as the preferred machine as its operation was simpler and was familiar to the majority of the team members after a brief training session. It was set to maximum sensitivity but to exclude ferrous materials (1st two settings muted).

The ground was an urban garden with a lush and deep covering of 'tropical broad leaved grass' which was easy to uproot. It covered a layer of topsoil of between 10 – 15cms deep. There was some ingress of roots from neighbouring plants. This topsoil layer was laid on top of an orange clay layer. Notably all the finds were in the topsoil although not stratified within this layer. Soil in the 'trenches' was notably darker and went deeper than the topsoil layer around it suggesting it was a fill. The surface of the trench features were filled with modern domestic rubbish such as glass bottles and building material.

Much of the site was scattered with building material and the ground was very uneven. There were a number of small mounds, mostly covered by vegetation but it was clear that these were piles of building material probably deposited during the various rebuilds and refurbishments of the house.

Fig 4 – Looking across the survey area towards the south west and two features thought to be the remains of slit trenches (Trenches 2 and 3 shown in blue). Note the unevenness of the ground and the mounds of domestic rubble.

Recovery of artefacts was done by trowel but there was no need to restore the garden to its original condition after each recovery. Location of the finds was recorded to within 5cms by measuring tape. Latitudes and longitudes were taken from Google Earth.

The weather was fairly hot yet over cast and turned showery at the end of each day. The team worked from 9.00am until 5.00pm on weekdays only to ensure minimal disturbance for the tenants.

The Location and Type of Artefacts

TAPP Finds Logs for the survey are shown at Appendix 1.

There was significant patterning of artefacts across the survey areas. There were certain areas which contained a high degree of modern detritus and building material. This was especially the case in the top layers of the trench features. A collection of larger iron pieces and in particular, the heads of construction tools were found on the SW edge of the survey area and they appeared to be having systematically thrown down the bank along its length.

The artefacts that could be directly associated with the wartime occupation of the site were split into 3 groups: bullets & cartridges, shell fragments and other wartime artefacts. These groups are reviewed in detail in below.

Summary of Artefact Catalogue

Out of the 79 items recovered just under a 25% could be considered as having direct relationship with the events of 1942. The great proportion of the relevant finds was either bullets, cartridges or shell fragments. There follows a summary of the items revealed and a full Finds Log can be found at Appendix 1.

1. The Cartridges & Bullets

Line Number	Transit	Item Number	Description	Location	Notes	Headstamp
32	2	3	Cartridge	4.25m x 0.05m	0.303	K39 VII
44	3	8	Bullet	18.60m x 0.27m	.303 / Type 99	N/A
47	3	11	Bullet & cartridge	23.0m x 1.20m	.45ACP	None showing
60	4	7	Bullet & Cartridge	14.85m x 1.70m	.45ACP	C 41
73	5	7	Bullet & Cartridge	19.90m x 0.47m	.303	VII

Fig 5 – The .45 ACP rounds alongside the .303 bullet

There were 5 cartridges and bullets found during the survey, the majority being 'dropped' or unfired rounds. The cartridges were cleaned and the heads of each round were examined to ascertain details of the head stamp. The 2/3/8 was measured and weighed despite being crushed and deformed at its base. The bullet appears to be a .303 however the Japanese Type

99 has the same dimensions and weight as the .303 and it is impossible to confirm the source of this bullet.

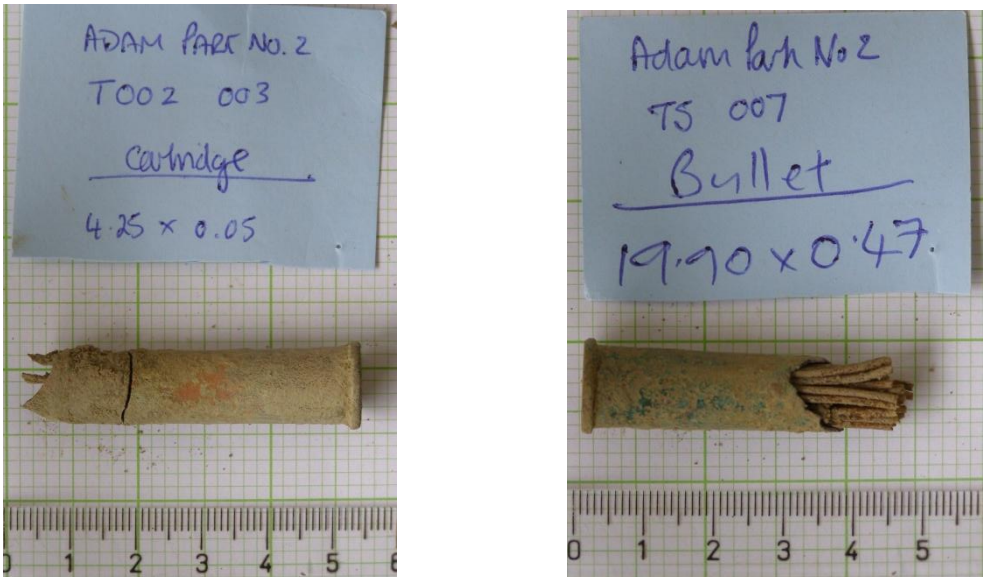

Fig 6 – The two .303 cartridges clearly show the cordite explosive charge within.

Item 2/2/3 came from the Kynoch & Co works, Witton, Birmingham, UK. This firm was first formed by George Kynoch at Witton in 1862 as a manufacturer of percussion caps. It was changed to a limited company in 1884 as G. Kynoch & Co Ltd and by then was manufacturing metallic Ammunition. A further reorganisation and expansion followed in 1889 when George Kynoch was ousted from the management and this then culminated in a further change of title to Kynoch Ltd in 1897. During the period ending with the 1914-18 war Kynoch, which by then was the largest of the British commercial Ammunition manufacturers, owned rolling mills at Witton, at Lodge Road, Birmingham and at Eyre Street, Birmingham. At various times it had propellant factories at Arklow, County Durham, making the cordite similar to that found in these examples, at Warsboro Dale, Yorkshire, making black powder and at Kynochtown, Stanford Le Hope, Essex, making smokeless powder. In addition to these plants the original cap production was maintained at Witton. Later, effective tracer and incendiary composition operations were also carried out at Witton. After the war in 1918 Kynoch Ltd, in common with most other British small arms ammunition manufacturers, was merged into Explosives Trades Ltd, later to become Nobel Industries. In 1926 when Nobel Industries became part of the new Imperial Chemical Industries, the old Kynoch factory at Witton was retained as the Ammunition centre as part of the Metal Group within ICI. The propellant interests being concentrated mainly at Ardeer within the Nobel Division of ICI. In 1962 the Metals Division of ICI was reorganised as a separate company known as Imperial Metal Industries (Kynoch) Ltd.

2. Patterning

The lack of Japanese bullets around the site suggests that the positions did not come under as sustained fire as the positions in other parts of the estate (See Survey reports for No.17 (4) and 18 Adam Park (5)). A number of dropped rounds were found in close proximity to the trench features suggesting the occupants were allied troops and at least one was armed with a Thompson submachine gun and another with .303 calibre weapon.

3. Shell Fragments

Line Number	Transit	Item Number	Description	Location	Notes	Edge of transit lateral measurement taken from
4	0	4	Shell Fragment	15.20m x 0.40m		left
18	1	13	Shards of metal	13.75m x 1.34m		left
48	3	12	Shards of metal	26.90m x 1.55m		left
69	5	2	Shell Fragment	3.40m x 0.80m		Right
71	5	4	Molten Metal	8.30m x 0.50m		Right
74	5	8	Shell Fragment	23.30m x 1.80m	large	Right

The largest piece of shell fragment was found in the rear of the trench line and was instantly recognisable for what it was. The wording along the rim identified it as an allied shell. This reflects well with accounts by various diarists stating that on occasions the Cambridgeshire positions were hit by their own artillery. This was particularly so on the 15th February when word reached command that Adam Park had been evacuated when in fact the Cambridgeshires were still holding on. Alternatively it was not unknown for the 3" mortar crews at Adam Park to set their weapons at such a high angle that the round would explode on the trees above them showering them with red hot fragments.

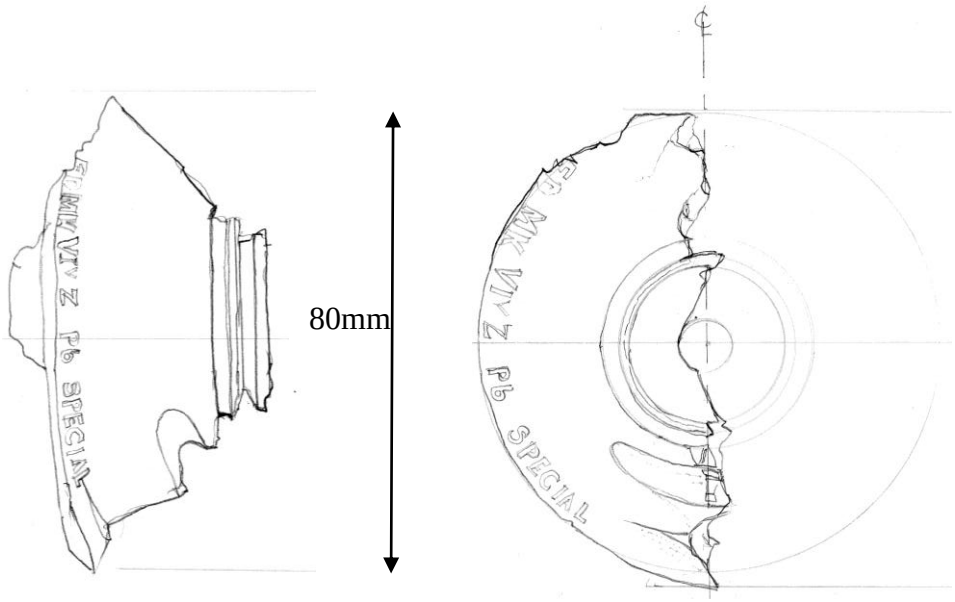

Fig 7 – Sketch of the large shell fragment found in behind the line of trenches

Fig 8 – The largest piece of shell fragment is most likely to be an allied 3" mortar round.

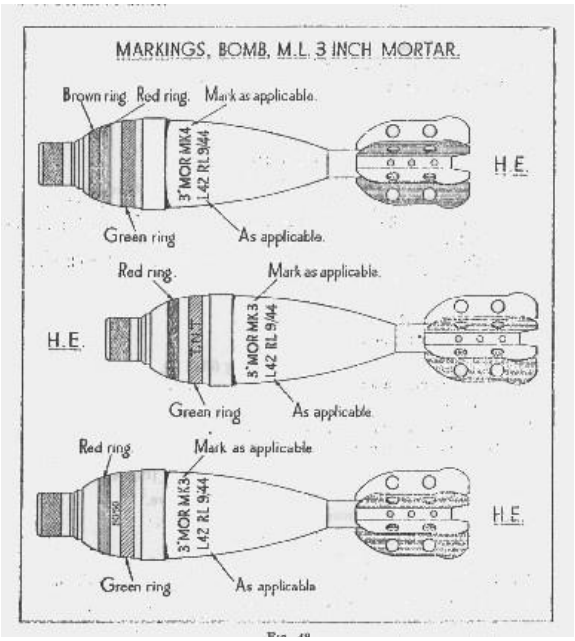

Fig 9a and b- the left hand image shows the standard markings and colour schemes on the 3" Mortar rounds in detail. Fig 9b shows a 3" mortar team in action with the Malay regiment in Singapore 1941.

We are yet to identify the type of round this was from the markings. Details of the find have been distributed onto various discussion groups and the following comments have been collated to date:

'Firstly, I can say that it is not a No 162 Fuze. These were made out of Die cast Aluminium or a material called Mazac (a slightly different {cheaper} alloy to the die cast aluminium), and not made from Brass as your object would appear to be. (see Fuze No162.pdf attached)

It does however, to a degree, resemble the No150 Fuze as used on 3-in Mortars leading up to and in the early stages of WWII until brass became scarce, (see the two attached photos and the Fuze No150.pdf).

However, there are some factors that make this doubtful and these are:

1. The diameter of the striker cup on the nose of your object would appear to be roughly 30 mm diameter. On the No150 Fuze the striker cup is 21 mm in Diameter,

2. The overall diameter of your object a fair bit larger that the typical exploded, No150 Fuze nose remnant. Because of the design and the internal machining of the No150 Fuze body housing they nearly always separate at the same place as the two samples on the photos attached.

3. On your object there appears to be two flat areas on the top of the fuze body just below where the safety cap screws down to, these are possibly designed to receive a fuze wrench when attaching or removing the fuze from the body of the parent ammunition item. (On the No150 Fuze there is one small hole in the body of the Fuze low down on the parallel portion of the Fuze body, near where fuze would join with the nose of the parent ammunition item, to

receive a 'C' spanner which is used for attaching and removing the No150 fuze on a 3-in mortar round.'

Bob E senior EOD (Bombs & Bullets) specialists at the Australian Special Air Service Association, Queensland Branch

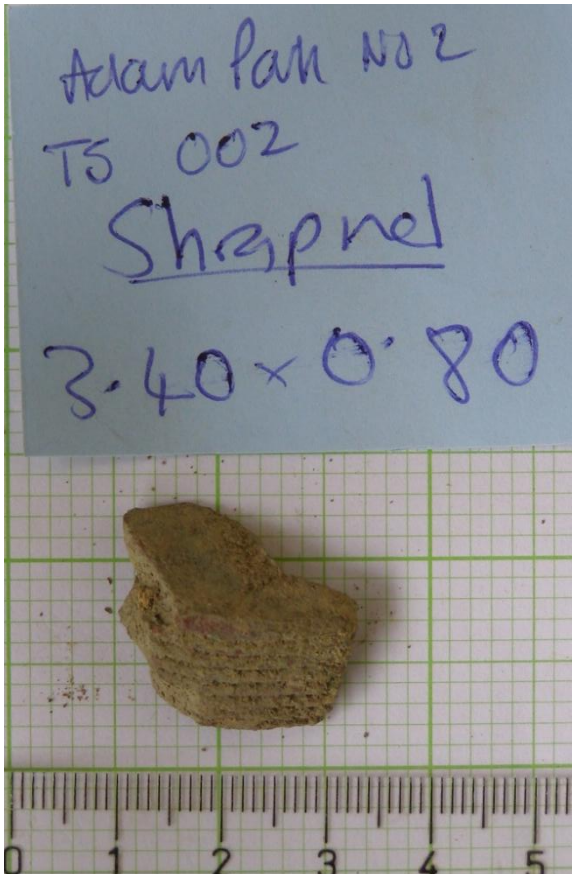

Fig 10 – A second piece of shell fragment is more typical of similar pieces found on other sites around the estate.

Other Related Artifacts

1. Prisoners' Tools

A number of larger pieces of ironwork were excavated in T1 and T0. They appeared all along the length of the transects and appear to have been discarded from the top platform at a number of points and not deposited in one location See Appendix 2 for distribution.

Line Number	Transit	Item Number	Description	Location	Notes	Edge of transit lateral measurement taken from
2	0	2	Tool Head	11.00m x 0.5m	With Socket	left
3	0	3	Tool Head	14.65m x 0.95m	No Socket - Hoe	left
9	1	4	Large Iron Plate	8.70m x 0.20m		left
26	1	21	Tool Head	27.50m x 1.30m	With socket	left
27	1	22	Tool Head	29.28m x 1.50m	No Socket – Hoe blade	left

Fig 11 Item 2/1/21 and 2/0/2 with very similar in design and clearly meant to mounted on a stave or handle. However they are of slightly different design. 2/2/21 has a hroseshoe shaped socket welded onto the balde where as 2/0/2 has the socket as an integral part of the blade with a strengthening thicker spine running down the centre.

Fig 12 - This image called Working on a Thailand Railway Cutting, July 1943 by Murray Griffin was painted in Changi in 1945 and clearly shows the POWs using tools similar to the item 2/0/2

From the documentary and pictorial evidence it is clear that tools like these were used by the POWs and to have a number of them abandoned in the garden of a known POW accommodation block strongly infers that the items did belong to the men housed.

Fig 13 – Broken blades of tools found along the embankment.

Fig 14 – These two pieces of metal work seem to come from the same object – a shovel perhaps.

2. Machine Part

This more unusual item was found in the same vicinity as some of the POW tools. Initially described as a 'piece of iron' it was clear that it was a machined item probably a fuel valve. The fuel line appears to be attached to one inlet and the main cavity contains a swivel valve that redirects the flow of liquid either through the main body of the valve or out through the central hole on the flange.

Fig 15 – The valve

4. The 'Bayonet'

Item 2/1/7 was also found in the sloping ground to the south of the trenches and may well have been discarded at the same time as the tools. It was retrieved in three parts of which the two longer pieces had once been connected. The third piece although retrieved from the same excavation appears to be a head of a hammer. The item was initially thought to be a bayonet but closer inspection suggests there is little evidence to support this optimistic assessment. The 'blade' is 28cm in length and approximately 25mm wide. It is heavily corroded. To date this item has not been matched to any known bayonet type.

Fig 16 – 2/1/7 is badly corroded and there is little evidence to relate it to either the Cambridgeshires or the POWs. The item underneath is most likely a hammer head.

5. Buckles

Line Number	Transit	Item Number	Description	Location	Notes	Edge of transit lateral measurement taken from
17	1	12	Belt Buckle plus stud	13.15m x 0.30m		left
25	1	20	Nail and Triangular buckle	22.90m x 1.40m	Possible Gun sling or lanyard	left
64	4	11	webbing buckles	21.55m x 1.64m	25mm internal width & 20mm internal width	Right

Four buckles were discovered in this survey. Two webbing buckles were discovered in the same hole however they were different sizes. One of these buckles was somewhat unusual as it could only take a 20mm strap whereas the other was the standard 25mm width. The smaller buckle still retained traces of the webbing on the centre cross bar.

Fig 17 – The two webbing buckles on the left were found in situ in the same excavation suggesting they were dropped at the same time.

A triangular buckle was also discovered. This was had a swivel fitting at the centre of the shortest side. However we are yet to identify a piece of military kit this may have come from.

Fig 18 - The belt buckle and stud (2/1/12) came from the same location. The buckle has an internal width of 18mm and the centre bar stands proud of the plain of the buckle by 5mm. Likewise the role of this buckle has not been identified.

6. The Toy Soldier

Perhaps the most poignant and ironic find was a lead toy soldier. This figure appears to be lying prone firing his weapon and is wearing a short tunic, breeches and a set of puttees. The only piece of equipment appears to be under the right arm possibly a canteen and the stock of the gun. The figure has no cross belts or webbing which may suggest that this is not a British soldier who typically wore some kind of webbing.

The figure is a pale khaki all over. On the base of the figure are the letters '...CTORS' and underneath 'LAND' suggesting it came from a European manufacturer possibly England, and under this the word 'COPYRIGHT'

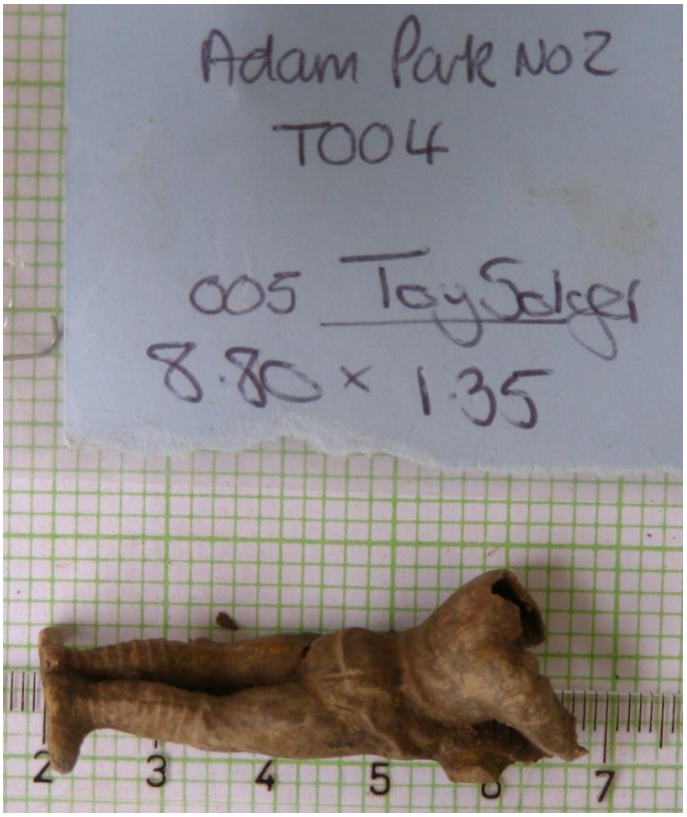

Fig 19 – the Toy Soldier

Hollow cast toy soldiers such as this are cast in metal, usually an alloy, which cools and sets first where it touches the mould, the excess molten metal is then poured out leaving a hollow figure. Pioneered by BRITAINS in the UK in 1893 they were much cheaper than the solid figures imported from Germany.

7. Pen Top - Blackbird

Blackbird pens by Mabie & Todd were a popular brand in the war years. One of the longest-lived makers of writing equipment, Mabie Todd & Co. began producing dip pens and mechanical pencils in New York City in the 1840s. They added gold nibs to the range through an association with Bard Brothers. Mabie Todd & Bard (as the firm was then known) took out its first fountain pen patent in 1878, and over the next decades its constant innovation put it at the forefront of quality fountain pen manufacture. The export to the UK began early, and a London office was opened in 1884. Manufacture of pens in the UK began around 1909, and by 1915 the UK side of the business had become so dominant that it bought out the original New York firm**.**

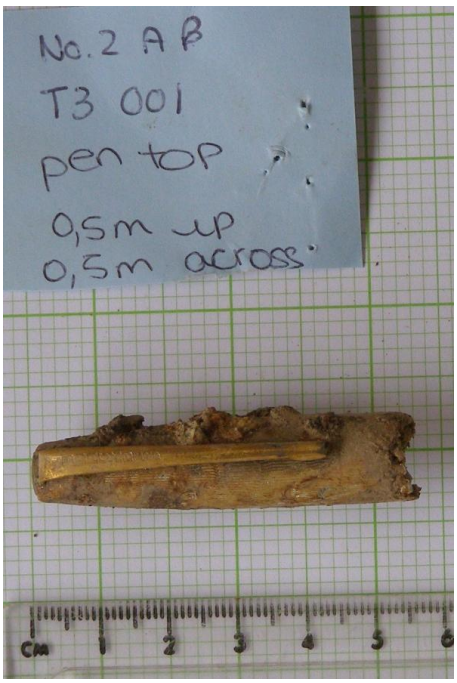

Fig 20 – The Blackbird Pen Top

The British Mabie Todd firm went from success to success, and the Swan design was widely advertised outside the USA as "the pen of the British Empire." The company initially prospered in the postwar period but the production of pens ceased before the end of the 50's.

8. The Comb

The comb is 13cm long and 1.5cm wide and appears to be made of steel. The unusual feature is the clip which allows it to be worn inside a breast pocket or perhaps on a barber's jacket. No other distinguishing features.

Fig 21 – The stainless steel comb is unusual but cannot be dated to the war.

Conclusions

Clearly the site had been occupied by British troops. The amount and variety of dropped rounds was comparable with the finds at No.17 and 18 in and around similar features. The surprising result was the apparent lack of Japanese bullets or fired British cartridges. It appeared that the fighting for this part of the perimeter was somewhat less intense as it had been to the north. The only evidence of the position being targeted at all was from the few pieces of shell fragment of which one appears to be British.

Potentially the most important finds were the POW tools. It could be argued that these were not left by the prisoners but by some of the many gardeners and estate workers that have been employed by the tenants since the 1930's. However the number of artefacts, their distribution along the bank and the fact that contemporary prints show similar tools in use by the POWs in Singapore is strong evidence to link these items with the prisoners.

The garden is also the site of the most convincing set of fieldworks on the estate found to date The trenches are clearly visible in the landscape and are uniform in appearance and perfectly situated for their defensive purpose. We look forward to excavating these in the future.

Fig 22 – Looking up from the SW bank immediately in front of Trench 2 with T0 and 1 in the foreground

Appendix 1 - TAPP - Finds Log – No 2 Adam Park - Nov 2010 Dig

Line Number	Transit	Item Number	Description	Location	Notes	Edge of transit lateral measurement taken from
1	0	1	Round Disc	7.45m x 0.05m		left
2	0	2	Tool Head	11.00m x 0.5m		left
3	0	3	Tool Head	14.65m x 0.95m		left
4	0	4	Fragment	15.20m x 0.40m		left
5	0	5	Metal Rod	18.60m x 0.1m		left
6	1	1	Toothpaste Tube	3.30m x 0.70m		left
7	1	2	Foil	6.20m x 1.53m		left
8	1	3	Bottle Top	7.20m x 2.0m		left
9	1	4	Large Iron Plate	8.70m x 0.20m		left
10	1	5	Coin	8.80m x 1.20m	Straits Settlement 1920	left
11	1	6	metal shard and nail	9.65m x 0.93m		left
12	1	7	Bayonet	10.30m x 0.60m		left
13	1	8	Piece of Iron	11.50m x 0.66m	8cm x 6cm	left
14	1	9	Piece of Iron	11.60m x 1.70m	9cm x 18cm	left
15	1	10	Two small shards of metal	12.30m x 0.90m		left
16	1	11	Clipboard Clip plus nail	13.00m x 1.68m		left
17	1	12	Belt Buckle plus stud	13.15m x 0.30m		left
18	1	13	Shards of metal	13.75m x 1.34m		left
19	1	14	Light Fitting bayonet	16.10m x 0.90m		left
20	1	15	Spoon	16.90m x 0.10m		left

21	1	16	Toothpaste Tube	18.60m x 1.00m		left
22	1	17	Door Fitting	19.60m x 0.40m		left
23	1	18	Ring	21.35m x 0.25m	x section round	left
24	1	19	Coin	21.40m x 0.80m		left
25	1	20	Nail and Triangular buckle	22.90m x 1.40m		left
26	1	21	Tool Head	27.50m x 1.30m		left
27	1	22	Tool Head	29.28m x 1.50m		left
28	1	23	Piece of Iron	29.30m x 2.60m		left
29	1	24	Bag of nails	29.60m x 1.46m		left
30	2	1	Plug Connection	2.90m x 1.20m		Right
31	2	2	Tube container	3.60m x 1.75m		Right
32	2	3	Cartridge	4.25m x 0.05m	0.303	Right
33	2	4	Bottle Top	6.45m x 1.10m		Right
34	2	5	Coat Hook	15.60m x 1.57m		Right
35	2	6	Metal Strip	17.35m x 0.20m	7.5cm x 3.0cm	Right
36	2	7	Washer	27.60m x 1.60m		Right
37	3	1	Pen Top	0.50m x 0.50m		left
38	3	2	Coat Hook	0.7m x 0.5m		left
39	3	3	Bottle Top	0.6m x 0.8m		left
40	3	4	Little rabbit	not recorded		left
41	3	5	Piece of Iron	1.3m x 1.0m		left
42	3	6	square piece of tin can	0.7m x 1.3m		left
43	3	7	Bottle Top	not recorded		left
44	3	8	Bullet	18.60m x 0.27m		left
45	3	9	Washer and stud	20.60m x 2.00m		left
46	3	10	Tap fitting	22.40m x 1.30m		left
47	3	11	Bullet	23.0m x 1.20m	& cartridge	left
48	3	12	Shards of metal	26.90m x 1.55m		left

49	3	13	padlock	26.90m x 0.5m		left
50	3	14	Assorted ferrous objects	28.93m x 1.10m		left
51	3	15	nails	30.00m x 1.28m		left
52	3	16	Glass	29.90m x 0.30m		left
53	3	17	metal Bracket	9.20m x 1.50m		left
54	4	1	Coin	1.83m x 1.05m		Right
55	4	2	Foil	4.60m x 1.70m		Right
56	4	3	Piece of Iron	8.10m x 0.60m		Right
57	4	4	Nail	8.10m x 1.50m		Right
58	4	5	Toy Soldier	8.80m x 1.35m		Right
59	4	6	Foil	13.85m x 1.40m		Right
60	4	7	Bullet	14.85m x 1.70m		Right
61	4	8	tag	15.35m x 0.95m		Right
62	4	9	metal	18.60m x 0.55m		Right
63	4	10	hook	20.80m x 1.57m		Right
64	4	11	webbing buckle	21.55m x 1.64m		Right
65	4	12	Tin lid	22.00m x 1.70m		Right
66	4	13	Rubbish Fill at this point	25.00m to 26.50m	bottles, metal strip and lawn mower blade	Right
67	4	14	Nail	28.10m x 0.70m		Right
68	5	1	Nail	3.15m x 0.20m		Right
69	5	2	Shell Fragment	3.40m x 0.80m		Right
70	5	3	Foil	6.15 x 0.20m		Right
71	5	4	Molten Metal	8.30m x 0.50m		Right
72	5	5	Tin Lid	14.0m x 1.57m		Right
73	5	6	Tin Lid	19.55m x 0.20m		
74	5	7	Bullet	19.90m x 0.47m		Right
75	5	8	Shell Fragment	23.30m x 1.80m	large	Right

76	5	9	Comb	23.50m x 0.40m		Right
77	5	10	Key	28.20m x 1.70m		Right
78	5	11	Door Fitting	28.45m x 1.0m		Right
79	5	12	Fawcett	29.30m x 0.30m		Right

Appendix 2 – Sketch plan of the Survey Area at 2 Adam Park