

# The Military Survey (Geo) Branch

Summer Newsletter 2016 – issue 60



## Station Anniversaries Day

Thursday 25th August 2016  
12 - 5pm

Wyton Airfield



For more information  
contact Siggie Hillman 01480 52451 x7250, x7198 or x8799

**SAPPER 300 EVENT**  
at  
**42 ENGINEER REGIMENT (GEOGRAPHIC)**  
&  
**RAF WYTON STATION ANNIVERSARY DAY**

**1200hrs to 1700hrs on the 25<sup>th</sup> AUGUST 2016**

All retired and serving members of Mil Svy (Geo) are reminded that they are invited to attend the above families' day at Wyton Station. **When 42 Engineer Regiment (Geographic) will celebrate the 300<sup>th</sup> anniversary of the Corps of Royal Engineers on Thursday 25<sup>th</sup> August 2016 at RAF Wyton (near Huntingdon). This will be a combined event including the annual Station Family Fun Day which also marks the 100<sup>th</sup> anniversary of flying in RAF Wyton. The day will be attended by the Chief Royal Engineer, Lieutenant General Sir Mark Mans KCB CBE DL.**

**The previously advertised "WYTFEST" has, unfortunately, had to be cancelled.**

PLEASE NOTE THAT THIS IS NOT AN OPEN DAY - You have to notify your intention to attend, you cannot just turn up – if you do then entry will, unfortunately, have to be denied for security reasons. Thus if you wish to attend this historic event then you must provide the information on the form below to our event organiser ideally **before Monday the 25<sup>th</sup> July 2016, however if you are unable to meet this date, late entries may be acceptable.**

**NB: Non-members of the Branch are also welcome to use this avenue to notify their intent to attend this event.**

**BE ADVISED - PHOTO ID WILL BE REQUIRED TO GAIN ADMITTANCE TO THE STATION**

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**RETURNS IDEALLY BY THE 25<sup>th</sup> JULY 2016 PLEASE**

**TO: - M. Perry, 101 Craven Road, Newbury, Berks, RG14 5NL or [mandpdperry@sky.com](mailto:mandpdperry@sky.com) Tel; 01635 37510**

From: Forename:.....	Surname:-.....
Address: -	Tel No: - .....
	E-mail: - .....
Type & Make of transport:-.....	Registration No: - .....

I wish to attend the Sapper 300 Families/Anniversary day at RAF Wyton and intend to bring the following guests:

1. ....
2. ....

**PLEASE REMEMBER THE GEO SUPPORT FUND –**

**I enclose a cheque to support the above fund for a sum of £.....  
(Please make it payable to "Military Survey Branch REA")**

Please append any comment and any special (disability) requirements here:-

.....

.....

## DEVELOPMENT OF THE CORPS OF ROYAL ENGINEERS — 1661

### FORMATION OF BRITISH REGULAR ARMY

#### OFFICERS

##### *King's Engineers*

Employed from Norman times on King's fortifications and works

1698

Engineer officers raised for permanent duty with ordnance trains for wars against France and the War of Spanish Succession, 1701-1713

26 May 1716

ROYAL ARTILLERY AND CORPS OF ENGINEERS constituted on separate establishments

25 April 1787

CORPS OF ENGINEERS given ROYAL title, becoming CORPS OF ROYAL ENGINEERS

#### SOLDIERS

Skilled men enrolled for ordnance trains, raised for specific campaigns and disbanded when no longer required

6 March 1772

Formation of SOLDIER ARTIFICERS at Gibraltar served through Great Siege, 1779-1788

10 October 1787

Formation of CORPS OF ROYAL MILITARY ARTIFICERS for work on defences at home and in defended ports of rapidly growing empire

June 1797

The Soldier Artificers at Gibraltar incorporated with the Corps of Royal Military Artificers

1812-1813

Name changed to ROYAL SAPPERS AND MINERS towards the close of the Peninsular War, 1808-1814, in view of the changing combat role of the military engineer

17 October 1856

CORPS OF ROYAL SAPPERS AND MINERS incorporated into the CORPS OF ROYAL ENGINEERS at the end of the Crimean War, 1854-1856

April 1862

British officers and NCOs of the Honourable East Indian Company Engineers amalgamated with the CORPS OF ROYAL ENGINEERS after the suppression of the Indian Mutiny, 1857-1858

### PROGENY OF THE CORPS

#### *Submarine Mining*

From 1871-1905 thence to the Royal Navy

#### *Military Mechanical Transport*

From 1866-1910 thence progressively to the Royal Army Service Corps

#### *Military Flying*

From 1871-1912 thence to the Royal Flying Corps

#### *Tanks*

Royal Engineers responsible for early development and operational use of the tank, and when first used in mass at Battle of Cambrai, November 1917, they were commanded by a Royal Engineers officer

#### *Military Signalling*

From 1856-1920 thence to the Royal Corps of Signals

#### *Searchlights*

From 1880 to 1938 thence progressively to the Royal Artillery

#### *Works Service*

From the earliest days the Engineers were responsible for fortifications and works services *i.e.* military accommodation. During the Napoleonic Wars, 1808-1815, the Royal Engineers were responsible for works services for the Royal Artillery, the Royal Engineers and other Corps administered by the Board of Ordnance and for defences. The responsibility for the works services of other arms was vested in a civilian organization under a barrack master-general.

In 1882 the Royal Engineers once more assumed full responsibility for works services at home and overseas.

In 1904 the Royal Engineers remained responsible for works services overseas, but a Civil Barrack Construction Dept. became responsible for works services at home.

In 1917 the Royal Engineers once more assumed full responsibility for works services at home and overseas.

In 1959 the responsibility for peacetime works services throughout the world passed to a civilian works organization, the Royal Engineers remaining responsible for works services in war and in areas where the civilian organization cannot operate in peacetime.

#### *Transport Operating and Movement Control Services*

From 1882-1965 thence to the Royal Corps of Transport, formed 15 July 1965. Civilian engineering aspects remain with the Royal Engineers.

(From chart in Corps Museum, Institute of Royal Engineers, Brompton Barracks, Chatham, England, September 1973.)

**Content:**

- No 2 Air (Survey) Liaison Section RE – Part Two – The Post-War Years
- History of 3 (Canadian) Field (Reproduction) Survey Company Royal Canadian Engineers
- A Brief Biography of Bernard McArthur-Davis OBE, FRICS and Mapping Kenya before Independence

## **No 2 Air (Survey) Liaison Section RE - August 1943**

### **Part Two – The Post-War Years**

The section arrived in Singapore on 24<sup>th</sup> January 1946 and following disembarkation was established at RAF Seletar. The section was without proper accommodation so no technical work could be undertaken however temporary accommodation was obtained in Station HQ. Work on following jobs began:

- Preparations of flight maps for post-war Survey programme.
- Organisation of tactical air survey cover over JAVA

#### **War Diary - January 1946**

Major B.H. Farmer R.E. is O.C. No 2 Air (Survey) Liaison Section. No 888 Royal Naval Air Squadron (RNAS) (Hellcats) began flying for Survey from Royal Naval Air Station Sembawang. Office for briefing established at Sembawang; remainder of unit offices are at RAF Seletar. The section is fully engaged in air survey by 888 RNAS with 681 Squadron RAF (Spitfires - non-operational at RAF Seletar) and a 681 Squadron Detachment at BATAVIA (Dutch East Indies). On 15<sup>th</sup> the section moved to permanent offices on RAF Seletar.



*Supermarine Spitfire: Spitfire PR.XI of No. 681 Sqn RAF, at various bases in India and Burma 1944-45. RAF PRU blue overall, sky grey codes and serials*

Col. J.C.T. Willis, O.B.E., D.D. Survey, HQ ALFSEA visited the Section on 16<sup>th</sup> January. Major B.M. Farmer, R.E. visited Batavia for discussions on air survey at HQ AFNEL, Air HQ, NEI, and RAF Station KEMJORAN over the 18<sup>th</sup> and 19<sup>th</sup>. From 19<sup>th</sup> to 31<sup>st</sup> 2<sup>nd</sup> Lieut. F. Longbottom R.E. attached for instruction from No. 12 Air Survey Liaison Section, R.I.E. There was a Mutiny of airmen at RAF Seletar from 26<sup>th</sup> to 28<sup>th</sup> January but the section was not affected.

#### **War Diary - February 1946**

The section was fully employed in briefing and plotting air survey photography by 888 RNAS and 681 Squadron, RAF throughout February. Programme for tactical town plans in Java nearly completed.

On the 8<sup>th</sup> Rear Admiral Bridge the Flag Officer (Air) East Indies Station visited 888 RNAS and this Unit's offices at RNAS Sembawang. On the 14<sup>th</sup> Brig. G. Bomford, O.B.E. D. Survey ALFSEA visited Unit HQ and the Sembawang briefing office.

#### **War Diary - March 1946**

From 1<sup>st</sup> to 12<sup>th</sup> of March the section was fully employed in briefing and plotting air survey photography by 888 RNAS and a detachment of 681 Squadron, RAF, Kemajoran Java. 681 Squadron (RAF Seletar) were grounded throughout the month by magneto trouble. For the rest of the month bad weather and serviceability problems reduced volume of 888 Squadron's effort. Unit took on various other tasks for D. Survey, ALFSEA to keep personnel busy.

On the 7<sup>th</sup> S/Ldr Wareham (106 Group, RAF Benson) visited the unit and on 11<sup>th</sup> Lt/Col. J.F.F. Lathbury, R.E. (D.D. Survey, Rear HQ, Survey Production Centre) visited the unit. Visits by Major J.S. Paintal O.C. 1 Ind. Fd. Svy. Coy. R.I.E on the 12<sup>th</sup> and Sgt Taylor, of the Australian Survey Corps, visited the unit from Labuan. Discussions showed we may expect little or no photography from 87 P.R. Squadron R.A.A.F. as its Labuan Detachment will be returning to Australia.

On 25<sup>th</sup> Lt. G.G. Ghent, R.E. attached from No. 4 Air (Survey) Liaison Sec., R.E. pending posting as GSO III vice Capt. M.E. Butt R.E. On 28<sup>th</sup> 2/Lt A.E. Morris, R.E. (Previously Sgt in this unit) commissioned in Corps of Royal Engineers as 2/Lt and posted in. At the end of the month Major B.H. Farmer, R.E. relinquished appointment as GSO II pending release.

#### **War Diary - April 1946**

Major J.W. Tayler R.E. was posted as GSO II Commanding the Section vice Major B.H. Farmer, R.E. awaiting transit to U.K. for release, Class A (Grp 26). On 5<sup>th</sup> 888 RNAS commenced flying again in the post war air survey photographic project of S.E.A.C. for the Cabinet Offices. Over the rest of the month in spite of very bad weather over Malaya and Sumatra several successful sorties were obtained.

On 13<sup>th</sup> Lieut. Basely, attached to this unit from 71 Base Map Reproduction Sec., R.E. proceeded to Batavia on posting by authority of D. Survey, HQ ALFSEA. On 20<sup>th</sup> Major B.H. Farmer, R.E. and Capt. M.E. Butt, R.E. moved to transit camp pending Class A release (Groups 26 and 27 respectively). Lieut. G.G. Ghent, R.E. posted as G.S.O. III of the section vice Capt. M.E. Butt, R.E.

#### **War Diary - May 1946**

On 9<sup>th</sup> Major W. Hore, R.E., O.C. No. 4 Air (Survey) Liaison Section, R.E. was attached to the section pending receipt of orders to proceed to U.K. for release – Group 26c. One Sergeant proceeded to transit camp on reversion to Home Establishment and probable employment in U.K. Police Services. On 20<sup>th</sup> 888 RNAS continued flying of survey sorties in the post-war photographic programme in SEAC. Orders were received on the 20<sup>th</sup> for 888 RNAS Squadron to cease flying and to move to U.K. On 24<sup>th</sup> Major W.H. Hore proceeded to transit camp for Class A Release Group 26c and Capt. K.E. Baseley, R.E. was attached to the section from 102 Ind. Corps Survey Directorate, R.I.E. Capt. G. G. Ghent, R.E. 2 I/C of the Section proceeded to Transit Camp for Class A Release – Group 33c.

#### **War Diary - June 1946**

On 3<sup>rd</sup> the section moved to more ideal accommodation on the Seletar Base and two B.O.R's from No. 4 Air (Survey) Liaison Section, R.E. were attached pending posting to this section. On 17<sup>th</sup> No 684 Squadron RAF (Mosquitos) detachment arrived in Batavia prior to flying survey sorties over Java and the Lesser Sundas. Major J.W. Tayler, R.E. proceeded to transit camp on reversion to Home Establishment. Capt. K.E. Baseley, R.E. assumed command of the unit vice Major Tayler. Sgt. J.C. Reynolds proceeded by air to Batavia to carry out duties with No 684 Squadron Detachment.

#### **War Diary - July 1946**

On 8<sup>th</sup> three officers of 2<sup>nd</sup> Division visited the section as part of an organised tour of RAF Seletar. They spent one hour being shown the various stages of the sections work. No 684 Squadron Detachment (Batavia) commenced flying Survey sorties over Java and subsequently during the month have successfully covered large areas. On 15<sup>th</sup> advance party of No 684 Squadron proper arrived at RAF Seletar prior to flying Survey sorties of Malaya and Sumatra.

#### **War Diary - August 1946**

On 4<sup>th</sup> 1953286, Cpl Larkin E.P. and 1931479, L/Cpl Salkeld J went into transit pending onward transmission to U.K. 14687165 Sgt Morley R.J. attached pending posting vice 14803284 Sgt Reynolds J.C. On 11<sup>th</sup> 14809641 Dvr Brown E, 4804557 Spr Harnan J.R. returned from LIAP. On 24<sup>th</sup> 1952845 Cpl Saunders W.N returned from LIAP and 1953286 Cpl Larkoin E.P. was posted into the section vice 1878295 Sgt Inglefield F.L. Capt K.E. Baseley assumes command of section.



*De Havilland Mosquito PR Mark XXXIV, RG203 'E', of No. 684 Squadron RAF Detachment is towed into position for takeoff at Brown's West Island, Cocos Islands in June 1945. Note the unusual camouflage with azure blue lower surfaces, and silver upper surfaces. Thirty eight sorties were flown by 684 SQN from the Cocos Islands. The PR.XXXIV variant carried additional fuel in a bulged bomb bay tank, yielding a Combat radius of ~1500 NMI. (IWM Photograph)*

**On 31<sup>st</sup> August 1946 No 684 Squadron RAF was disbanded and on 1st September, 1946, No. 684 Squadron, based at RAF, Seletar, Singapore, was re-numbered No. 81(PR) Squadron, and equipped with Mosquito PR 34's (right). Thus 81 Squadron, after five years as a fighter squadron, now took up its present PR role.**



In November, 1946, the survey of Java and the Lesser Sundas was completed, and the detachment was withdrawn, going on to Mingaladon, in Burma, to complete the survey of Western Thailand. This detachment returned to Seletar in April, 1947.

In February 1947 a detachment of two B.17 aircraft of 5th Recce Squadron USAAF arrived at Labuan and planned to photograph the whole of Borneo from coast to coast with trimetrogon cameras. It was learned that they planned to wait until the country is clear enough to permit coast to coast photography and that any uncompleted run would be rejected. The number of such days is probably not more than twenty in a year however with that type of aircraft they have the advantage of being able to photograph practically all day when conditions permit.



A flight of Spitfire PR 18's was also engaged in the survey of Singapore town, harbour, and the Malayan airfields. A survey of Sarawak, and British North Borneo was the next task given to the squadron, and a detachment was sent to RAF Labuan for this purpose, operating on a three-day detachment cycle. In October, 1947, 81 (PR) Squadron moved to RAF Changi, continuing the survey of Malaya, and operating another detachment of three Mosquitos at Mingaladon (Burma). This detachment was withdrawn in December, with its task almost complete.

In January, 1948, a detachment was sent to RAF Butterworth, Penang, with the task of surveying the Kra Isthmus, and Thai beaches. No. 28 Squadron, one of the two Spitfire squadrons (the other being No. 60) in the Far East, sent six aircraft to Hong-Kong in January via Kuching, and Clarke Field, shepherded by an 81 Squadron Mosquito. This move, a practice of re-inforcement, reflected the growing anxiety over conditions in China, where the dispirited Chinese Nationalists, were quickly losing ground to the Reds.

The Mosquito remained at Kai Tak to survey Hong Kong, and the New Territories. It was not only in China that the communist menace was beginning to loom larger. By the end of 1947, the illusory impression that peace was returning to South-East Asia was being dispelled. The occasional murderous attack on Malayan white planters was being recognised as part of an organised insurrection. In May, 1948, a State of Emergency was declared. The Seaforth Highlanders left Gillman Barracks for up-country, and the RAF stood by to give its support.

81 (PR) Squadron had been caught in the middle of several other commitments. In February, 1948, the squadron moved to RAF Tengah (right), and another detachment had been sent to RAF Labuan to continue the survey of Sarawak, and North Borneo. In May another detachment was sent to Hong Kong to survey French Indo-China, returning to Tengah in July.



Operation 'Firedog' began, a code-name covering anti-terrorist operations. The first 'Firedog' was flown by Spitfires on 9th July, 1948, a detachment being sent to Kuala Lumpur for the purpose. In January, 1949, the crew of a Mosquito baled out over Thailand, when their aircraft caught fire, and both were rescued unhurt. At this time all the Mosquitos were based at Tengah, and the Spitfire flight at Kuala Lumpur. Fg. Off. I.M. Pedder, a Spitfire pilot, was awarded the D.F.C.

In February, 1950, a detachment of four aircraft was sent to Saigon, to continue with the survey of French Indo-China, but this detachment was withdrawn in May, because of the urgency of the 'Firedog' commitment in Malaya. All but 1000 sq miles of the total of 49,000 sq. miles had been covered in four months.

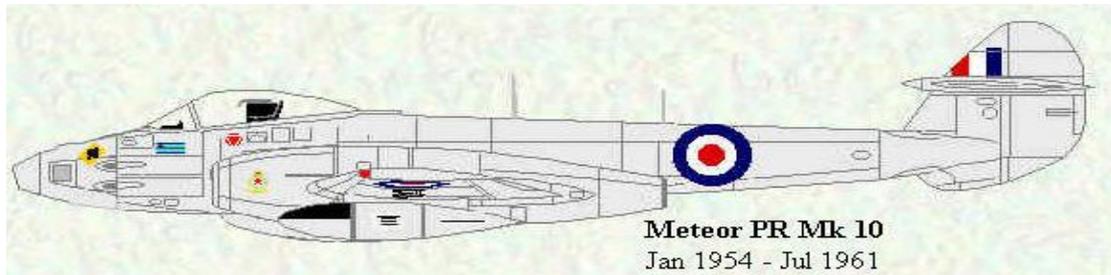
On 15th, March, 1950, the squadron moved back from RAF Tengah to RAF Seletar. In October of that year, a detachment was sent to Butterworth, for the survey of Southern Thailand, leaving only one Mosquito and one Spitfire at RAF Seletar, but the following month, the whole squadron was detached to Butterworth, leaving only the squadron Anson at the base

In January, 1951, five Spitfire PR 19's were received from the U.K., of which two left immediately for Kai Tak (Hong Kong). In February, another detachment consisting of one Mosquito was sent to Labuan, remaining there until mid-September, by which time it had completed 23,234 sq. miles of cover.

On 1st April, 1954, Spitfire PR 19, PS-888, took off from Seletar on the last operational flight of a Spitfire in the RAF. This fact seems to be generally acknowledged these days, but one still finds authorities (such as Bruce Robertson on page 98 of his book 'Spitfire') crediting 60 Squadron with the honour. 60 Squadron flew their last Spitfire operationally on 1st January, 1951. There was a presentation of a silver model by Rolls-Royce and Vickers-Armstrong to 60 Squadron, and a parade, which was improved by the appearance of a formation of 81 Squadron's Spitfires. Later Vickers Armstrong and Rolls Royce made amends for this mistake by presenting 81 Squadron with another silver model Spitfire.

From that time on the Mosquito bore the brunt of the reconnaissance work, doing long-range flying to Ceylon in the West (where they supplied the Aircraft for the Film "The Purple Plain – Gregory Peck, Maurice Denham & Lyndon Brook), Japan in the north, Christmas Island, and Cocos (Keeling) Island in the south, and Darwin to the east. Over Borneo, they were engaged in anti-piracy patrols, and on one occasion were instrumental in enabling a bunch of pirates to be caught. The basic 'Firedog' cover of Malaya was completed in September, 1953, comprising a total of 856 areas, each one measuring 10,000 yards by 20,000 yards.

In November, 1955, the first Meteor PR 10s began to arrive, and shortly after this two were deployed to Kai Tak. On 15<sup>th</sup> December, 1955, Mosquito PR 34a, PG-314, flew the last operational sortie of a Mosquito in the RAF, another honourable 'last' to the credit of 81 Squadron (although honourable 'lasts' seem to be a feature of the RAF in the Far East).



### Overview of No 2 Air (Survey) Liaison Section activities from 1949 until disbandment in October 1952

“By April 1948, the considerable Survey organisation in the theatre at the end of the war had been reduced to No 2 Air (Survey) Liaison Section and the Singapore Map Depot, with no representation at GHQ. No 2 Air (Survey) Liaison Section, based in Singapore, continued to support the extensive survey photography programme being carried out by the Royal Air Force in the Malay Archipelago, Borneo and Indo-China.

The Map Depot supplied all the maps required by the three Services. Early in 1951 a small survey directorate, under Lieut Colonel L.H. Williams as AD Survey, was re-established in GHQ to exercise technical control over these units, to co-ordinate the work of various mapping agencies and to resolve the map supply problems. At the end of 1952, this survey directorate was once more closed down and a staff captain absorbed into the staff of G (Ops) to handle map supply.

With the survey photography programme nearly completed - **No 2 Air (Survey) Liaison Section was at the same time re-designated as the General Survey Section R.E. with effect from 6<sup>th</sup> October 1952.** The role of the unit with regard to Air Survey remained the same, and it continued to liaise with the RAF on all matters appertaining to air photography for survey purposes. The section moved from RAF Seletar to Tyersall Camp in Singapore.

*Bill Dace served with No 2 Air (Survey) Liaison Section from March 1949 to March 1952, firstly at RAF Tengah then later at RAF Seletar. He recalls: “During this time there were detachments to Saigon, to fly Indo-China as far as 39 degrees north, Butterworth and Labuan. The O.C. was Major Griffiths. The camera used was the K-17 with a 6 inch lens. The F52 was used for larger scale work with a 20 inch lens. An expedient photomap of Singapore was produced. All personnel had to fly a sortie in the Mosquito. OC 624 Sqn RAF, later 81 Sqn RAF, was Wg Cdr Thompson. Other officers of the Air (Survey) Liaison Section mentioned were Capt Townsend RE and Lt, later Capt. Saxby RE. In Saigon, cost of living was high. Beer was flown in, in the nose of the Mosquitos, at 3 piastres a bottle/can and sold for 26 piastres”.*

**In September 1955 the General Survey Section RE (FARELF) was disbanded and 84 Field Survey Squadron RE and 570 Map Reproduction Troop RE were raised in Singapore in December 1955.** When raised, neither unit was up to full establishment due to operational and administrative factors. While the reproduction element had necessarily to be in Singapore, the work in the field had to be controlled centrally to the task in hand and conveniently close to an operational command HQ.

At the same time a small survey directorate under an AD Survey, with an Australian deputy, was again re-opened in GHQ. It was decided to locate 84 Field Survey Squadron alongside HQ Malaya Command at Kuala Lumpur but the move was delayed until May 1956 due to lack of accommodation. In the intervening months, the Squadron undertook a revision of the 1:25,000 maps of Hong Kong. In 1959 a detachment, supported by personnel from 13 Field Survey Squadron in UK was sent to Borneo to establish control for new 1:50,000 and 1:25,000 mapping”.

In April, 1958, 81 Squadron again moved back to RAF Tengah and on 17th December, Flg. Off. George Paul flew the 10,000<sup>th</sup> Firedog sortie, in a Meteor 10 WB. During the ten years of the emergency, 81 (PR) Squadron had flown some 9000 sorties against the terrorist, quite apart from non-operational surveys of Malaya, Borneo, Sarawak, Hong Kong, Thailand, Indo-China, and all points east. The squadron was awarded three, D.F.C.s, three, A.F.C.s, and two D.F.M.s.

In January, 1960 the first Canberra, the T.4 WH-651, arrived on the squadron. It was followed in February by WH-777, a PR 7, and WH-780 in August. Since then re-equipment had continued until the whole squadron consisted of Canberra's. The Pembroke's were flown away by July, 1960, and the last two Meteor 10s left for Seletar M.U. on 7th July, 1961 (WB-159 and WB-166, flown by Flt. Lt. Littlejohn, and Flt. Lt. Ashley).



Over the latter part of 1961 and early 1962, 81 Squadron was again engaged in the Thai survey. The whole country had been surveyed by Valiant PR aircraft based at Butterworth, but 81 Squadron was employed to fill in the gaps. This took the Canberra's to all parts of Thailand, from the Burmese border in the West, to the Laotian border in the North, and the Cambodian border in the East.

An aircraft flew up twice a week, night stopping in Bangkok, thus allowing all squadron aircrew to get to know that excellent city on intimate terms. At the conclusion of the task, the Royal Thai Survey Department of the Army, invited all 81 Squadron aircrew, and a selection of ground crew to a party in Bangkok.

The survey of North Borneo, Sarawak, and Brunei, continued to figure with increasing importance during 1962 and 1963. To the South, Indonesia was apparently eyeing the territories of British Borneo, and it was essential that the survey was completed before trouble broke out in the area. Detachments to RAF Labuan with liaison staff were a frequent occurrence, although the Borneo weather did not allow any startling progress to be made.

In December, 1962, came the insurrection in Brunei. 81 Squadron were sent to reconnoitre the area of fighting, and to watch the frontiers with Indonesia. With this event came the order that the survey of all British Borneo was to be given the highest priority, and from May until September, 1963, the whole effort of 81 Squadron was directed to this end, working at times on a seven day week. An Air (Survey) Liaison Section from 84 Survey Sqn RE was based at Labuan during the months of May and June 1963. By the time the worsening weather made any further effort wasteful, about 80% of the area had been covered. At various times 84 Survey Squadron would provide Air (Survey) Liaison Staff in support of 81 Squadron when there was a requirement to obtain survey photography. There was an involvement with 'Operation Mandau' in 1969/70 where the Royal Australian Survey Corp and 84 Survey Sqn RE in conjunction with the Indonesian Authorities produced mapping of West Kalimantan (Borneo), using photography taken by 81 Squadron.

**No 81 (PR) Squadron RAF was finally disbanded on 16<sup>th</sup> January 1970 as the Far East Air Force was being run down.**

**Noel Grimmett and Mike Nolan**

Sources

TNA files: WO 172/7842, WO 172/10349, WO 203/2205, WO 203/2206, WO 203/2211, WO 203/3410 and WO 402/226  
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81 Sqn RAF History – [www.81squadron.com](http://www.81squadron.com)  
684 Sqn RAF - [www.historyofwar.org/air/units/RAF/684\\_wwII.html](http://www.historyofwar.org/air/units/RAF/684_wwII.html)

## HISTORY OF 3 (CANADIAN) FIELD (REPRODUCTION) SURVEY COMPANY ROYAL CANADIAN ENGINEERS

(The following notes have been taken directly from the souvenir booklet produced by the Company at the end of World War Two, primarily because they throw light onto some of the map production processes and equipment in use in field survey companies.)

### FOREWORD

This book has been compiled with a dual purpose. The first is to serve as a permanent record of the Survey Services since they formed in Ottawa, Canada, on 3<sup>rd</sup> September, 1939, with a more detailed account of the 3<sup>rd</sup> Canadian Field Survey Company from June 1943, until VE-day, 9<sup>th</sup> May 1945. The second purpose is a souvenir Book of pictures collected during the past 5 years of places, technical equipment, and personnel, who have served with Survey.

The type matter is written entirely from memory (as access to the War Diary was not possible at this time) so there may be slight mistakes in dates, but in general the matter is fairly accurate. It is intended that every man who served with Survey no matter in what capacity will receive a copy of this book.

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On 3<sup>rd</sup> September 1939 at 59 Alvert Street Ottawa, Ontario recruiting commenced for 1 Corps Field Survey Coy RCE, with Major W.J. Baird, MC as Officer Commanding (now retired). Lieut. J.M. Robinson (now Major OBE) 2<sup>nd</sup> –in-Cmd, Lieut S.G. Gamble (now Lt-Col) and several former members of NPAM Survey formed the nucleus for the Active Service Coy. On 23<sup>rd</sup> September 1939 with a total strength of 88 all ranks, recruiting ceased.

The first appointment in the newly-formed unit was Lieut S.G. Gamble as officer i/c Topographic Training. Lieut W.K. MacDonald (Now Lieut-Col) joined the Survey Coy during the latter part of October 1939, and Lieut C. Soutar (now retired) assumed appointment of Officer i/c Printing.

Instruction began on 15<sup>th</sup> October 1939. The Topo and Repro personnel received their technical training at GSGS Rockcliffe, Ontario.

2 Lieut Wilson (now Lt-Col) joined the Survey as Topo Officer on 1 January 1940. CSM (WOII) Pink transferred from the PPCLI to take over the appointment of WO i/c Military Training.

Recruiting re-commenced during the first week of January 1940 and ceased 15<sup>th</sup> January 1940 with the Survey Unit up to strength, 7 Officers and 137 Other Ranks.

On 22<sup>nd</sup> January 1940, the 1 Corps Field Survey Coy RCE was ordered to proceed overseas. Final inspection was held in the Drill Hall, Ottawa, and in the morning of 26<sup>th</sup> January 1940 the Company marched to the Union Station to entrain for Halifax, arriving at port of embarkation on 27<sup>th</sup> January 1940. The unit set sail on 29<sup>th</sup> January 1940 aboard the *Empress of Australia*. The ship anchored at Greenock on 8<sup>th</sup> February 1940, then proceeded to Glasgow. Troops boarded waiting trains and arrived at Aldershot on 10<sup>th</sup> February 1940.



Then followed four weeks of Military Training the Survey Company was smartened up, under the direction of CSM Pink. The Unit moved from Aldershot to Southampton on 15<sup>th</sup> March 1940 taking over property known as Elmsleigh, 15 Glen Eyre Road Bassett. The reproduction training commenced on the 18<sup>th</sup> March at Ordnance Survey Southampton; while the Topographic personnel were under instruction in the area around Winchester.

After Dunkirk, invasion of England was imminent. The Survey Company was allotted a sector of the Itchen River to defend. Defence positions were prepared and manned by the Survey unit until relieved by an incoming British Force.

Although military exigencies seriously interrupted technical training, this was completed on 10<sup>th</sup> June 1940. The War Office released to the Unit two (2) Double Demy Mann Hand-fed Litho Presses, mounted on trailers, hauled by Matador Artillery Tractors. This was the first technical equipment to be received.

The Company moved to Admington Hall (right), near Stratford-on-Avon 15<sup>th</sup> July 1940. Grade 'A' Trades Pay was granted to all qualified technical men (printers comprising over 50%). Trade rates were effective retroactive from 18 June 1940.



The stay at Admington Hall was short and the Unit convoyed to Wood Manor, Cobham Surrey, arriving 8 August 1940. This was the first day of Germany's all-out Air offensive against England.

The Repro Sections received the balance of technical equipment, including two (2) hand proving presses, 1 Guillotine, 1 grainer, 1 whirler, and a complete supply of chemicals.

Major Baird, after lengthy illness, relinquished command of the Survey and returned to Canada. Capt J.M. Robinson was appointed officer commanding. Unit Officers at this time were: Capt Gamble 2 i/c, Lieut Soutar i/c printing, Lieuts Smith and Slessor i/c Topo, Lieuts Kelly and Andrews' i/c Draughting. 2/Lieut Wass joined the Unit as Printing Officer, from Royal Engineers, British Army.

During six months, the Battle of Britain raged night and day. The Unit was subjected to continual bombing due to its proximity to the biggest aircraft factory and airfield in the Home Counties. Enemy action finally resulted in the Survey being moved from Wood Manor to the Convent of Notre Dame Cobham (right).



A few days prior to moving to the Convent, the reproduction sections received their first mobile, technical equipment, in the form of two Photomechanical and two Press lorries.

These were called 3-ton, 6 wheeled, Photomechanical and Printing Lorries respectively. The Photomechanical Lorry although similar to the present plate-making lorry was considerably smaller and contained a much inferior type of equipment.

The Printing Lorry contained a Demy Single Colour press made by Crabtree's Limited. The press was equipped with an automatic feeder and had a printing surface of 19 x 24.5 ins. Later, these printing lorries, along with the static equipment, were returned to Ordnance and more spacious printing lorries with the same type of press replaced the obsolete ones.

Shortly after moving to the Convent, the company was re-organized and Major W.K. MacDonald assumed command with Capt. Gamble as second in Command. Lieut Wass was officer in charge of printing, Lieut Trorey, officer in charge of draughting, and Lieut Slessor officer in charge of Topo. Additional personnel were taken on strength, amongst whom were Lieut Leak, and Lieut Webber.

The company at this time received its new name and became known as 1 Canadian Field Survey Company, and came directly under the command of the Canadian Army. The total strength of the company at this time was approximately 160 all ranks. This was broken up into 2 reproduction sections of 25 all ranks, 2 topo sections of 23 all ranks, 1 draughting section of 17 all ranks, 1 camera section of 15 all ranks, and the remainder of the company formed headquarters section.

In May the company went on "Bumper". This exercise lasted about 3 days and resulted in ironing out many of the kinks in the survey company. One great factor that was developed was the reproduction of a pencil compilation submitted by the draughting section.

On 17<sup>th</sup> August 1942 the company moved to Ockham Park (right), Ripley, Surrey, to occupy the late Lord Lovelace's estate. Again the company's strength was increased by the addition of Special Increment sections attached to the three branches of Survey. The reproduction sections had a most difficult time due to lack of equipment and resulted in them working 24 hours a day in order to train the additional increment personnel.



The next technical equipment obtained was for the photographic branch of Survey which received an Auto-Focusing Camera Lorry and later added a static Process Camera.

During March 1943 the company participated in exercise "Spartan" which resulted in a new branch of Survey being formed to cope with the delivery of maps and the supplying of the three companies with technical supplies. The new company was called 1 Canadian Army Field Survey Depot, with Lieut Lyons as commanding officer, CQMS Bartlett transferred to Depot as RSM and his experience in technical equipment and Svy needs did much to build Depot to the efficient Company it is today.

During the years 1943 and 1944 many of the Repro personnel were sent to Survey Training Centre at Ruabon, North Wales, to gain experience and knowledge of RE methods of Reproduction.

In June 1943, at the break-up of 1 Canadian Field Survey Company, 3 Canadian Field Survey Company was formed with the following establishment:

Headquarters - Four Reproduction Sections, and two Map Photo sections; each section as a separate unit administered by Headquarters.

The company was commanded by Major C.H. Smith with Capt. L.F. Wass as second in command. The reproduction sections were in charge of the following officers, 1 reproduction Section by Lieut A.V. Holland. 2 Reproduction Section by Lieut J.A. Thornton, 3 Reproduction Section by Lieut H.C.W. Gill, and 4 Reproduction Section by Lieut R.C. Richards. The Map Photo sections were in charge of sergeants, 1 Map Photo Section by Sgt M.P. Hollinger, and, 2 Map Photo Section by Sgt M.F. Wood. The personnel in each reproduction section consisted of four litho machine minders, five helio workers, and four draughtsmen.

Together these men comprised the technical team to carry out the actual reproduction. Other tradesmen were required such as fitters, electricians, motor mechanics, and drivers etc. to maintain the equipment. In the Map Photo sections the tradesmen consisted of two photographers, and three photo writers, in addition to the section sergeants who were photographers, and the necessary personnel to carry out equipment maintenance.

Each Reproduction Section was equipped with one Photo-mechanical (helio) Lorry and one Printing Lorry, graining machine, and other numerous items to make up a complete G1098 (army scale of equipment) so they could be self-contained.

One Map Photo Section consisted of one mobile camera lorry and one processing lorry, and in the other Map Photo Section it was necessary to acquire some sort of building in which the process camera could be set up and a dark room installed.

3 Canadian Field Survey Company, and, 4 Canadian Field Survey Company, were established together at Newdigate, as the work these two companies were doing necessitated them working in conjunction with each other.

Later on as 4 Canadian Field Survey Company's work tied up one map photo section completely, a map photo section was attached to them, later on it became part of the establishment, 3 Canadian Field Survey Company being reduced by this section.

During Aug 1943 two sections were attached to 2 Canadian Field Survey Company (the topographical company), and proceeded to South Wales on exercise Blast II. This was an artillery show and as the reproduction company was now concerned with the production of artillery fire plans, task and timing tables, and the overprinting of artillery concentrations and barrages on maps, this lent the first opportunity to get the proper training under the same conditions as would be required in operations. Of course many new angles had to be contended with and these were ironed out in future exercises.

Towards the end of Aug and the beginning of September, Headquarters, 2 Reproduction sections, and Map Photo plus sections from 2 Canadian Field Survey Company, proceeded on exercise Link. This was a Canadian Army show and entailed movement of the army through London with traffic control through the city handled by the metropolitan Police. Everything ran smoothly en route and proved that when movement was necessary through a densely built-up area little or no trouble would be experienced when properly organized. On this scheme part of the company worked with the Air Photo Interpretation Sections on the production of "defence overprints". It was the first time we had undertaken this type of experiment and the knowledge gained was advantageous as later much work of this nature was produced.

In the latter part of September two more sections were dispatched on exercise Blast I. This was also to South Wales with artillery and worked in conjunction with Blast II. Many points were put into practice which had been learned from Blast II. Also this gave a further percentage of the company the opportunity of gaining experience and being able to show what could be expected from "reproduction" as to the class of work and production times.

During the period of exercise Blast I the company moved to Ripley, Surrey, and were stationed for a period of about two weeks with 2 Canadian Field Survey Company. From there a move was made to Leigh Court, Cobham, Surrey, and production commenced on the printing of operational maps of Europe. Visits were also made to the company by APIS in preparation for the numerous "defence overprints" which would be required.

At the same time of the move from Ripley to Cobham, Major C.H. Smith left for an appointment at DD Survey. Capt Wass became officer commanding with Lieut Holland as second in command. Our stay at Cobham though very pleasant was short-lived and in early November the Company moved to Wakehurst Place (right), near Hayward's Heath, Sussex. From this point on, operational production of maps was increasing steadily and 1 Canadian Field Survey Company were also beginning to deliver the goods. Lieut Dadson and Lieut Turner returned to the company from OCTU at this time.



The company during the latter part of March and all of April were allotted the job of revision of the maps of the Normandy beaches where the D-day landings were to be made.

This task held top priority and a Top Secret rating, and was known as operation ENAMEL. It consisted of the complete redrawing of some 16 sheets. The series was taken from the 1:12,500 series which had been compiled from air photos, and our job was to redraft this series to 1:25,000 on enamel plates at a scale of 1:20,000. They they were reproduced by camera to 1:25,000. Printing was the next stage and 50,000 copies of each map were reproduced in three colours.

Fom Wakehurst Place our next move took us to our concentration area at Bookham, Surrey, which took place the latter part of March 1944. On 4<sup>th</sup> May, Capt Holland went to an appointment at DD Survey, and Lieut Thornton became second in command. While at our concentration area a section was attached to 2 Canadian Corps and proceeded to Dover where further practice of defence overprints was carried out working with APIS. Lieut Alsop arrived back at the company from OCTU during this period and took over the Map Photo section whose work was increasing by leaps and bounds.

During our stay at Bookham most of us will remember the many enjoyable evenings spent at the “Crown Inn”, perhaps even more than the not very pleasant memories when the V-1 later to be called the “buzz-bomb” started to pass over the company area around June 16<sup>th</sup>.

Operational work was increasing all along and bringing the boys up to a peak of what they could expect when finally the great day would come to take us into action across the channel.

In July the company was divided into two flights, one under Major L.F. Wass, and the other under Capt J.A. Thornton. The first flight moved to their marshalling area near Winchester on 27<sup>th</sup> July, from here a final move was made to the embarkation point near Gosport, Hants, where loading onto LCT's took place and sailed for France at 1400 hours on 28<sup>th</sup> July.



The second flight had rather a lengthy journey, moving on 29<sup>th</sup> July to their marshalling area near Tilbury, north of London. They stayed in this location for two days and then moved to Tilbury docks and boarded a Liberty ship sailing on 31<sup>st</sup> July. This was a large convoy and the trip took four days to the beaches of France.

### Mike Nolan

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### 42 Survey Regt - Op Burbury 1977 – Fireman’s Strike



Top: Duncan Brimson, Steve (Joe) Baldwin, Chris Hewitt  
Centre: Mark Binfield, Brian Hurley, Mick Porter  
Bottom: Russ Garner, Mick Asprey, Andy Tipping, Dave Claringbull, Keith Rackham

## A Brief Biography of Bernard McArthur-Davis OBE, FRICS

By Duncan D. McCormack, Hamilton, New Zealand



*1966 Atlas Division Survey of Kenya FHQ*

*L to R - Gerphas Obonyo, Mhd Akbar, Duncan McCormack, Bernard McArthur-Davis, Mhd Aslam, Surjeet Singh*

This is the story of a remarkable man who did many interesting things in the service of his country and profession, as related to me in a final series of letters written from 1979 to 1983 toward the end of his life; and from the many earlier conversations we enjoyed while working together in the Survey of Kenya, 1958 to 1962, at the start of which time I was in my mid-twenties and Bernard in his late fifties. We struck up a rapport that endured to the final exchanges when, as he put it, “I have always wanted to get this off my chest, to someone I can trust and the lot has fallen to you, for your sins”. I can only regret that Bernard’s trust was to some extent misplaced in that it has taken me over a quarter of a century to tell his story.

Bernard was born in 1900, his appetite for adventure whetted by childhood tales of India at his grandmother’s knee. She had married his grandfather when he transferred to the Indian Army following service in the Crimea campaign where he had been an early winner of the Victoria Cross (“One of the first to be decorated by Queen Victoria at her first Investiture, 26th June 1857; he was ninth in the line of 85 officers and men”). A great raconteur, fluent in Hindi, his grandmother awakened in her grandson a life-long love of language and exotic places.

Bernard arrived in Palestine in 1918 and, early on, became fluent in both written and spoken Arabic. As he wrote to me, “From near the end of World War 1 onwards, I was out there, as a youngster of course. The war with the Turks, who Allenby vanquished by about 1919, was not quite over and there were pockets of ‘Johnny Turk’ in various desert places. It was no fun trying to do plane table surveys in such hostile areas, but such it was, with the 7th Field Survey Company, R.E. (Egyptian Expeditionary Force). Later on, of course, I joined the Palestine Government Land Survey Department, eventually becoming i/c of all topographical work in Palestine, firstly in the field with 36 surveyors, mainly young Arabs, and later in charge of the drawing and reproduction team.

“The whole country was covered with contours at 25-metre vertical interval by plane table on the largish scale of 1 to 10,000, some at 1 to 50,000, using Indian clinometer and Abney level. Trig, of course, had already been laid down. With staff trained by myself, mostly, it is surprising how well the results compared with later work in the region”.

Other projects were fitted in. “I must be the only bloke in the world who has walked from Kantara, on the Suez Canal in Egypt, the 500 kilometres to Haifa, now in Israel. For that time, in my early days, I was attached to the Palestine Railways and was allotted, as a very young surveyor, the unthankful task of re-measuring the railway line due to modifications made to the track, originally laid down by the Army under World War 1 conditions, to convert it to civilian traffic use. I stepped on every sleeper over the whole distance, taking three months booking the new chainages of all the bridges, culverts and stations, etc.

“Later on, in the 1930’s, I came to know the Golan Heights like the back of my hand. Long before the formation of Israel and later conflicts there, I had a topographical training school up there, training Arab topographers. I also compiled and had published a Gazetteer of Palestine, which was published in 1939 to accompany our 1 to 100,000 series but, due to World War 2 breaking out, ‘security’ clamped down on it so it never really got into circulation and all copies were numbered and signed for.

“By the early 1940’s I had finished up as an Assistant Director of the Survey of Palestine. After a war-time spell with the Long Range Desert Group in the Libyan Desert, in 1943 I was transferred to the Gambia in West Africa, to form and train a small Survey Department, with the additional task of field-checking the compilation sheets of the new 1 to 50,000 full-colour topo series for the Directorate of Overseas Surveys. This was the pilot series for other territories and the late Brigadier Hotine seemed very satisfied with the results. This was the first territory to have a D.O.S. map series compiled via aerial survey (although flying and plotting from aerial photos had gone on elsewhere, e.g. Palestine, since the 1920’s). In the Gambia, mapping work meant mucking about in dense mangrove swamps, as that is mainly all that is there, fringing a very wide and deep river. The mangrove roots are like large, haphazard accumulations of builder’s scaffolding, being very difficult to negotiate. The River Gambia is 400 miles long, is tidal as far up as Kuntaur, a river trading centre 200 miles up. 7000-ton steamers went right up to collect the groundnut crop. Seemed funny to be driving in dense bush and suddenly see masts and funnels looming up ahead”. Bernard also told me, (when I worked with him in Kenya in the late 1950’s) that in the Gambia the Bilby towers, used for survey observations above the bush canopy, had an important secondary function. “Gin-towers”, he said, “Mozzies don’t like flying that high, so we had our sundowners up there”. I wondered about later descent in the dark after a few stiff gins.

To continue in Bernard’s words, “I was then offered a transfer to Nyasaland (now Malawi), to form and organise a new Survey Department from scratch; that was in 1950. This was some job; although the powers that be were reluctant to put up the money, I thumped the table a bit. Recruitment of surveyors was very difficult and in the end I had Poles, Belgians, English and South Africans and we got things going. Of course, inter alia, we had to draw up survey legislation, especially to cope with licensed surveyors from Southern Rhodesia operating in Nyasaland. So I was made a Member of the Legislative Council, called the Hon. Mr B.A.McA etc. etc. and went through the tedious procedure of helping draft then pushing the Survey Regulations through the other uninterested lot of Hon. Members, which took time and patience! Having helped put Nyasaland on the map I felt I’d had enough of British colonial government and decided to retire from same.

“I then landed the job of Chief Surveyor to the Government of Iraq, and was called ‘McArthur-Pasha’. While I was there, the Survey Directorate was quite a thing, with a couple of hundred surveyors and a large repro-printing set-up with five two-colour machines which printed banknotes and stamps as well as maps. We had let large aerial survey contracts to map Kurdistan at 1 to 50,000 scale, another to map the potentially more fertile areas toward the Iran border and another smaller contract to map the Tigris-Euphrates delta and around Basrah in the Shatt-el-Arab. To show you how things can go wrong, on some sheets for final ground-check (I will not say which contractor was responsible), the trig points were in impossible places like valleys, river beds and dense desert scrub. No one could understand it until it transpired that some bright spark of theirs had plotted the trigs on a separate sheet and transferred them, onto some of the map sheets, upside-down. This brings to mind another earlier “howler” in Palestine. We had a young surveyor sent out by the Colonial Office with tip-top qualifications, M.A., Triplos I and II and what have you, and he was sent down to the Beersheba district to put in some extra trig. The terrain was flat to rolling, with little knolls, ideal for trig stations. Because he had been taught observations in Cambridge, which is all church and college spires which could not be occupied by an instrument, he ignored the knolls and resorted to satellite stations! Anyway, I stayed in Iraq until things got out of hand, the Iraqis burnt down the British Embassy, bumped off young King Feisal and others, so McArthur-Pasha quickly folded his tent and vamoosed or imsheed, as the Arabs would say.

“In late 1957 I pitched up in Kenya as a ‘re-tread’, a re-employed pensioner and you know all about me as far as Nairobi is concerned”. That is true; Bernard used his vast experience to ably organise and produce the first edition of the Atlas of Kenya. Many years later I discovered that this was the task I had been recruited for, reaching Survey of Kenya some months after Bernard who, by then, was already well into the project. Whilst my end product may have been somewhat different, I consider that Bernard did an outstanding job. His lifetime experience in often adverse conditions, working with many races and coupled with his natural courtesy, endeared him to even the lowliest technical staff in Survey of Kenya. He had a genius for getting the best from those working with him. Conversely, he had an unerring eye for sham and pretence and his forthright manner in this regard did not always endear him to some of his senior colleagues. He always had time to help others: I recall him happily spending hours with my first wife, a graphic designer, advising on a major Middle East project for an airline which required an Arabic script and knowledge of customary practices.

Eventually I took up the reins on the second edition of the Atlas of Kenya and the time came, in 1962, for Bernard to leave us. We each received a card from “B.A.McArthur-Singh” to attend at the Corner Bar, a well-known Nairobi curry house. There Bernard held court sporting a perfectly-wound turban (courtesy of our Atlas stalwart Surjeet Singh) and had his face suitably browned-up for the occasion. Present were all the cartographic and printing crew of all races who had slaved to make his Atlas a success, a fitting memorial capping a long and varied career. None of the Survey of Kenya hierarchy appeared to have received his card, so the atmosphere was very relaxed.

Bernard was 32 years my senior. Young as I was, I recognized, beneath his slightly Blimpy exterior and mannerisms, a piercing intelligence that saw through any pretentiousness. He had done more interesting things than would befall a dozen average lifetimes. Throughout my subsequent career, in New Zealand, Kenya again, Western Samoa and the Sultanate of Oman, in sticky situations I often sensed Bernard at my shoulder with the right steer.

After Kenya, Bernard and Mildred retired first to Spain, then Malta, Portugal and Somerset. On Mildred’s death, after 57 years of marriage, his final home was near family in Edinburgh. His last letter to me ended:

“From an old Irish blessing, for old time’s sake:  
May the road rise to meet you,  
May the wind be always at your back,  
May the sun shine warm upon your face,  
The rains fall soft upon your fields,  
And until we meet again,  
May God hold you in the palm of His hand. Yours ever, Bernard”.

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### **Mapping Kenya before Independence**

**By Duncan McCormack**

(Senior Cartographer, Survey of Kenya, 1958-1963)

When I arrived at Survey of Kenya in early 1958 I was pleasantly surprised to find an agency well set up and able to provide a full topographic mapping service from aerial survey through photogrammetry, cartography, photo-processing and lithography. In its modern FHQ, at Ruaraka, Survey of Kenya also had a technical Training Wing and a large African Lands Division devoted to mapping consolidated plots of fragmented African rural land under the Swynnerton Plan. Also, a special cartographic group was working on the new Atlas of Kenya.

The Director, Administration, most surveyors, the plan registry, cadastral services, city and township mapping and liaison with the adjacent Lands Department were still housed in the old HQ colonial-style buildings in what was then Government Road, where I spent my first six months initiating a new 1:250,000 scale cadastral series. One day a column of siafu, safari ants, rose through the cracked flooring and crossed the drawing office floor as a solid brown mass before disappearing down another crack. The aged electrical system provided a sharp tingle every time a desk lamp was touched. Through my window I looked along Kingsway with its Italian grocery, regularly visited by white-clad nuns who emerged with laden kikapu to feed the hungry waifs they had rescued from Nairobi streets. My Pakistani staff daily introduced me to a wide variety of delicious koftas, pakorhas, and samosas, (“come on, sir, you try that thing”). I was far away from the rather staid Kiwi environment and loving every minute of it.

At FHQ the principal task of topographic mapping had, some years earlier, been beefed up in response to greater needs by the police, the military and government agencies during the Mau Mau Emergency. The 89th Field Survey Squadron, R.E., carried out topographic fieldwork in remote areas, provided our printing presses and also ran the large map and paper store.

There were also a number of DOS (Directorate of Overseas Surveys) surveyors attached, engaged in essential baseline and triangulation surveys needed to establish an accurate geodetic network and in control surveys for aerial photography. In late 1958 when I was posted out to FHQ there were still very large slotted-template laydowns to establish control and rectify the scale errors of the aerial photographs, a technology soon to be superseded.

The 1:50,000 scale, SK 11 or Y731 topographic series covered the more settled areas of the Highlands, Rift Valley and Coastal region with over 250 sheets printed, by that time, in five colours. The 1:100,000 Y633 series, covering sparsely-populated areas such as the Northern Frontier District, were basically tactical maps showing motorable terrain, roads and tracks and had form-line contours. By then about half the 186 sheets were printed. The 1:250,000, Y503 series, which I began in late 1958, were derived from the 1:100,000 Y633 series. Designed for land operations, they proved very popular with the Police Air Wing.

The large Atlas of Kenya, with 47 colour plates, was first issued in late 1959. It immediately sold out and I was tasked with producing a Second Edition. A remarkable feature was its complete design, compilation, drawing, printing and binding within Survey of Kenya without the overview of a committee of academics, as is the norm.

The SK 13 and 14 1:2,500 and 1:5,000 Nairobi and Environs topo-cadastral series, totalling 136 sheets in five colours, showed cadastral boundaries overprinting topography, revealing some glaring suburban land encroachments. Many other townships were also covered. There were cadastral maps of Nairobi and Environs at 1:25,000 and Settled Areas at 1:50,000, plus other municipalities at 1:10,000 scale. Aerial photographs were also available for purchase.

A large range of special maps, at scales of 1:1,000,000 to 1:4,000,000, included mean annual rainfall and rainfall probability maps, hunting block maps, a folding safari map, administrative boundaries, the Nairobi Area, Nairobi Royal National Park and Mt Kenya maps. There were some 'one-offs' such as Famine Relief maps to aid in combatting the severe early '60s drought.

Production of such a large array of topographical, cadastral, township and miscellaneous maps, plus a large Atlas, required complex planning, massive expenditure and great dedication by all those involved. This huge effort reflected great credit on the colonial administration's foresight and resolve.

Maps are essential in any country's development and must be accurate and of good quality. Achieving this, using the pre-digital technologies of the day, required a large staff and the combined efforts of a number of disciplines; the aircrew who flew the vast areas of accurate, overlapping aerial photography; the land surveyors who provided baseline measurement and primary triangulation essential for an accurate geodetic framework, also ground control surveys; the photogrammetrists who plotted the map detail to scale; the cartographers who compiled and produced the final fair drawings; the experts who field-checked for detail accuracy and incorporated accurate nomenclature; the lithographers who processed and printed the maps and, lastly, the map librarians who saw that the latest editions quickly reached the hands of those who relied on them.

Survey of Kenya's training of local recruits of all races in these complex and exacting technologies also reflected the vision displayed by the colonial government. I must admit, in coming from the New Zealand Lands & Survey Department, I had not expected to find African cartographers capable of the most complex mapping work with minimal supervision. Their cartographic standards were up with the best and their work ethic certainly superior. In the late '50s I imagined I had a long and enjoyable career ahead in Kenya.

From its earliest days Survey of Kenya had to surmount huge difficulties in distance, hostile environments, slender resources and sometimes danger to establish a viable cadastral system on which title could be issued and a reliable geodetic framework on which topographic mapping could be carried out. There were also five international boundaries to be surveyed and demarcated and internal administrative boundaries which had to be legally defined. On this note, one of my interesting tasks nearing Independence was the defining of proposed regional boundaries. In mid-1963 the Director and I went into lock-up mode to define and legally describe these post-Independence regional boundaries only to have them scrapped after all our exacting work was completed. I sometimes wonder whether regionalism would have benefitted or complicated Kenya's subsequent development.

In late 1963 I left for home and today have lasting memories that those were the most challenging, interesting and rewarding of my forty years in cartography.

## The Royal School of Military Survey

The Graduation Ceremony of Course Number 35 on 22<sup>nd</sup> April 2016

Military Engineering (Geographic) Technician Class 0-2 Course



Standing: L/Cpl Gyabaah, L/Cpl Holland, Spr Eusa-Basil, Spr Guile, Spr Terkpetey, Spr Evans, Spr Joyce, Spr Scully  
Sitting: Spr Umesh-Rai, Spr Topp, L/Cpl Yakso, Lt Col Mark Kingston MBE LG, Dr John Knight (Principal), Spr Joubert, Spr Clarke, Spr Mortimer

WO1 (SMI) Mark Kieras R.E. welcomed family members, friends and staff to the Graduation of Course 35 and outlined the activities and achievements of the course. Dr John Knight (Principal) also welcomed the guests to RSMS.

Having completed their Basic Combat Engineer training in Gibraltar Barracks Minley Surrey, and most having completed their driver training at the Defence Driving School at Leconfield; Course 35 assembled at the Royal School of Military Survey in May 2015 to start their Military Engineer Geographic Technician 0-2 Course.

This course was different to all previous courses in that it consisted of a high proportion transferee soldiers from other trades within the Corps of Royal Engineers, including two soldiers from the Queens Ghurkha Engineers (see table below). The result was that this course had a raised level of experience, maturity and more importantly a real strive to perform and better themselves – core attributes of Royal Engineer Geographic soldiers.

The 11 month course itself has been diverse and extremely intense. Over the course of the year, 8 Modules have been studied ranging from one to nine weeks, covering topics such as:

1. Complexities of modern IT systems
2. Web design
3. Analysing of spatially attributed data
4. Exploitation of satellite Imagery
5. Cartography
6. Understanding Datum's and projections and how to map our 3D world onto paper.
7. 3 dimensional visualisation of the terrain
8. Through to complex analysis of geographic data.

The intelligence derived from these geospatial products will allow our commanders to make better and quicker decisions, and as such will be a vital piece in modern operations. After a minimum of 18 months within the Army training environment the students are now sufficiently trained and ready to be accepted into the field army as Geographic technicians.

WO1 Kieras also noted that the technical performance of the course has surpassed that of previous courses, with over 81% of module results passed at Merit or above and approximately 20% of passes being at Distinction, these are unprecedented results, with a group average statistically better than any previous course.

Outside their academic studies, Course 35 has also been busy. The course has supported the Army Benevolent Fund (the Soldiers Charity) in a number of ways, be it collecting money at Ascot Races, Station Families day or collecting money at the beating retreat ceremony held here at Hermitage station. It was also stressed that the majority of charitable activities that the course had undertaken, was purely voluntary and they have raised £1000 over the last 12 months.

The course has also demonstrated some sporting prowess:

- L/Cpl Yakso, Spr's Joubert, Rai, Clarke – have all represented the station at racket sports be it Badminton, squash or long tennis.
- L/Cpl Yakso, Spr's Basil, and Guille – have all represented the station at Football.
- Spr Evans represented the RSMS at Rugby,
- Spr Mortimer has represented the RSMS at Orienteering
- Spr Joyce has coached Boxing and L/Cpl Jabbaa coached power lifting
- 2 Individuals L/Cpl Yakso and Spr Mortimer have started an Open Diver training qualification.
- Spr Terkpetey being a physical training Instructor has both organised and delivered physical training to the RSMS, Army reserves and the local primary school.

The Graduating Officer, Lt Col Kingston MBE LG, the Hermitage Station Commander was asked to present the certificates to the students. The TOP STUDENT prize went to L/Cpl Yakso QGE having attained the highest average marks over the 8 modules. Through hard work and dedication L/Cpl Yakso attained distinction grades in all but 3 modules resulting in an average score of 71%.



L/Cpl Yakso (Top Student), Lt Col Mark Kingston MBE Life Guards, Dr John Knight (Principal), Spr Joubert (Soldiers' Soldier Award)

Lt Col Kingston gave a short address, saying that he was delighted to make the presentations and reflected on his own army career of 37 years from trooper to Lt Col. He described the changes in the field army since he first enlisted and how there was now a requirement for very technically able soldiers to resist the various threats to the safety of our country.

WO1 Kieras described the *Soldiers' Soldier Award* in that the winner is chosen by the course members who they collectively believe has contributed most to the course. This award is not about how academic the individual is, how fit or how military, but is an award given to the individual who mentored, coached and helped maintain team cohesion over the duration of the course.

The *Soldiers' Soldier Award* for course 35 went to Spr Joubert, and was presented by Noel Grimmett on behalf of the Military Survey (Geo) Branch of the Royal Engineers Association.



Finally as mentioned previously the course has soldiers that transferred from other areas of the Army. Of significant note were two soldiers – L/Cpl Yakso and Spr Rai – having joined the course whilst still members of the Queens Ghurkha Engineers. Having successfully passed the course, it was an honour to celebrate the fact that these two soldiers can now fully transition into Corps of Royal Engineers to become Royal Engineer Geographic Technicians.

To formally acknowledge the transition into the Corps, the School Principal Dr John Knight one of only 36 Honouree Members of the Institution of Royal Engineers presented the Royal Engineer No1 Dress Hat on behalf of the Corps of Royal Engineers to L/Cpl Yakso and Spr Rai.

Name	Unit	Previous UNIT
<b>42 Engr Regt (Geo)</b>		
Spr Rai	13 Sqn	36 Engineer Regiment (GRCMO)
Spr Terkpetey	13 Sqn	170 Engineer Sp Gp
Spr Eusa-Basil	13 Sqn	32 Engineer Regiment
LCpl Gyabaah	13 Sqn	22 Engineer Regiment
Spr Scully	13 Sqn	21 Engineer Regiment
LCpl Yakso	14 Sqn	36 Engineer Regiment (GRCMO)
LCpl Holland	14 Sqn	170 Engineer Sp Gp
Spr Clarke	14 Sqn	
Spr Guile	14 Sqn	
Spr Evans	16 Sqn	
<b>External Postings</b>		
Spr Mortimer	RIGC(NI)	
Spr Topp	JSSU (Digby)	
Spr Joubert	TIW (Marham)	32 Engineer Regiment
Spr Joyce	DGC	

## Obituary

### Major General John Kelsey CBE FRICS

1 November 1920 to 10 June 2016



From a wartime emergency commission to director of Military Survey

MAJOR-GENERAL JOHN KELSEY, who has died aged 95 was born at Faversham, Kent on 1st November 1920. His father, Benjamin Kelsey, who was a master baker and confectioner, died under tragic circumstances, after his business had collapsed during the depression of 1927, leaving his wife, Daisy Elizabeth, to bring up two sons under difficult conditions. Fortunately she was able to continue to live in the family home, by keeping house for the elderly bachelor, the owner of the house.

Benjamin Kelsey had been a mason, so his sons were eligible to attend the Royal Masonic boarding schools at Bushey, Hertfordshire, where orphans of deceased masons could be given boarding school education, so, at the age of eight, Kelsey entered the Royal Masonic Junior School for Boys, which had been newly opened in 1928. All four hundred boys and the staff were new to their posts and, initially, there were no school rules, but, as misdemeanours occurred rules were created to deal with them. Kelsey was reasonably successful at both work and sport and in 1933, he transferred to the Senior School, where he fared equally well, becoming in 1938, Deputy Head Boy and Captain of hockey, cricket and rugby teams.

In 1938, he was awarded an Exhibition Scholarship at Emmanuel College, Cambridge, to go up in October 1939 to read mathematics and also to take further studies to fit him for a subsequent career in teaching.

During his first term, he regrettably paid little attention to his studies to concentrate on rugby, where he played regularly for the Cambridge Sixty Club XV, the normal second Cambridge XV. In wartime, the normal blues were not awarded for playing in the traditional Varsity Match, which could not be played at Twickenham, as it would have presented a tempting target for German bombers. So matches were played against Oxford in December and in Cambridge in the following March, with Kelsey being awarded a half-blue for playing in both matches.

In January 1940, Kelsey's tutor informed him that the War Office was seeking mathematicians for the Military Survey Service, adding the following comment "I suspect that they will not know that you are a poor mathematician, but you may have other qualities, which may appeal to them. I suggest that you apply!" He just scraped a third class in the first part of the maths tripos examination in June and was called up for training in Military Survey at Fort Widley, Portsmouth in July 1940. He served as a topographic officer in field survey units in Scotland and, in 1942 his unit went to Algeria and Tunisia with the First Army. He commanded No 1 Topographic Section (518<sup>th</sup> Corps Field Survey Company RE), consisted of some twenty surveyors plus about ten logistical staff, such as cooks, drivers, etc. and, in February 1943, it was detached from the First Army and was sent south towards Tebessa to provide survey support to an artillery unit of the American Second Corps, who had lost their surveyors in the battle at Kassarine Pass, where the German Africa Corps inflicted a heavy defeat to the US forces. For his work there, Kelsey was given a commendation by the US Corps Commander.

In April 1943, during the battle at Medjez el Bab, prior to the capture of Tunis and the end of the North African Campaign, Kelsey was severely wounded during an air raid and evacuated, firstly to the 12<sup>th</sup> American Army General Hospital in Oran and subsequently via a hospital ship to UK. On his return to duty in May 1944, he was involved with the preparation and subsequent distribution of mapping for the invasion of France. However, in November 1944, the then Director of Military Survey, Brigadier Martin Hotine, decided to begin post war surveys of the Colonies and dispatched Lieutenant Kelsey and some twenty surveyors to carry out triangulation surveys in the islands of Barbados and Dominica, West Indies. So, in November 1944, Kelsey departed for the West Indies in a troop ship, returning American Bomber pilots to New York, leaving his wife, whom he had married only in August, behind in London to face the final air raids from V2 rockets. Returning in November 1945, he was offered a post in the Colonial Survey Department, but, as this would have entailed long periods abroad he decided to take a regular commission in the Army.

In 1946 he resumed his academic studies at the Military College of Science, Shrivenham and gained a first class honours external degree in engineering from London University. His subsequent career alternated between survey units in Germany, Cyprus and UK and tours in the professional staff of the Ordnance Survey, with the one exception when, in 1953/4 he commanded a squadron in 32 Assault Engineer Regiment RE, designed to provide experience of service in a regular unit, as opposed to a Survey unit. This was a unique experience for Kelsey and even more so for his wife. Firstly they were allotted an army quarter, which enabled them to live amongst families from differing army units, whereas for the past 9 years since their marriage, they had been obliged to live in rented houses, which was all that was available in post war Britain. For his part, Kelsey found the posting challenging but enjoyable, especially so, when he was chosen to be the commentator during a live television show, pretending to be an expert on bridging in a programme when the regiment was demonstrating such matters to a live audience of several hundred army officers, as well as to the TV audience. Apparently he was selected because his voice sounded good on TV!

In 1955 he was posted back to the professional staff of the Ordnance Survey, where as a major he controlled some 500 surveyors carrying out the final field operations of the Re-triangulation of Great Britain in the remotest parts of North Western Scotland and on the Third Geodetic Levelling of Great Britain. Throughout his subsequent career, major advances occurred in the sciences of surveying, cartography and photogrammetry with the inventions of electronic distance measurement, digitisation of mapping and the complete transformation of traditional geodesy by observations to satellites. Kelsey was active in professional societies internationally, promoting these major advances. In the International Association of Geodesy from 1966 to 1975 he was a member of the Permanent Commissions on European Levelling Network, the Readjustment of the European Triangulation and the Secretary and later the President of the Western European Commission on Satellite Geodesy. He was a member of the National Committees for Geodesy and Geophysics, for Photogrammetry and Satellite Geodesy of the Royal Society and was active in the Royal Institution of Chartered Surveyors and the Photogrammetric Society.

From 1965 onwards he held senior appointments in Military Survey and in the professional staff of the Ordnance Survey and was promoted Director of Military Survey in 1972, initially as a Brigadier and later as Major-General, when

the post was upgraded in 1973 at the same time as the post of Director General Ordnance Survey was finally civilianised.

His rugby playing days were affected by his wartime service and injuries, but in the immediate post war period he played for Richmond and for the county XV's of Kent and Dorset and Wiltshire, and later, when his wartime injuries forced his retirement, he took up refereeing to County standard with the London Society of Referee's. He was Secretary of the Army and Combined Services Rugby Clubs from 1962 to 1967 and was one of the Army representatives on the Committee of the Rugby Football Union from 1966 to 1967. In 1968 he was appointed CBE, in recognition for his services to Army and Combined Services Rugby.

On his retirement as Director of Military Survey in 1977, he continued to be actively involved in professional surveying circles, and from 1978 to 1987, he served as a non-executive director of the UK subsidiary firm of Wild Heerbrugg Ltd, a Swiss company manufacturing surveying and photogrammetric instruments and later also with Ernst Leitz Wetzlar of West Germany.

After serving in Cyprus in the early 1960's, he became an enthusiastic sailor, initially in dinghies but later in cruising yachts, and he cruised regularly to Normandy, Brittany and the Channel Isles. His other main interest was gardening, which he shared with his late wife Phyllis Margaret Smith, who sadly died in 1995. She was a keen member of the Royal Horticulturist Society and together they travelled frequently on tours organised by the RHS visiting gardens in UK and abroad. Fittingly Kelsey had spent recent years looking after the gardens surrounding the group of town houses in a quiet part of Lymington, where they had been resident since 1967. These gardens were mainly designed by his wife and remain as a fitting memorial to both of them. John Kelsey died on 10<sup>th</sup> June 2016 and is survived by his son, Peter, his daughter Diana, his daughter-in-law Stephanie and his only surviving grandchild, Joanna, as his grandson, John Edward, had died tragically, aged 17, in 1995 from a heart attack.

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It is with regret that I have to announce the death of Diane (Diz) Bevis the widow of Pete Bevis (WO1 Photo). Diz passed away on Sunday 17<sup>th</sup> July 2016 at Southampton General Hospital. Details of the funeral will be announced in due course.

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