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“From Ruabon to Rangoon: the 61 Indian
Reproduction Group IE”

Ian Jacobs

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***From Ruabon to Rangoon:
The 61 Indian Reproduction Group IE
Ian Jacobs***

In early September 1942 his captain asked Gunner Ronald Waddams whether he would like to draw a cartoon. Ron explained to his parents that "A.A. Command were asking for specimens of drawing. Apparently they were looking for a draughtsman. The chance of doing a job connected with drawing, of course appealed to me, so I drew the cartoon and it was submitted. The result of this little drawing has just come through. On Tuesday of next week I am to be at Wrexham in Wales, for an interview with the view of me becoming a Lithographic draughtsman in the Royal Engineers."¹ Ron had spent a year at Ealing School of Art and had then worked for a sign company and a lettering studio in London², so his records told his captain that he might be just the kind of man who was needed. Ron's cartoon turned out to be his ticket to Ruabon and on to South Africa, India and Burma.

Ron arrived at Wynnstay Hall,³ Ruabon, north Wales on 22 September. He wrote home: "Tomorrow I am having a drawing test, if I do not pass this, I shall be returned to my unit. As the test consists of a little lettering, I have every hope of succeeding. On passing, I shall be trained as a Litho draughtsman, this will be entirely connected with map work; everything points to an interesting job. ... I have made several pals already. They all seem excellent fellows, and all connected with painting and art. I should be very happy."⁴

Ron passed the test and was now Sapper Waddams. On 30 September he started a course which "normally takes nine weeks to complete, though now it is being crammed into about a month. This means quite a lot of hard work and studying. Consequently, every night after tea we have gone back to the class room and done an extra hour and a half's work."⁵ The course began with "a lecture this morning on the principles of lithography. After this we were given a [zinc] plate each to practice on. I should like to know why they put Gum Arabic on the plate when the drawing is finished. We were given a reason but it was not very clear. The book Dad gave me on survey will be most useful, even the instructor has borrowed it."⁶ His father responded "Gum Arabic is used because it can hold moisture. If it happens to dry, the plate can easily be sponged all over (with a gummy sponge) without injuring the work."⁷

¹ RH Waddams, Fort William, 18 Sept 1942.

² RH Waddams, biographical notes.

³ For the history of map training at Wynnstay Hall see WN Saunders, 'Wynnstay Hall and the School of Military Survey', *Sheetlines*, 106, 21-23.

⁴ RH Waddams, Survey Training Centre, Ruabon, 22 Sept 1942.

⁵ RH Waddams, Survey Training Centre, Ruabon, 16 Oct 1942.

⁶ RH Waddams, Survey Training Centre, Ruabon, 30 Sept 1942. Ron's father, Bert Waddams was a draughtsman at the well-known Arts and Crafts printer Emery Walker Ltd. One of his specialities was drawing maps. Several of Ron's letters ask his father to explain something he had not fully understood in class.

⁷ HC Waddams, *Lithography*, October 1942.

By 5 October the trainee mapmakers had “completed the map [they were] working on, it has turned out quite successfully. Much of our time has been taken with the study of scales and their construction; these have given us severe headaches. To achieve this end we have been delving into the forgotten mysteries of decimals and geometry. For Dad’s technical ear, I can now reduce the Representative Fraction to a graphic scale or to a written scale. At first I found it a little difficult to grasp the figures, but I have soon picked it up again.”⁸ A week later, while continuing to practice on plates, the class was learning “about grids. This meant more headaches, but through a mass of information, daylight is dawning. Our work is restricted to army grids or the Modified British Grid System. During this coming week we are going to draw some grids for ourselves. Last week we had a little test. We had to construct a map from instructions given, showing necessary contours and conventional signs. My drawing was correct in all ways.”⁹

By 16 October the class had progressed to “working on a very fine map. The work on this is extremely delicate and calls for much painstaking. The lettering too, calls for the utmost skill, it is tiny stuff mostly Bodoni italic; you can imagine it is very tiring to do, especially after so long a time without practice. Working on a zinc plate adds more difficulties, the main one being the correcting of mistakes. Later on, I may be able to have a proof taken of my work, so that I shall be able to show you.” The study of grids had “progressed to the construction of a sloping grid.” One class “dealt with the permanent offset on the plate, that makes it possible to draw each colour separately on each plate. To do this they have a special process, which has not yet been released for general use. As Dad knows, the offset that is usually obtained is not permanent. I will explain this new idea when I see him. Another lecture was on the Helio[type] process, and the Gum reversal or Vandyke process.”¹⁰

The following week, “We have passed quickly onto the study of projections in their various forms and complexities. A brief outline of latitudes and longitudes has been given to us; with an even briefer description of grid north, magnetic north and true north; to say nothing of all the little odds and ends that have been thrown at us. The trainee mapmakers also visited the presses of “the mobile printing unit, I had better not say anything about them here, as they are pretty secret. But you can take it from me that it is a most excellent outfit. I also watched a Crabtree Rotary machine working. The opportunity was also given me of following the gum reversal process through its various stages.”¹¹ In early November the students were sent “into the grounds, with paper; scales;

⁸ RH Waddams, Survey Training Centre, Ruabon, 5 Oct 1942.

⁹ RH Waddams, Survey Training Centre, Ruabon, 11 Oct 1942.

¹⁰ RH Waddams, Survey Training Centre, Ruabon, 16 Oct 1942. The Vandyke process, invented by Ordnance Survey, involved a light-sensitive layer on the zinc plate. ‘Gumming out’ was used on zinc plates to achieve effects such as stipple: personal communications Rob Wheeler 06 April 2021 and Richard Oliver 9 April 2021.

¹¹ RH Waddams, Survey Training Centre, Ruabon, 24 Oct 1942.

protractor; and prismatic compass; and have surveyed and constructed a map of the lake here.”¹²

Outside the classroom the men at Ruabon had plenty of activities to fill their days. Army duties included fire picket, 15 minutes of PT each morning, and every Tuesday there was bath parade. The troops took the train eight miles to the Whitehaven colliery baths. They were also prepared for combat: a week of gun drill and a week of firing. In November they were taught battle tactics, “showing how we should defend ourselves if ever the need arose”, and staged an attack on the railway station. The week ended with manoeuvres with the Home Guard. The lorry transporting Ron and his colleagues broke down, obliging them to walk. At Greenfield, on the estuary of the River Dee, the cartographers found themselves under attack. “[A] lorry load of Home Guards came streaming across a field towards us. We immediately scattered and went to ground. We had some little crackers to give the effect of fire, but this did not impress the guardsmen, who came pouring down and captured us, although we tried to explain that we had shot them, but they would not have it.”¹³ Free time was spent at dances, in the camp or in the village, the chief attraction being the local girls, or at the cinema in Wrexham.

Ron’s training finished at the end of November and by 3 December he had been “mustered as an A2 tradesman, and my total wage is five and three a day.” “The No 1. Reproduction Group, is a small company just being formed, and it is this my pal and I have joined. Until it has been properly formed and equipt (I think that word is misspelled) we are attached to another company ... Our quarters are in the house of the Duke of Bedford, in Ampthill Park. It is quite a large house from what I have seen of it. I am sleeping in a room that must once have been one of the servants’ rooms at the top of the house.”¹⁴

A few days later Ron was able to tell his parents more about his unit: “I can now define my position more clearly. The No.1. group to which I belong, comprises of about thirty men, printers and draughtsmen. This is a complete little production unit, or one little firm, if you like. And when we have the necessary equipment, we shall be drawing and producing maps. This is about one of the best jobs I could get into. For unlike the ordinary field survey units, we are not mobile. Our job will be to produce stock maps, so if ever we go abroad we will be stationed at some base or depot. You may remember me explaining the work of men in the field survey, who print new information on maps, that is obtained from the Topo. Surveyors or from air survey. When I was with you I knew nothing of the Reproduction Group idea, as it is quite a new thing. Imagine how

¹² RH Waddams, Survey Training Centre, Ruabon, 3 Nov 1942.

¹³ RH Waddams, Survey Training Centre, Ruabon, 29 Nov 1942.

¹⁴ RH Waddams, No.1 Reproduction Group, Att. 14th CFS Company R.E., Ampthill, Bedfordshire, 3 Dec 1942.

cushy and enjoyable it is going to be, just working with a few men. I am certainly in luck again.”¹⁵



Ron Waddams (1920-2010), Self-Portrait, oil on canvas, probably painted in Rangoon in 1946. He wears the army glasses issued to him at the Survey Training Centre in Ruabon in October 1942, and the Australian style hat issued to the 61 Group in January 1945 before entering Burma.

By 18 February 1943, Ron knew that his unit was to be sent overseas. “Naturally, I am very excited with the prospect of my future, for I can see extremely good and interesting times ahead of me. When I return I shall never regret going. I expect to go to one of two places, and neither of these is an active front. Judging by the nearness of the end of war, I should not be away for longer than a year.”¹⁶ The fortunes of war proved Ron to be much too optimistic. He would not see home for three and a half years. As he prepared for his departure, the commanders of allied forces that had suffered a disastrous defeat at the hands of the Japanese and their Thai and Burmese allies in 1942 were preparing the Burma campaign. His unit, now the 61 Reproduction Group IE (Indian Engineers), would be called upon to produce the maps used to

plan battles in Burma. Ron was to be in Rangoon Friday 10 August 1945 when news of the Japanese surrender arrived. On 26 August he witnessed Spitfires escorting two Japanese planes carrying Lieutenant General Takazo Numata to the formal ceremony of surrender of Japanese forces in Burma. Ron’s unit printed a leaflet in Japanese to be distributed to enemy troops still in Burma to encourage them to stop fighting: “Special Notice. Lieutenant General Numata, Chief of Staff of the Southern Expeditionary Army General Headquarters, arrived in Rangoon on August 26 to discuss the withdrawal of the Japanese Army from Burma. The photo on the reverse side is of Lieutenant General Numata signing the treaty in the presence of the Chiefs of Staff of the Allied Forces.”¹⁷

At the time of the surrender, Ron was busy designing a booklet, *Finale*, published by his unit in September 1945 to record their “travels & trials”.¹⁸ They had sailed from Greenock in February 1943 and after brief stops at Dakar, Sierra Leone and Capetown, reached Durban, where they waited in Clarewood Camp

¹⁵ RH Waddams, No.1 Reproduction Group, Att. 14th CFS Company R.E., Ampthill, Bedfordshire, 7 Dec 1942.

¹⁶ RH Waddams, No.1 Reproduction Group R.E., 18 Feb 1943.

¹⁷ The leaflet is in one of Ron’s photo albums.

¹⁸ *Finale*, Rangoon, 1945. The centre spread is a map of the 61 Group’s travels.

for a ship to take them on to Bombay. They arrived in India on 11 June. From June 1943 to January 1944 they were stationed at the headquarters of the Indian Survey in Dehra Dun, in the Himalayas. February to August 1944 found them in Thondebavi, just north of Bangalore. In August a long journey by train and river boat took them closer to the front line at the 14th Army HQ in Comilla. In February 1945 they arrived at Imphal on the Burmese border, where until late April they worked 24 hours a day to produce the maps used by commanders to direct the successful campaign to defeat the Japanese in Burma. On 28 April 1945 they entered Burma. In *Finale*, Colonel C. A. K. Wilson of the 14th Army noted: "When we heard that 61 Rep Group was coming to join Fourteenth Army in August 1944 we made a few discreet enquiries and were told that it was a first class, efficient unit. It has certainly lived up to its reputation. It stepped straight into high production, and maintained it until the end of the campaign. The first rate standard of quality has never been lowered. With the other Rep Groups, it efficiently defeated the prognostications of our pessimists by successfully taking its heavy equipment and plant 1500 miles overland from Comilla to Rangoon."

The histories of the Burma campaign do not mention the part played in victory by the cartographers of the Rep Groups, but the first thing General "Uncle Bill" Slim did when he was appointed to command Allied forces in Burma in 1942 was to take a map of Burma and reduce it in his mind "to a rough diagram with the distances between the main places marked". A map of the current situation was permanently available in the War Room of his HQ and Slim's "practice [was] to visit my War Room every night before going to bed, to see the latest situation map". Maps captured from Japanese units were a valuable source of intelligence concerning enemy intentions.¹⁹

Ron Waddams preserved 19 maps from his years in the 61 Rep Group. For example, *Situation Sep. 1944*, was printed in Comilla, shortly before the beginning of the offensive that would lead to the defeat of the Japanese army in Burma (*figure 1, pxx*). It showed the positions and numbers of enemy troops (principally Japanese, but also the Burma National Army led by Aung San). Notes provided commanders with additional information, for example: "2 Div[ision] moved to Salween Front end Aug 44 for counter offensive ordered by Gen. Kimura on Kawabe's relief by Gen. Kimura in Sep 44. This operation was cancelled, and main body 2 Div moved to reserve in Lower Central Burma." Another note stated that the "Japanese Air Force [had] 80 aircraft in Burma. Total 450 aircraft in S.E. Asia. Total fighting T[roops] 78,000 replacements coming in at rate 7,000 per month. L[ines] of C[ommunications] T[roops]. 100,000".

Another map (*figure 2, pxx*), *Enemy Situation Immediately After Crossings (by 20 Div., 7 Div. & 2 Div.) of Irrawaddy: - 20 Feb '45*, printed in Imphal, documents a critical point in the Burma campaign. Slim's plan was to convince General Kimura that his main objective was Mandalay, while in fact he intended to direct his principal attack to capture Meiktila to the south. This involved perilous

¹⁹ Field Marshal Viscount Slim, *Defeat into Victory*, London, Pan Books, 2009, pp.25-26, 161, 396, 478-479

multiple crossings of the great Irrawaddy River.²⁰ This map shows the various bridgeheads established by 14th Army troops despite the opposition of the Japanese forces waiting for them. Flags mark the various headquarters: Slim's 14th Army HQ in Monywa, 33 Corps HQ directing the feint to attack Mandalay. 4 Corps had its headquarters at Myitche for the critical crossings to the south to advance on Meiktila. As the map shows, 48 and 63 Brigades and the 255 Tank Brigade had already broken out from the bridgehead at Nyaungu to seize the Myingyan-Meiktila railway line.

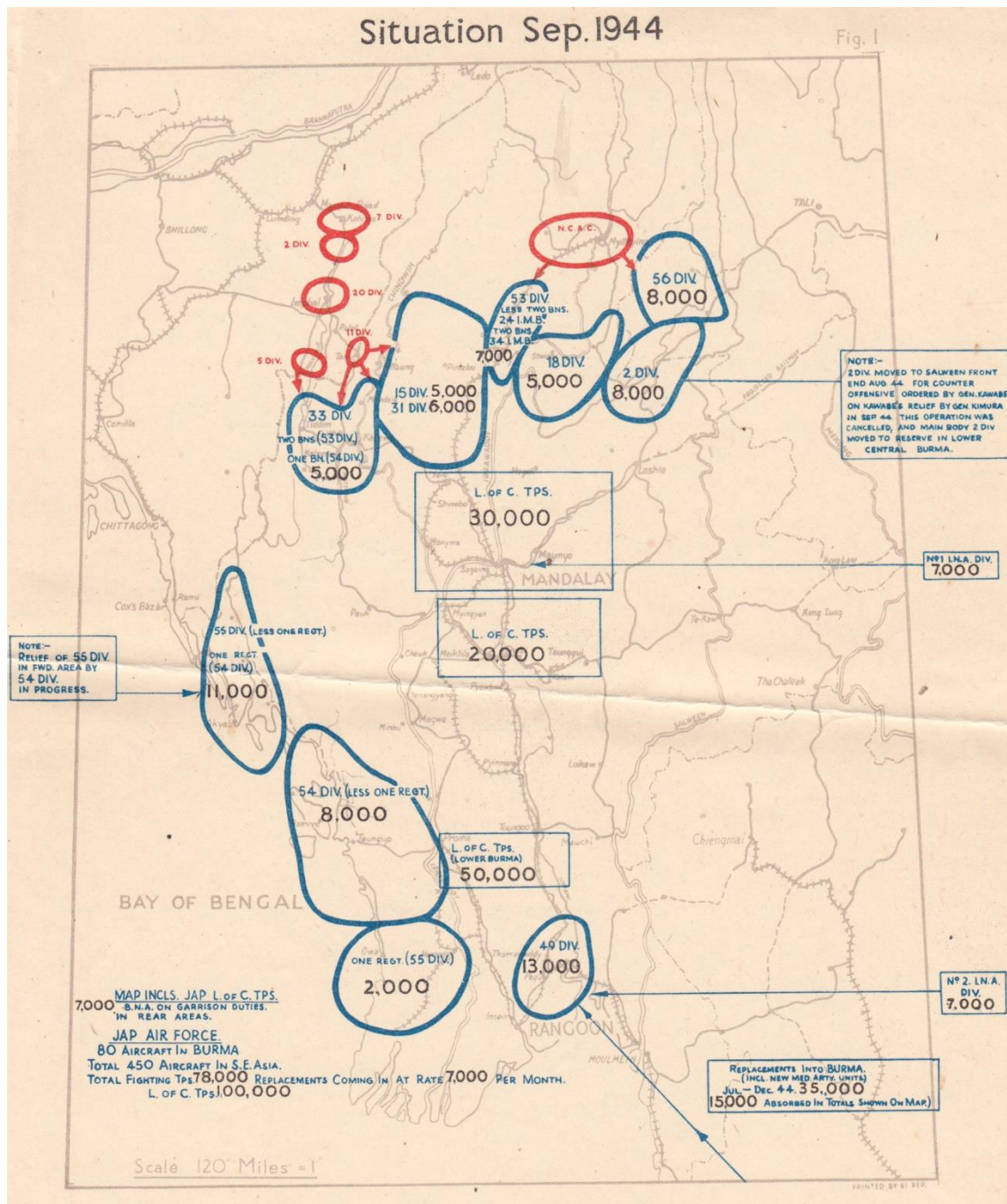


Figure 1

²⁰ Slim, pp.469-470, 472-473, 476

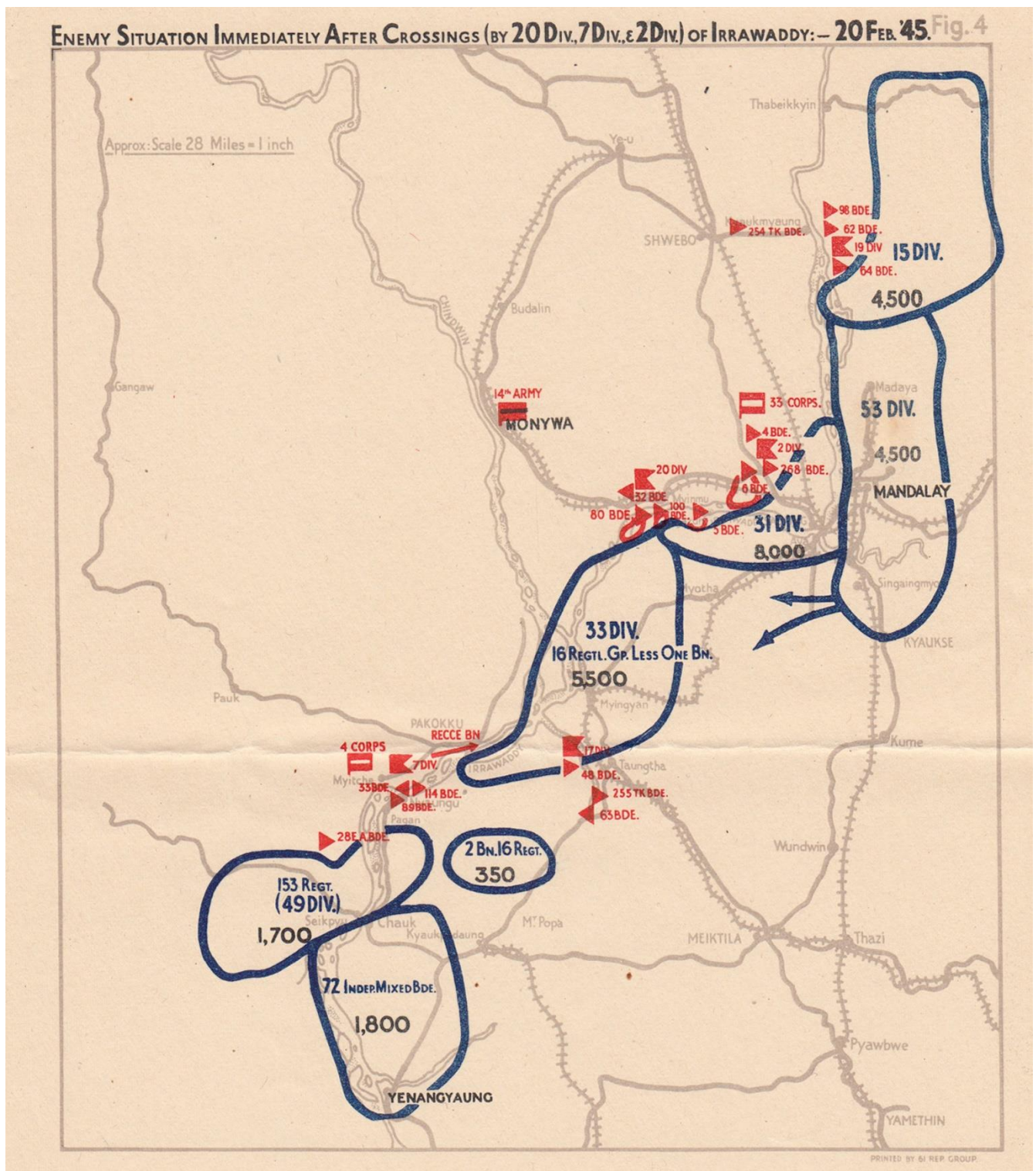


Figure 2

In the river port of Kalewa, during a halt in their journey to Rangoon, the 61 Group printed *Japanese Dispositions 10 May '45 After Capture Rangoon* (figure 3, pxxx). The Japanese had been roundly defeated after the crossings of the Irrawaddy, and 15 Corps had occupied Rangoon on 3 May. But the imperative of racing to Rangoon to beat the monsoon rains left substantial numbers of Japanese troops at large in several parts of Burma. As Herbert Holland observed in *Finale*,

the 61 Group passed through Toungoo on 29 May and “from then on we had to be on the alert, as the Japs were still operating either side of the road”. The map makes the risks that Herbert referred to graphically clear. Between Toungoo and Pegu 5,000 lines of communications and 2,500 fighting Japanese troops were to the west of the road to Rangoon. To the east were 29,500 remnants of the 33 Army, and to the south of those elements were a further 20,000 Japanese army, air and naval troops.

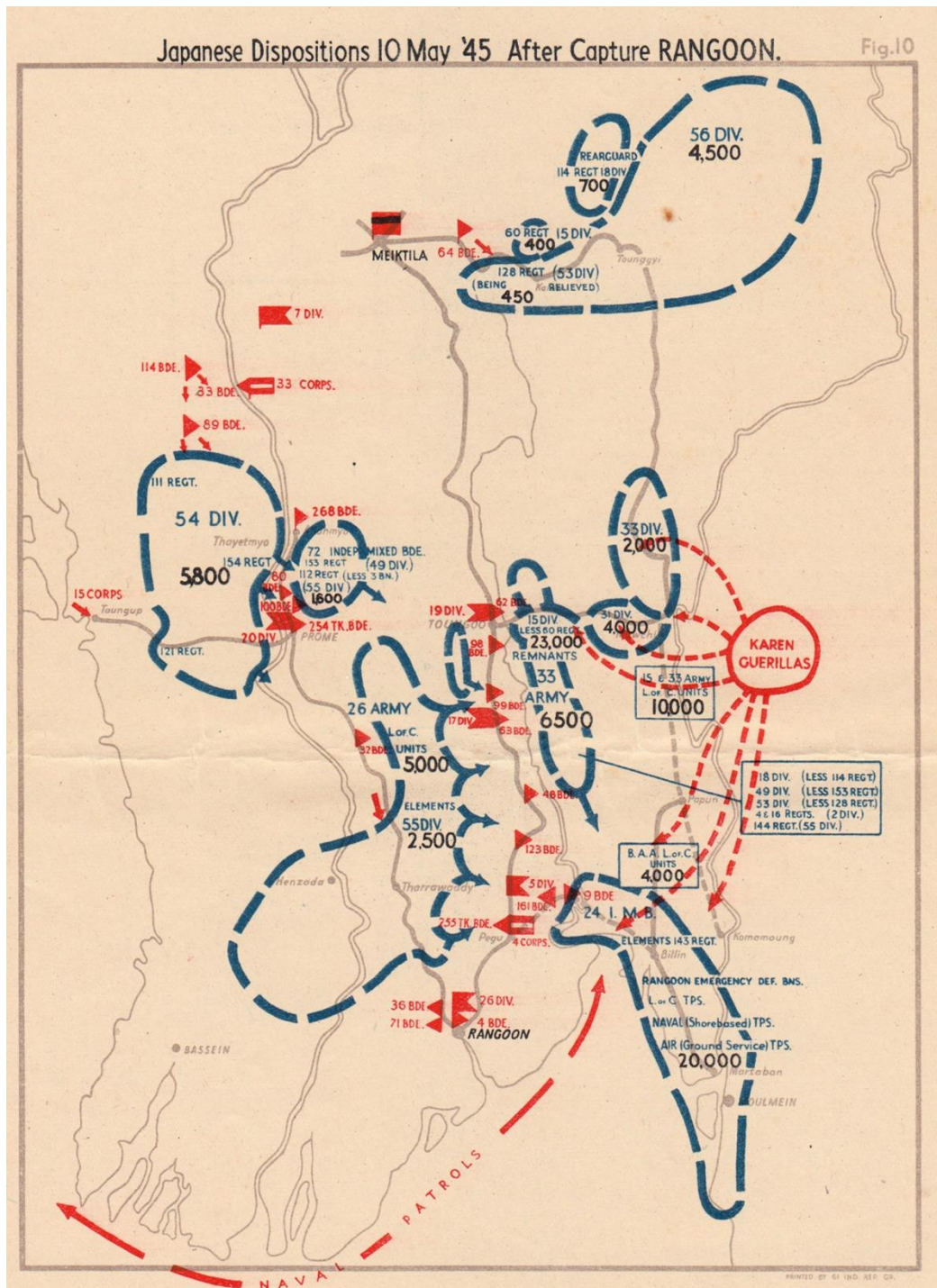


Figure 3

Ron also brought home four large detailed maps of Burma and the wider area; India, Siam, French Indo China and China, presumably used as reference maps. There is also a map of Burma printed on red silk, because, Ron explained to me, paper maps disintegrated in the monsoon season.

A photo of the Group, taken in Rangoon, shows 64 men, British and Indian.²¹ The programme printed for Christmas celebrations in 1944 and *Finale* identify 37 British members of the Group.²² The non-combatant Indians included tradesmen, while others took care of “the common fatigues of ordinary army life”, such as washing and sweeping, and drove the trucks.²³ Some of the British contingent had been with the Group since Ruabon, others had replaced those who had been promoted to other duties. A humorous piece in the Christmas 1944 programme, when the Group was working in Comilla in the hot lowlands of East Bengal, indicates how the unit was organized. The commanding officer, was Captain Edward (‘Eddie’) Baker. The orderly Les Wilde started the day with First Parade, and, with Stan Ward, managed the office. Jobs arrived as base maps on Kodatrace produced by Indian colleagues, which were passed to the Photo Department, manned by Jack Charlesworth and ‘Tookey’, operating in a trailer. Here faults (“pin-holes”) in the negative were corrected with ‘semi-opaque’. In a *basha*, a large thatched bamboo hut, where the negative was examined with a ‘shiner’, or light box, some nine draughtsmen worked. One of them was “young Wads”, Ron Waddams. The *basha* also housed the generators. Plates were made and scrubbed with sulphuric acid for reuse in the trailer where about seven platemakers worked. There were ten printers working on at least two machines. Andy Howe was the maintenance man of the printing department, always ready with his “hammer, wire and pliers”. Ted Carigeit was the senior of the four men who ran the stores.

These men made maps in the cool of Dehra Dun in the Himalayas, the tropical savannah climate of Thondebavi, the intense heat and humidity of Comilla, humid subtropical Imphal, where production ran 24 hours a day²⁴, and tropical Kalewa. In Comilla, the men lived in a *basha* roofed with thatch where rats made comfortable homes and would descend at night to gnaw the clothing of anyone careless enough not to keep his clothes in bed under the mosquito net.²⁵ To produce accurate maps in these conditions, in less than luxurious accommodation, under the pressure of deadlines imposed by military exigencies, required team work and considerable professional skills. Clearly, the Ruabon course had trained the 61 Group to a very high standard.

²¹ In one of Ron’s photo albums.

²² *Christmas Programme 1944 Souvenir*, Comilla. *Finale*.

²³ *Christmas Programme 1944 Souvenir*. RH Waddams, 61 Ind. Reproduction Group, 31 July 1944; 31 June 1945.

²⁴ *Finale*

²⁵ *Finale*