NRAO ONLINE 12

Epilogue-Darwin 1942[1]

The major failures that lead to the Darwin radar disaster had their origin in a remarkable lack of coordination and cooperation between RPL and the RAAF in early 1942. In subsequent accounts over the last 75 years, a number of authors have placed the blame squarely on the RAAF; this is hardly justified. In late 1941, there was chaos as the Japanese advanced towards Singapore. RAAF had many priorities, including aircraft and early warning radars. Delivery of radars from the US was not expected before mid-1942 and design of a local set was stalled by difficulty of getting overseas transmitting valves. At this point, Piddington's innovative AW set and the crash production programs at RPL and HMV [His Majesty's Voice electronics company) came to the rescue.

But, starting 31 January 1942, as the second of the RPL manufactured sets was sent to Darwin, major problems developed. The fundamental causes were (1)Pither's lack of interest in RPL in the preceding months, (2) the failure to appoint a senior RAAF officer with authority to secure priority on services and communications, (3) a failure to inform the RAAF leadership about the detailed capabilities and methodology, and (4) a fundamental flaw in leadership of the RPL in failing "to endure that equipment loads at Richmond were properly co-ordinated, within specified aircraft limits and to supervise aerial erection [and adjustment, such as matching the dipoles] and installation of basic equipment in Darwin."[2]

The role of Jack Piddington was crucial.[3] But again, his own account changed over time, clearly upsetting many of the men still alive in 1967 at the time of the 25th commemoration of the Darwin attack. (NRAO ONLINE 9). Harry Minnett's balanced assessment of Piddington's role illustrates the complexity of events in 1942. However, his criticism of Piddington is quite muted. Certainly, the RAAF personnel were hurt by the implied blame which became evident during the 25th anniversary of the attack in 1967.

Minnett et al (*Boffins*, 451)[4]:

[1] See NRAO ONLINE 9 31RS for details of the events of February 1942 at Darwin
[2] Minnett, Alexander, Cooper and Porter (Boffins,1999, p.448-9)
[3] Ibid
[4] Ibid

> The innovative AW set was probably Jack Piddington's most significant contribution to Australian wartime radar. When later combined with a new light-weight aerial initiated by Pither, the result was the LW/AW set that became famous throughout the Southwest Pacific. However, Piddington remained disillusioned that the Services had not earlier appreciated the potential and need for air warning radar. He was especially bitter that the Darwin AW had not become operational until seven weeks after it had been handed over to the RAAF in Sydney, and even then, only with his help. His account of the situation that he had found in Darwin was not balanced by an appreciation of the early problems, and upset many of the RAAF men at 31RS who had done their best under difficulties not of their making. But his comments on the delay in calling for help after the bombing remain valid. Piddington's main criticism was directed at higher levels where lack of vision had led to the crises in the last quarter of 1941.
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> Piddington wrote Pither just after the 25th Anniversary controversy on 23 March 1967, perhaps indicating that he was willing to admit that fault lay on both sides: "Cooper and I were there [at Darwin) ... and….we have speculated on how much sooner we might have had an operational set with closer co-operation."

Many authors have given detailed accounts of the Lowe Commission hearings of March 5 to 10 (Darwin) and 19 to 25 March 1942 (Melbourne) by Justice Charles L. Lowe, set up by the Curtin government to inquire into the circumstances and response to the 19 February 1942 attack on Darwin. A major issue was the "Adelaide River Stakes", the mass exodus in the subsequent days to the south. (Lockman, 1966, p. 155-176). Adelaide River, 113 km south of Darwin, was the destination for many civilians and some military (said to have included 278 RAAF personnel) who fled Darwin in a disorganised fashion. The material in NRAO ONLINE 9 contains some details about the Lowe Commission and the absence of a working radar station on 19 February 1942.

On 30 May 1942, the new Chief of the Air Staff, Air-Vice Marshal G. Jones (succeeding Sir Charles Burnett in May 1942) wrote a letter of appreciation to Madsen, acknowledging the major contributions by CSIR RPL in 1941-1942. The letter (signed by the new Chief of the Air Staff) was only secured by a "blunt intervention" from Major General Whitelaw of the Army; possibly Pither or others in the RAAF had originally objected to the acknowledgement.[5] Air-Vice Marshall G Jones wrote to Madsen

[5] Minnett, Alexander, Cooper and Porter (*Boffins*, 1999, p. 449-50) report that the source of this story is a note written in Piddngton's handwriting on his copy of the letter, forwarded by Madsen. Certainly, this experience did nothing to calm the antipathy between Piddington and the RAAF. Letter from Jones to Madsen, NAA C3825/1 A6/1. Madsen wrote to Jones on 6 June 1942 pointing out that "Prof. F.W.G.

> I would like to express the appreciation of the Air Board for the work done by your laboratory in producing the AW equipment. In December last[1941] after the entry of Japan into the war, we were in a very precarious position in that practically no warning equipment existed in Australia and there was no prospect of securing any. It was at this stage that the Radiophysics Laboratory came to the fore with a rush job made up from equipment already available in Australia which later became the AW. The first of these equipments were installed at Darwin and has been an outstanding success. I would be glad if you would convey to the members of the Laboratory concerned and particularly to Dr Piddington who, I understand, designed the set, the thanks of the Air Board for a very effective piece of equipment.

In 1942, Madsen was anxious to stress the important role played by CSIR in formulating the need for air warning before Pearl Harbour and Darwin. In a letter to the Chief of Air Staff on 6 June 1942 he reiterated the success of White in 1941-1942 in foreseeing the urgent need for long-range warning sets and initiating developmental projects accordingly:

> I would particularly like, however, to draw attention to the fact that Professor F.W.G. White carries the responsibility of directing the work of the Radiophysics Laboratory, and that the successful results which have been obtained arise primarily from his foresight in recognising the need of such equipment, and his directions of the work of the Laboratory, particularly that of Dr Piddington. As will be seen in reference to the Minutes of the RAB, Professor White most persistently urged that this work [long-range air warning] should be taken in hand.

Madsen's Grilling by the War Cabinet Monday 26 January 1942[6]

The year 1942 was to prove a "traumatic" period for the RAB (Radiophysics Advisory Board). Conflicts and tensions had developed in 1940 and 1941, not least of which was the security breach of early 1941 by the then Chief David Martyn. (See NRAO ONLINE 7) He had been

White carries the responsibility ... of the RPL., and that the successful results which have been obtained arise from his foresight in recognising the need of such equipment and his direction of the work of the Laboratory, particularly that of Dr Piddington." On 10 June 1942, Rivett wrote Madsen: "I think it might do our Minister good to see what splendid fellows you are in the RPL, so I am sending a copy to him [Dedman, the Minister of the CSIR]."

[6] Most of the material on this topic is taken from Evans (RAB,1970, p. 84-87) and his Annexures 14, 27 and 28. Schedvin (1987, p. 264-265).

demoted and ceased being Chief of RPL in October 1941[7]; the Military were displeased but realised that Martyn could not be dismissed since he "knew too much". Clearly RPL had lost credibility with the Military; it was Army Intelligence that had uncovered the serious consequences of the ill-conceived liaison between Martyn and the German citizen Ella Horne.

Conflicts between the RPL and the PMG had also been exacerbated by Martyn's abrasive management style; since Fred White arrived in March 1941, relations between RPL and the PMG (McVey and Witt) had improved. Witt had been especially antagonised by Martyn.

After the Pearl Harbour attack on 7 December 1941, the Australian Military realised that their previously chronic neglect of long distance air-warning was a major oversight. Thanks to Piddington at RPL, a short-term solution, the AW MkI set, a modified version of a Shore Defence set, was available. A handful of these (and one British CHL at Newcastle) were in place in NSW at Dover Heights and Kembla (later Kiama) and Tomaree (Port Stephens). By early February 1942, a small number of sets were to be available for the North, Darwin, Port Moresby and Hammond Island. Since four of the same Japanese aircraft carriers were by this point on their way to Darwin, the Darwin radar station 31RS was essential. As we have seen, this station was finally available, after substantial delay, on 22 March 1942.

Thus, the RAB and the RPL in particular were stressed institutions. The Pacific War and the increasing threat from Japan were sources of anxieties and fears; the war was now at the doorstep of Australia. Protection based on vast geographical isolation seemed less assuring than when the Australian war of 1939 was being fought in Europe and North Africa. Already the 8th Division in Singapore was about to be lost. Soon Australia would be attacked in Darwin and even in Sydney harbour in the submarine attacks of June 1942. Evans (RAB, 1970, p.84) has summed up the situation in early 1942:

> With these new pressures of ugly responsibility, it was less difficult to understand that the Chiefs-of-Staff on the one hand, and the Cabinet on the other, suddenly saw Madsen's struggling Radiophysics Advisory Board in an entirely new light. Where, up to the present, the Board had largely needed to do the urging, from Pearl Harbour onwards, the Government and the Services reversed the roles, and were more than ready to find scapegoats to explain away deficiencies in defence equipment.

An additional complication was the new Australian Labor government of Curtin, Evat, Beasley, Dedman et al. Since 7 October 1941, this new team took over from the group of Menzies,

[7] An additional complication was the absence of Sir John Madsen for the period March to December 1942. Fred White was brought to Sydney from New Zealand but was thrown into the confused cauldron at RPL after the Martyn problems of 1941

Casey, Holt, Earl Page, (Coalition of United Australia Party-Country Party), who had established a good working relationship with Madsen and Rivett.

On 16 January 1942, F.C. Shedden, Secretary of the Department of Defence Co-ordination wrote Madsen asking for a report on the status of RDF. Madsen quickly prepared an 11-page report ("The Present Position of Radio Location Work in Australia") followed by a six-page report from the PMG on the production status of RDF equipment. On 24 January 1942, Madsen was called to be in Melbourne the following Monday, 26 January at 1200 noon, to meet the War Cabinet. Nine and a half hours later in the evening, he was received for a one-and-a-half hour grilling (he told Rivett he "was on the grid"), the main examiners being not Curtin but Dr H.V. Evatt (Attorney-General, Minister for External Affairs) and Mr Jack Beasley (Minister for Supply and Development). The original reports from the government were Annexures in the Evans volume (RAB, 1970), but later deleted due to the confidential nature of the matter. Fortunately, David Rivett talked at length with Madsen after the meeting and wrote a detailed letter to J.S. Duncan at the Australian High Commission in London on 11 February 1942. Rivett:

> In effect they said that he (Madsen), as Chairman of the Radiophysics Advisory Board, was responsible for seeing that Australia was adequately supplied with all the RDF gear which she needed. The position at the present time was that she had very little of this gear while, with the entry of Japan, the need for it was obvious and urgent. What had he, as Chairman, to say to this charge? Where had his arrangements broken down - and so forth. The position was, of course, almost grotesque because, as you know, Madsen has never been in charge of production of equipment, beyond the prototype stage for which our R.P. Laboratory is responsible; nor has he any say whatever about the requirements and the orders of the Services.
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> I was not present at this interview, but I gather that Madsen handled matters very well and certainly resisted any temptation to lay blame upon others who might then have been called in for similar treatment. The plain fact, which was not in the least understood by the Ministers concerned, was, of course, that Britain herself had been hard put to it to meet her own immediate needs, and even had we pressed hard, it would have been impossible for her to have provided us with the gear which now, in retrospect, was considered by the political people to be necessary. Moreover, in many lines, working apparatus had not until quite recently been developed; in some cases, in fact, improvements are still only at the experimental stage.[8]

[8] Evans (RAB,1970, p.86)

Madsen realised how very essential it was that there should be no more misunderstanding about responsibility for production [PMG] and operation [CSIR] of actual RDF gear.

According to Evans [RAB,1970, p.87],

> [The minutes of the meeting] reveal nothing of the emotional tension of this situation, but they do confirm that there were no effective steps that the Government could take in R.D.F. which had not already been thought of. The Cabinet had clearly picked on the wrong man in Madsen, who had voluntarily shouldered the R.D.F. burden with dedicated and intelligent application, and in this field might well boast the clearest conscience in Australia.

Rivett concluded his letter to Duncan with good news, Evans (RAB, 1970, p. 87):

> Ashamed in retrospect of their performance, members of the Cabinet approached Madsen individually in private after the meeting and apologised to him. The whole interlude had been ugly, and those with a feel for democracy might have hoped that a belated Government interest in the Board's affairs could reasonably have taken a less aggressive and more encouraging form. However, this represented the mood of the current times of emergency in Australia, and the confrontation at least had in [*sic*, the?] merit of informing the Cabinet on the prevailing R.D.F. situation. This was to prove of immediate benefit in reducing the heat and recrimination inherent in the approaching catastrophes of the Darwin raids [only three weeks in the future].

In February 1942, White and Rivett had an exchange of several letters about whether RPL could, in the emergency of the post Pearl Harbour era, produce a handful of prototypes to fill in the gap until the PMG or HMV could begin to produce "production" equipments.[9] Rivett was quite concerned that RPL was overstepping its prerogative in going beyond their role as the "designer" of the radar sets. The experience of Madsen at the hands of the War Cabinet on 26 January 1942 had increased his [Rivett's] doubt. On 8 February 1942, Rivett wrote to White:

> … [O]ne may well ask whether we are wise to undertake any responsibilities in this direction [production] unless the circumstances are exceptional. They may be the case: I do not know … Madsen's distressing experience with certain members of the War Cabinet last week [26 January] makes it advisable for the Executive to protect CSIR rather carefully, since such experience may lead to individuals feeling forced to

[9] In WWII, the radar equipment was the plural term *equipments*.".

> withdraw from further association with ruling authorities. We cannot afford to lose anyone in that way.[10]

White responded on 9 February 1942 in a *mea culpa* letter, apologising for organising production with an outside firm—HMV—without the permission of the CSIR Executive. The idea was that HMV would only produce "certain parts in order to accelerate the manufacture of **experimental prototypes [our emphasis]**… and in fact a good deal of the work of assembly and adjustment will be done in our own workshop." [11] On 13 February 1942, Rivett wrote again to White. The issue was settled; Rivett accepted White's apology.

> There can be no question about the course you have pursued, but I think you understand why, in light of recent events, it seemed to me advisable just to give a warning about our giving the appearance of an entry into production. If we continue to use the term "pre-production models", even the meanest intelligence should not be able to misunderstand us.

The turbulent year 1941 and the first months of 1942 had tested the CSIRO Division of Radiophysics. The leadership of the RPL had suffered a blow in March -July 1941 when the scandal with Ella Horne (German citizen) brought down David Martyn as the Chief of RPL; the successor Fred White (recently arrived from Christchurch, New Zealand) learned quickly as he became a strong, effective leader of RPL. In the course of 1941, the group of energetic young scientists had succeeded in creating a successful Shore Defence at 200 MHz, to protect Australia from a threat that did not materialise, Japanese battleships, cruisers etc. In December 1941, this system was modified to work as a make-shift Air-Warning system. But the attempts for radar defence at Darwin failed on 19 February 1942. The scientific leadership of Piddington, Pawsey and colleagues was now poised to create the most successful defensive weapon of WWII from Australia – the Light-Weight/Air-Warning radar (the famous LW/AW portable system).

However, the Australian scientists had not learned an important lesson from the British: close collaboration with the Military was essential. Bowen had stressed this point in late 1945 after he had been in Australia for about a year; in June 1946 he would become the Chief of RPL at age 35. Bowen wrote in October-December 1945[12] as he described the experience in the UK:

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[10] Letters to and from Rivett, NAA C3825, A6/1.

[11] White and especially Rivett insisted on using terminology that emphasized that RPL was only building prototypes, not production models. Numerous euphemisms were used in correspondence from 28 July 1941 to 13 February 1942: **proto-type apparatus, experimental prototypes and pre-production models**.[our emphasis]

[12] The Australian Scientist, October-December 1945, Vol Viii, p. 33, "Radar at War".

> The success of the scientist in postulating this solution [close association between scientific and military activity] and demonstrating it in a practical form was followed by the next important lesson in the application of science to warfare. It was that the closest possible association must be maintained between scientific and military personnel during the development of ideas to their finally completed form. This collaboration was strongly in evidence right through the development of radar and was twofold in its value. It gave the scientist an appreciation which he did not previously possess of the scope and complexity of military problems. At the same time, it gave the military man an inkling of the processes of scientific thought and method, and incidentally gave him a preview of the instrumental horrors he had to wrestle with in the field. This association blossomed into a mutual understanding and appreciation which among the Allies led to the freest mixing of the soldier and civilian scientist right up to and beyond the front line.

By early 1942, the radar scientists at RPL had achieved an excellent relation with the Australia Army (Whitelaw) but had so far failed with the Royal Australian Air Force. The challenges awaited them later in 1942 as they were forced to find an Australian solution to Air-Warning with portable aerials as they fought the Japanese air forces in northern Australia, Indonesia, Papua-New Guinea, New Britain and the Solomon Islands.

In contrast to the Australian experience, the UK Royal Force had achieved a close collaboration with the radar scientists ("boffins"). The UK solution had led to a remarkably successful Chain Home system during the 1940 Battle of Britain. The Chain Home radar system had been produced by Watson-Watt and colleagues (including Bowen), then fully integrated into the Fighter Command with the Royal Air Force.