

**Pawsey – Public Policy in the Post-War Era: The Role of Secrecy in Research and Atomic Weapons Policy**

JL Pawsey commentary: Australian Broadcasting Commission 1945 and 1946:

[Australian Broadcasting Commission, Radio 22 November 1945]: Can humanity not achieve some success in this vastly important matter of preventing war? This thing is essentially practical if the people of the world detest war.

[Then, 22 April 1946]: ... It is an obligation on scientists to study the implications of their work, and then they have to advise governments on request, and at the same time keep on this question of informing public opinion. Now this has a tacit assumption in it that the advice of scientists is worth something. I'd like to back this idea very strongly ... I think that the application of the clear methods of thinking is the main hope of the world to get out of the difficulty of her present social morass.

**INTRODUCTION- Australian Association of Scientific Workers**

Immediately after WWII, a number of controversial topics were hotly debated in the New South Wales Division of the Australian Association of Scientific Workers (AASW).<sup>1</sup>

In mid-November 1945, the AASW in Sydney discussed the issue of secrecy related to nuclear weapon research. On 18 November 1945, Pawsey sent a letter<sup>2</sup> to David Rivett, the Chief Executive of CSIR. He reported on the complex Sydney AASW deliberations about the desired security policy in the era of nuclear weapons. Based on the discussions at several meetings, Pawsey was fearful that no agreement could be reached: "... I can point out a fundamental difficulty preventing unanimity." There were three possible choices: (1) complete secrecy within each nation. This could lead to world war within six or more years and would likely cause a "serious break on general progress of science"; (2) a worldwide abolition of secrecy without international agreements; and (3) international control of all major weapons. Option 1 was held

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<sup>1</sup> Background material on this organisation- 1939 to 1949- from "Australian Scientists and the Cold War" by Jean Buckley-Moran, p.11 from the collection of articles, Martin, B., Baker, C. A., Manwell, C., & Pugh, C. (1986). *Intellectual Suppression: Australian Case Histories. Analysis and Responses* (North Ryde, Australia: Angus & Robertson Publishers). Also see Additional Note 1.

<sup>2</sup> NAA A9874/85

by Pawsey to be a “dangerous” policy, while they all noted that Einstein had publicised his support for option 3. There were multiple opinions among the Sydney members of the AASW:

Many say that a declaration against secrecy [option 2] is not going far enough; that the only worthwhile move is one leading to world control; further that the holding of the atomic detailed knowledge is a bargaining tool in moving towards that desired end.<sup>3</sup> Others say that world control is impracticable and hence fall into two camps, for secrecy if they foresee imminent war, against secrecy if not.

After this stalemate, Pawsey expressed frustration to Rivett:

My own idea at present is that the most important action which could be taken ... is to obtain agreement between scientists of all countries on general policy, and then make our pronouncements ... I think it is good to have the general question discussed in Australian scientific societies ... and approaches made to overseas bodies with the expressed objective of attempting to form that united front ...

The whole damnable business of attempting to stir up dissension between Britain and US and Russia is just criminal. If ever there was a chance to prevent the outbreak of devastating wars in the future it is now. And it hinges on one solitary factor. That the leaders of the nations, three only, should consider that it is a really important thing to achieve just that.

### **Australian Broadcast Commission Radio programmes in 1945 and 1946**

At the same time, Pawsey was involved in at least two Australian Broadcasting Commission (ABC) radio interviews concerning (1) atomic policy and (2) the role of secrecy in military research.

A few days after the letter to David Rivett, Pawsey participated on 22 November 1945 in a group broadcast on the ABC “The Atomic Bomb and Politics”. This broadcast was the second in a series, the first being on Monday 19 November 1945. During the first programme, two of the major participants were Professor Ian Clunies Ross of the University of Sydney (Dean of the Faculty of Veterinary Science) and a future Chairman of CSIRO (1949, until his death 29 June 1959). Another participant was a well-known German-Australian correspondent Kurt Offenburg

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<sup>3</sup> The concept of “Mutual Assured Destruction” (MAD) was developed in later decades as the Cold War intensified.

[Pawsey spelled the name Offenberg]. Offenburg was a veteran of the German army at Passchendaele (Flanders, facing the Australian troops near Ypres, Belgium), becoming a strident anti-Nazi and later a naturalised Australian after emigrating to Australia.

Pawsey's three pages of typed notes<sup>4</sup> were written just before the 22 November 1945 broadcast. He summarised his impressions of the Clunies Ross-Offenburg discussion earlier in the week. These notes were to be his guide as he presented his ideas. He pointed out that he was not an expert in atomic physics but "from my [extensive] experience in my own field-television and then [WWII] radar [as one of the leaders of the Division of Physics from 1940 to 1945], [I] can form an intelligent estimate of probable development [in the future of nuclear research]."

Pawsey was in agreement with Clunies Ross and Offenburg on four main points: (1) within a few years, major cities like Sydney could be destroyed in a few hours with atom bombs; (2) no adequate defence was available except a prevention of war; (3) "secrecy about the ... bomb will not prevent other nations working on the technique, but will delay this a little"<sup>5</sup>; (4) the only real method of avoiding a war was "to surrender the sovereign authority of each nation" with an unspecified world authority to be established. Pawsey finished with a final thought: "It will be very hard to set up a satisfactory authority."

Pawsey then criticised the point of view of Offenburg as compared to Clunies Ross.<sup>6</sup> The former had voiced a strong opinion that since some type of world order had been tried in previous centuries and always failed, an attempt in the mid-20<sup>th</sup> century would certainly fail. Clunies Ross, as a scientist, had asserted that in the last century science could overcome major adversity in creating new methods and inventions. "... [T]he scientist cannot escape the idea that a thing which has never been done before may nevertheless be capable of being done. He has seen the previously impossible done in his own work much too often."

Pawsey was also deeply concerned by secrecy; he feared that nuclear weapon controversies would spread to all of science.

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<sup>4</sup> Pawsey family archive.

<sup>5</sup> He quoted Churchill's recent statement at the House of Commons debate that with "no information from the US and Britain" the Soviets could develop a weapon within four years. The first USSR explosion was only four years in the future (29 August 1949, "Joe 1", a plutonium device).

<sup>6</sup> Apparently, Clunies Ross had a high opinion of Offenburg. After Offenburg's premature death (age 47) in May 1946, Clunies Ross helped establish a special memorial collection of Offenburg's published work at the Public Library of Victoria in 1947-1948. (Struve, W. (2006). "'Dedicated to the promotion of international understanding': a memorial for Kurt Offenburg at the State Library." *The La Trobe Journal* 78: 56-71.)

The question of the value of secrecy requires continuous emphasis. Remember Mr Churchill's four years.<sup>7</sup> As a preparation for imminent war it is effective, as long term security it is futile ... It is a factor in international discussion. We do not know the details of these or the Russian attitude, but, if we wish peace, the citizens of our countries must make known to all, including Russia, that we wish the path of collaboration and are prepared to make voluntary sacrifices to that end rather than make involuntary victims of ourselves on the altar of war.

Secrecy on a national basis is simply a few years start in an armaments race.

In summary, Pawsey planned to be optimistic about the future. He thought that the "scientific attitude" would prevail.

We do not admit a thing is impossible because it has not been done before. We have a method of thinking, just plain common sense guided by the utmost care in expressing our exact ideas, which has been astoundingly successful in certain branches of human endeavour. Can humanity not achieve some success in this vastly important matter of preventing war? This thing is essentially practicable if the people of the world detest war. And I for one think this is so.

The following year, on 22 April 1946, Pawsey participated in an extensive broadcast at the ABC with moderator H.D. Black. The text is 25 printed pages; presumably the broadcast was more than an hour. The programme was titled "The Nation's Forum of the Air: Has the Atomic Bomb Created a Moral Dilemma for Scientists?" The complete text was published a week later by the ABC on 1 May 1946, at a cost of threepence. The participants were Richard (R.E.B.) Makinson, Pawsey, C.E.W. Bean and W.E.H. Stanner.<sup>8</sup> Makinson was the husband of Rachel Makinson, a scientist with the CSIR (Goss and McGee, 2009, page 201 and 309). Makinson provided a strong plea for international control, stressing that Sir David Rivett of the CSIR was a strong supporter

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<sup>7</sup> The time interval in which the US had a lead in the arms race to develop the atomic bomb starting in 1945.

<sup>8</sup> Makinson was a physicist at the University of Sydney who had been a war-time colleague of Pawsey working on radar related research. Bean was a World War I correspondent who had been at ANZAC cove at Gallipoli, wounded in the latter part of the campaign. After the war he was the editor of the 12-volume *Official History of Australia in the War of 1914-1918*. Bean was extensively quoted in the *Sydney Morning Herald* obituary for Kurt Offenburg some weeks later (16 May 1946). Stanner was a well-known anthropologist at ANU; he is credited with championing Australian Aboriginal people in the post-war era. In WWII, as an officer in the Australian army, he organised "Stanner's Bush Commandos" (called Nackerooks) in northern Australia.

of this point of view. William Wentworth, the notorious anti-communist and soon to be a long-term member of the Australian House (from 1949-1977), was in the audience and voiced his disapproval of Makinson:

Dr Makinson, in view of your advocacy of the immediate removal of all atomic secrecy, without regard to military implications, would you have favoured giving the secret to Nazi science if the bomb had been discovered by the democracies before September, 1939? Now this is a practical question, because it is now clear that the Soviet is essentially a fascist state, and Hitler is being followed by Stalin. It is particularly appropriate to ask you because of your personal association with Communism.

Bean emphasised the problems of possible manufacture by non-government groups:

[If] every Tom, Dick and Harry can manufacture the bomb, [this will bring] serious consequences to the human race. And again, if you tried to allow freedom of investigation and experiment ... who is to say where research or experiment ends and where manufacture begins? So the problem of control which we have to face will ... someday involve some restrictions on both publicity and freedom of research.

Pawsey continued. He spoke from the point of view of someone who had been involved in the design, prototyping and manufacturing of one of the most successful defensive weapons of WWII in Australia: the LW/AW radar that was so important in the defeat of the Japanese air power in the SWPA. He was not an expert on atomic weapons but was someone who had been a leader of wartime top-secret research. He brought up a problem that continues into the 21st century:

Further, we know ... that a few small bombs could devastate a city, and that to completely prevent a few small bombs being landed on a city, perhaps by aircraft, by rocket, or even by stealth, by smuggling means, presents defence with an almost hopeless task.

Pawsey was clear in stating his determined view of the desired role of Australian scientists:

In Australia, the situation is rather different than in America. The scientists of Australia have none of the detailed technical knowledge which some of the American scientists hold, and consequently, there is a school of thought here which says because we know so little, whatever we do, we're likely to put our foot in it, we had better do nothing at all. I'm very much opposed to that. I think the position is this. It's up to us to find out

what we can, and while we're finding out more things, we'll probably have reached definite conclusions on some things, and on the things on which we reach definite conclusions, it's our duty to try to influence public opinion, and to advise governments. Well, we don't advise governments except on request. What we can do is to try to influence public opinion, and inform the public of facts.

... [I]t's an obligation on scientists to study the implications of their work, and then they have to advise governments on request, and at the same time keep on this question of informing public opinion. Now this has a tacit assumption in it that the advice of scientists is worth something and I'd like to back this idea very strongly.

One of those things is the special technical knowledge [of Australian scientists] ... In Australia, [knowledge of nuclear weapons is] limited, but it's probably still more than is available to members of the public. Next, we have a knowledge of scientific method. Now, by that I mean the way in which these physical developments are achieved, and it's known to the people who are working in scientific laboratories, and it's only the outstanding scientists who really are masters of that, and those are very few. I think that the application of the clear methods of thinking is the main hope of the world to get out of the difficulty of her present social morass. If we're to do that, the most obvious way is to somehow or other involve those really first class scientists, those few first class scientists who really know the method, and one other point is that we've got something in the nature of a world organisation or world contact already set up. This is a very proud boast of scientists, that we already have, or we had before the war, a world-wide freedom of the press and a great number of personal contacts.

I'd like to finish on one very important thing. This question of secrecy again. Just what is it worth? The pre-war background with the publication, and the definite step towards world cooperation. The war came and that ceased. Now secrecy, national secrecy, in science, is just a form of armament. As that it has three effects. It can give tactical surprise in the use of new weapons. You hoped it would give a monopoly. As a matter of fact, in a lot of cases it didn't give a monopoly. Radar was a very high secret and it was not a monopoly. It did that, it causes distrust and fear among nations because of not knowing the developments in other nations, and lastly it hinders science in its application to industry and to the good of humanity. The net result is that each case must be treated on its merits, but as a principle, international secrecy is a thoroughly wrong principle.

The prominent anthropologist Dr Stanner challenged Pawsey in an aggressive tone, with an accusation of arrogance:

I can't accept the preposterous statement of Dr Pawsey that only the successful technological scientists understand the principle of scientific method; that, of course, is fantastically untrue ... There's a fine irony in all this, that we should accuse scientists ... of conduct which has become fundamentally immoral ... At first a negligent and now almost potentially a criminal neglect of social and moral realism-- a neglect of the social effects of what they do. It's a moral dilemma which has never risen before in the sixty odd brief centuries of recorded human history.

... Science has to be the tool and not the master of humanity. It's a means and not an end. The scientist has all too often lost sight of himself as a citizen, as one of us ... What he's trying to be too often ... is a member of a little sacred priesthood, a cloistered and rather precious little group sometimes, not quite as other men.

The broadcast then continued for some time with questions and comments from the audience. A Mr Lyle had a perceptive comment when he asked Stanner to consider that nuclear war should be thought of as a reciprocal affair. Thus, the possession of the bomb could be looked at as a deterrent to war<sup>9</sup>.

In Additional Note 2, we summarise two articles in the *Australian Journal of Science* from October and December 1945 by Bowen and Pawsey. Each author described their war time experiences as they provided a forecast of the future. Bowen provided a retrospective on "Radar in War", building on his experience with the Chain Home system in the UK in the period before WWII began and the utilisation of this radar defence during the war. Pawsey provided a review on atomic power and weapons from the perspective of the Manhattan Project in the US. He provided a detailed history of the US project starting in 1939 up to the explosion of the first atomic bomb at Hiroshima in August 1945. His text was based on the official history of the project by H.D. Smyth, chair of physics at Princeton and consultant to the Manhattan Project of the US Corps of Engineers. Pawsey commented: "The book bears the obvious heavy imprint of the censor, but nevertheless contains a great deal of fascinating information."

### **Pawsey and the Australian Association for Scientific Workers (AASW)- Two Controversies, Alan Nunn May in Canada and the Rocket Range Project in South Australia**

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<sup>9</sup> After the broadcast of 22 April 1946, White wrote Pawsey a letter of partial congratulations. "... [I]t came over excellently. Although I do not agree with your views or your opponent's views [Stanner] for that matter. I was very pleased to hear it." Joe and Lenore Pawsey Family Collection.

Jean Buckley-Moran (see footnote 1 and Additional Note 1) has provided a succinct summary of the role of the AASW in the Australian response to the arrest of Dr Alan Nunn May in the UK in March 1946. Nunn May, a British physicist working on atomic research, had been sent during WWII to join the British group participating in the Manhattan project in the US. He later moved to Montreal to continue the research in Canada. There he was contacted by an agent of the GRU (Soviet military intelligence). Apparently, he passed secret information to a GRU agent, Angelov. A cipher clerk of the GRU, Igor Gouzenko, defected to the Canadians in September 1945, about the time Nunn May had returned to the UK, implicating Nunn May.

A group of Canadian atomic scientists were arrested in mid-February 1946 and held incommunicado with no charges for periods ranging from two to six weeks. Buckley-Moran wrote:

The detainees were then subjected to the gruelling cross-examination of a Royal Commission ... [appointed] within hours of revelations made to the Canadian authorities by Gouzenko ... Its mandate was to investigate the nature and extent of espionage activities perpetrated by a conspiracy whose immediate objective was to convey 'the secrets of the atomic bomb to Russia.' ... [The Canadian Royal] Commission proclaimed some of the detained guilty before criminal proceedings had started.

The Canadian Association of Scientific Workers (CASW) complained strongly about the proceedings ... "deploring the use of legal procedure to repress scientific exchange." Buckley-Moran continued:

AASW [Australian Association of Scientific Workers] saw the conviction of May as part of an attempt to stifle protest by scientists. AASW members were also concerned that secrecy restrictions on the technical aspects of atomic energy were being applied in blanket fashion to *all* information with any relevance to atomic processes. With the arrest of prominent Canadian scientists on charges of espionage, the threat of military control of science was seen in some quarters as a "threat of the military control of labour, for it is the beginning of Fascism".

As CASW itself anticipated, there was a strong possibility that the spy scare would be used to discredit the scientific profession ...

While some AASW scientists absorbed the shock that the internationalist ethos of science guaranteed no immunity from what they interpreted as a clear-cut case of

political chicanery, the Australian press and a few vocal politicians seized on AASW's defence of Canadian scientists implicated in the Gouzenko affair as unequivocal evidence of communist infiltration and treason by [the local] AASW.

The Australian Labor Party had formed the national government since 1941. The government's outlook favoured a trend towards centralisation and internationalism. Cabinet documents reveal that the government's views on the uses of atomic energy for industrial power production were entirely consistent with its own position at this time. The parties which formed the parliamentary Opposition - the Liberal and Country Parties - were able to use attacks on the autonomous AASW and on the major government scientific research organisation the Council for Scientific and Industrial Research (CSIR) as a convenient lever for discrediting the Labor government.

One of those leading the attack on AASW was W.C. Wentworth, an aspiring politician, later elected to the House of Representatives in 1949. His antagonism towards AASW had been earlier aroused at AASW's 1944 Planning Conference. There the provocative interjections of Wentworth and his supporters effectively stymied conference approval of a series of specific resolutions of direct political and social significance. This time, however, the stakes were rather higher. After the Canadian Royal Commission, Wentworth lost little time in denouncing AASW. Prominently featured in the pages of the *Sydney Daily Telegraph*, Wentworth claimed that Russia was using "her influence on AASW to get the technique to make atom bombs as soon as possible"... He charged that AASW was a "fifth column for Russia ..." Wentworth also alleged that (1) "Russia operates largely through a physics lecturer at Sydney University [Dr R. Makinson] and the [AAASW] ... ; (2) that these last two bodies have infiltrated the Council for Scientific and Industrial Research [CSIR]; and (3) [the] man who organised this treasonable conspiracy still remains a Lecturer in Physics at Sydney University" [that is, Makinson].

The above texts show the heated atmosphere in which Pawsey became a participant. The AASW met in a controversial meeting on 12 June 1946 in Sydney. The report in the *Sydney Morning Herald* on page 4 of the following day shows the deep divisions within the organisation:

A special meeting of the NSW Division of the Australian Association of Scientific Workers last night passed a resolution demanding the release of Dr Alan Nunn May, who was imprisoned for giving secrets to foreign agents.

Mr J.R. Callaghan, who proposed the resolution, said the spy scare was deliberately designed as a threat to the Soviet Union, that it had been prejudiced by an unscrupulous newspaper campaign ... He said that certain important interests in Britain and the US, finding a threat to their own power in the growing democratic movements throughout Europe, were endeavouring to cause a breach in relations with the Soviet Union and to discredit it. In this way another war was threatened.

Dr Nunn May had given information to an allied country, which if it had received the information earlier, it would have brought the war to a more successful conclusion. Mr Callaghan admitted that Dr Nunn May was technically guilty under the Official Secrets Act and that he had acted foolishly at his own trial and not sought a remission of the sentence.

Dr R.K. Murphy attacked the resolution [which had passed]. He said the meeting was the most unscientific one he had attended. The discussion was political and philosophical and based on facts which had not been given to the meeting. Scientists had to be a little bit hysterical and lost their sense of balance.

Dr J.L. Pawsey said the motion could not be supported unanimously by all members of the association and he thought it would split the association and give it a reputation for irresponsibility. Nunn May's action had shown a breakdown in his integrity and the motion in effect supported that break in integrity.<sup>10</sup>

Mrs E.E.B. Makinson [Rachel Makinson, the wife of the arch demon of Wentworth] said laws were only changed when people broke them. The Official Secrets Act was not designed to prevent [communication] of fundamental scientific information, but it was being used to do this. Dr Nunn May was a martyr.

The next event involving Pawsey and the troubled AASW occurred the following year, 1947. Buckley-Moran continued her narrative:

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<sup>10</sup> Pawsey's stand against supporting Nunn May was even reported in the Canadian press. W.J. "Bill" Henderson, Pawsey's former classmate at the Cavendish Laboratory in the 1930s, wrote to him on 1 November 1946 from Ottawa. He had just left the Radio Branch at the National Research Council of Canada, transferring to Radiology in the Physics Division. Henderson wrote in a handwritten PS: "You got your name in the Canadian papers as the man who threatened to resign some association if it protested the handling of spies." NAA C3830 A1/1/1 1945/6 Part 1

AASW's fear that Wentworth's attack amounted to an attempt to "frame the left" was confirmed when, six months later in March 1947, Country Party parliamentarian Joe Abbott launched a vitriolic attack against AASW. The timing of Abbott's charges coincided with parliamentary discussion of the Anglo-Australian rocket range proposals, acceptance of which federal Cabinet had approved in principle on 19 November 1946. Meanwhile a protest movement hotly contested the establishment of an experimental testing range for guided projectiles in South Australia, mainly on the grounds that it could endanger the lifestyle of tribal Aborigines. By January 1947 the protest movement gathered momentum, with the support of 36 organisations, including AASW. [See NRAO ONLINE 55 – "Dr Charles Duguid, Champion of Aboriginal Rights and the Rocket Range Project -1946-1947" for a description of the most formidable opponent, Dr Charles Duguid, an Adelaide surgeon and husband of JL Pawsey's first cousin, Phyllis Lade Duguid.]

On 6 March 1947, the day before Abbott's first attack on AASW, the government's Committee on Guided Projectiles had released its official report on the rocket range. Through a series of conflationary acrobatics, Abbott used a recapitulation of the Nunn May case and the Canadian espionage trials to insinuate a concrete espionage connection between the Canadian and Australian Associations of Scientific Workers. He strongly urged that the government hold a Royal Commission to investigate "the whole of the communist activities of Australia", evidence of "spy rings" and communist associations among AASW and CSIR personnel. Abbott then named six AASW members and a member of the executive committee of CSIR as security risks. Abbott's insinuations were seen as both an attempt to silence AASW's ("expert") opposition to the rocket range proposals and to discredit the Labor government's present security arrangements.

Apart from insisting on a Royal Commission as a means to outlaw the Communist Party of Australia for the second time within five years, Abbott was also engineering a case for instituting security screenings on all CSIR research personnel and, effectively, for the control of science in Australia. In claiming that AASW's executive used "secret study groups" to turn its members into "traitors", Abbott's charges of communist infiltration of CSIR through AASW implied a sinister symbiotic connection between the two organisations. Abbott's attack was consolidated by contributions from several other members of the federal Opposition [in the Australia parliament].

Stung by the allegations made under parliamentary privilege, AASW's scope for redress was by now severely circumscribed. Faced with an "orgy of redbaiting" by the press,

AASW's Federal Council was reduced to sending letters of protest to the Prime Minister and sympathetic members of the House of Representatives. After the parliamentary attacks were made on AASW, it became clear to those who still remained sympathetic to AASW's overall platform that they could no longer remain members of AASW without considerable risk to their careers and livelihoods. Initially, many of those who remained with AASW until March 1947 refused to believe that AASW harboured "fellow travellers". After several of its members were named in Parliament in March 1947, to be a member of AASW *implied* Communist Party membership.

This negative publicity played a major role in initiating attacks on the CSIR and the CEO, Sir David Rivett. By May 1949, the CSIR was reorganised into the CSIRO with a new executive without Rivett.<sup>11</sup>

As Buckely-Moran wrote in 1986:

The *Melbourne Herald's* tribute to Rivett on his retirement as a "genius for getting things done" and someone who collected honours and exhibitions "as easily as a housewife gathers flowers" must have been small comfort for someone who had made such outstanding contributions to Australian science and to two world wars.

The AASW had no future; the organisation formally wound up its affairs on 31 July 1949.

Again, J.L. Pawsey was involved in this conflict. This time there are no reports of public actions in the press. Pawsey's Australian Security Intelligence Organisation file (Additional Note 3)<sup>12</sup> contains the key information about Pawsey's point of view. On 13 April 1954, the unknown Principal Section leader of ASIO in Sydney had written:

Dr Pawsey was a member of the AASW in 1947. The CIS [Commonwealth Investigative Service – preceding ASIO] had no adverse information about him and recorded (20 August 1947) that at a recent meeting of the AASW he expressed himself against any

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<sup>11</sup> F.W.G. White has provided an insider's account of the turbulent transition from CSIR to CSIRO, "CSIR to CSIRO- the Events of 1948-1949", *Public Administration (Sydney)* Vol. 34, No 4, December 1975. White wrote: "David Rivett taught us how to manage a research team which, through notable scientific achievement, could contribute to the practical interests of Australia ... He could discern scientific leadership and that who had it were appointed promoted ... The war stimulated [CSIR's] growth and on the sound foundation of earlier years, CSIR voluntarily made a substantial contribution to the national [Australian] war effort ..."

<sup>12</sup> Provided by Rob Birtles from the CSIRO archives in October 2010.

Australian ban on the Rocket Range Project ... Though the AASW was infiltrated by Communists at this time [in 1947], it was the normal professional organisation for scientists such as Dr Pawsey, and no adverse conclusions can be drawn from his membership of it. **His support of the Rocket Range Project was contrary to the Party “line” of the time.** (our emphasis)

Two weeks later on 27 April 1954, Brigadier Sir Charles Spry (the name of the ASIO Director was expunged, known to be Spry) signed a handwritten form in which the same statements about Pawsey were repeated, without including the words about the “Party Line”. Additional details in the innocuous ASIO file concerning Pawsey are presented in Additional Note 3. Pawsey’s strong adherence to the “progressive-liberal” point of view in the AASW in opposition to the “radical nucleus” meant that he escaped the harsh judgement of the vigilant ASIO apparatus in the height of the Cold War.

In the course of 1947, all opposition to the project evaporated; by June 1947 the Rocket Range Project was approved in the Australian House of Representatives. Only a single member of parliament voted against the project, Mrs Doris Blackburn, an Independent Labor Member for Bourke and friend of Charles Duguid.<sup>13</sup> Peter Morton (1989, “Fire across the desert: Woomera and the Anglo-Australian joint project 1946-1980.” Department of Defence Canberra (Australia)), page 120. See NRAO ONLINE 55 for details about Duguid, married to Pawsey’s cousin) has pointed out that the bill to impose draconian penalties (a fine up to £5000 and/or a year’s imprisonment “on anyone disrupting top priority defence projects by sabotage or boycott” was passed by the Australian House in Canberra at 3:30 am on the morning of 6 June 1947.<sup>14</sup> Mrs Blackburn suggested that too many members were “asleep on the benches to constitute a quorum”. Not surprisingly, “the indefatigable” Dr Duguid was forceful in his letter to the *Adelaide Advertiser* on 5 June 1947 as it became clear that the Rocket Range Project would go ahead full-steam: “... Charles Duguid said darkly that ‘to save the children of today in every country from such diabolical cruelties concocted in cold blood, gaol will be suffered gladly by all parents who put their faith in common sense and the United Nations.’” [Morton, 1989, page 121]

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<sup>13</sup> When she introduced this motion on 4 December 1946, “she pointed out that in the opinion of this House the proposal to establish a rocket bomb testing range in Central Australia is an act of injustice to a weaker people who have no voice in the ordering of their own lives and a betrayal of our responsibility to guard the human rights of those who cannot defend themselves ...” Morton (page 74). Her motion was defeated soundly on 1 May 1947 on a voice vote. The Labor government was joined by the Menzies’s Opposition in supporting the rocket range project.

<sup>14</sup> In the end, no prison sentences occurred. Morton page 121: “... no one went to goal, gladly or otherwise.”

Even the outspoken David F. Martyn had a strong opinion in the 1947 era about the rocket range. Along with most of the public in Australia, Morton (1989, p.76) wrote that Martyn asserted that the issue of Aboriginal Australians did not “tap any deep vein of popular indignation”. Morton has written in a remarkably caustic tone [page 76]:

In those days few Australians cared much for Aboriginal culture: a physicist [from CSIR, Mount Stromlo], D. F. Martyn of Canberra, probably voiced a common sentiment when he opined with heavy jocularly [and sarcasm] that natives were less at risk from advanced weapons than from the “advanced form of psychological warfare practised locally with the aid of the directed bone”.<sup>15</sup>

## **Additional Notes**

### **Additional Note 1. “Australian Scientists and the Cold War”- The Australian Association of Scientific Workers– AASW: 1939-1949 based on a Master’s Thesis at Griffith University Australia by Jean Buckley-Moran 1983**

The successful and troubled AASW was founded in 1939 as a break from the elitist existing scientific societies in Australia with broad base support of the rank-and-file scientists as WWII overwhelmed Australia. Jean Buckley-Moran has presented a succinct and insightful summary of this organisation. A few paragraphs from her introduction set the stage:

In the late 1940s and through the 1950s, Western countries underwent a period of anti-communist hysteria. As the military necessity for Western alliance with the Soviet Union against Nazi Germany collapsed, earlier anticommunism resurfaced and the Soviet Union was fostered as a feared enemy. The hysteria manifested itself in an elite-sponsored paranoia about communist agents who somehow threatened to topple Western institutions by working from the inside and providing information and comfort

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<sup>15</sup> From a letter sent by Martyn to the *Sydney Morning Herald* on 4 November 1946. The “directed bone” refers to bone pointing among Aboriginal Australians, the expectation that death would result from having a bone pointed at a victim. Martyn’s letter was on page 2 of the newspaper with the title “Rocket Research in Australia – Radiophysicist’s View”. His heavy-handed comments continued: “... [W]e may assume that the landing of [these test rocket projectiles] will make a small non-lethal depression in the ground which may ... be of use to the aboriginals as a novel kind of water-hole ... Should we not welcome to Australia a major scientific enterprise which opens to us remarkable new prospects of exciting voyages ... [not only on earth] but also into the fantastic unexplored regions of our planetary neighbours?” Martyn had missed the point that the main danger for the few thousand Aboriginal Australians was the culture shock produced by their increased contact with the “European” Australians.

to the Soviet state. In practice, anticommunism served to mobilise national chauvinism and to oppose emerging support for internationalism in politics and economics. The cold-war crusade in addition ably served the careers of many politicians who joined the cause helping them to discredit political opponents.

... A little-known organisation, the Australian Association of Scientific Workers (AASW), became an unwitting focus of the attempt to gain more concerted control over the future direction of science and the determination of policies for its institutional development. In contrast with the conservative, isolationist mould in which Australian science had grown, the AASW offered a different set of ideals for science - that science be centrally related to social ends and be more vitally connected with industry. AASW's premature demise cannot be considered separately from a whole range of social alternatives that were dislodged in the early cold-war years.

To state the obvious, the price of suppression is always greater than the sum total of individuals damaged in the process. It visibly affects the process by which countervailing orthodoxies may be regenerated and reproduced institutionally. It limits the horizons of what is perceived as possible, feasible or even desirable ...

[During WWII], individual subcommittees made outstanding contributions. For instance the AASW Drugs Committee, a small team of research chemists who worked around the clock to develop pilot-scale synthesis of essential drugs, was a pioneering effort given that Australia had never before undertaken commercial synthesis of drugs. Their breakthrough in developing an anti-malarial drug became as important as ammunition when the incidence of malaria threatened to reach epidemic proportions among troops fighting in New Guinea ...

The AASW scientists' early public visibility and pronouncements about atomic energy were to play directly into the hands of their critics. Eager endorsement of the internationalist ethos of science and appeals for the unfettered exchange of scientific knowledge were later interpreted as either evidence of scientists' ostrich-like naivety or as a subterfuge for sinister acts of disloyalty, even treason ...

The main text of this chapter provides an overview of a number of the controversial issues involving the AASW in the period after WWII. The conflicts between the "progressive liberals" (including Pawsey) who argued for piece-meal reform based on facts and the smaller, "disproportionally influential radical nucleus asserted that socially productive science could not be achieved without radical social change."

The issues discussed in the main text led to continual conflicts with Pawsey solidly in the camp of the “progressive liberals”. The conflicts that surrounded Sir David Rivett began in 1947 (see Schedvin, C. B. (1987). *Shaping Science and Industry: A History of Australia's Council for Scientific and Industrial Research 1926-49*. CSIRO PUBLISHING, pages 322 to 350 – “Reorganisation”, especially, p.344 concerning the Science and Industry Research Act of 1949) and led eventually to the reorganisation of the Council of Scientific and Industrial Research into the Commonwealth Scientific and Industrial Research Organisation in May 1949 and the retirement of Rivett, one of the major scientific figures of the 20<sup>th</sup> century in Australia. Further attacks from right wing Labor parliamentarians like Jack Lang had begun in 1948. Attacks on Richard Makinson and the Tom Kaiser affair of late 1949 continued the conflicts (see Goss and McGee, 2009, page 44 and 239 and Schedvin, 1987, p 350) with the Australian political scene. Already on 31 July 1949, the fate of the AASW was sealed due to the accusations of the linkage between the AASW and the Communist Party of Australia. The AASW folded at the end of July 1949. Buckley-Moran has provided an epitaph:

In other circumstances, the organisation might have provided a fertile breeding ground for a coherent rather than an ad hoc scientists' protest movement. The expedient attack effectively put an end to the public articulation of social responsibility in science for a generation of scientists in Australia. The changed ideological climate of the cold war had the effect of turning the quest for autonomy into a utilitarian pursuit for greater funding for fundamental research ... In an important sense then, AASW's premature demise marked a watershed in the attempt to negotiate a central relevance for science in a society and to break down the isolationist mould of scientific production in Australia.

**Additional Note 2. Bowen, “Radar in War” and Pawsey, “Atomic Power and American Work on the Development of the Atomic Bomb”), *Australian Journal of Science*, vol 8, 1945)**

At the end of the war, both Bowen and Pawsey saw the need to inform the science community about break-through science that had been achieved in secret during World War II.

**BOWEN:**

In a brief five page article, Bowen revealed the story of the most successful defensive weapon of the past war. The origin of radar was presented from the British point of view with roles of Tizard and Watson Watt emphasised starting in 1935.<sup>16</sup> The origin of operational radar was not

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<sup>16</sup> The earlier work of 1933 by the US group at Bell Labs (Mumford and Crawford, 1933) that preceded the UK research was briefly mentioned.

an accident but a solution to a major problem, the detection of hostile aircraft. Bowen provided an overall viewpoint of the method applied in the mid-1930s:

... [W]e have illustrated perhaps the most important prerequisite of any scientific attack on a military problem, namely, the careful review of the field followed by a clear statement of the problem in the simplest possible terms. When the problem is appreciated in this way and stated in the right form, the scientist is already half way to the solution.

Bowen emphasised a point that he stressed in his personal history from 1987, *Radar Days*, the necessity for close collaboration between the military and the scientific boffins:

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.

Bowen then provided details of the complex radar story of the submarine conflict in the Battle of the Atlantic. The continual development of new radar led to predictable countermeasures from the Germans. But these were overcome in every instance.

Bowen emphasised two aspects of the Allied radar research that were far superior to that of the Axis powers: (1) The control of scientific research was in the hands of the scientists and not the military. In Germany and Japan, there was rigid military control. In the US, Australia and the UK, most radar research was directed by civilians. (2) Fundamental research led to the UK discovery and the US perfection of the magnetron, starting in mid-1940. "The opposite picture is seen in Germany, where most scientific research was stopped as a matter of high military policy in 1941, the only work which was allowed to continue being that connected with the immediate problems of the projection and guidance of monstrous missiles."

Bowen ended his radar discussion with a short description of the surprising Collaroy observations of the sun by Pawsey, Payne-Scott and McCready in 1945 October (See Chapters

12-14). He provided a straight forward description of the intense radio burst activity at 200 MHz that was correlated with sunspots. He then ended his contribution with a bizarre text:

One theory of the production of this noise is that sunspots correspond to holes in the surface layers of the sun through which energy corresponding to the internal temperature can escape in the direction of the earth. The fact that little or no energy comes out in the visible spectrum is readily explained by the heavy absorption of these frequencies which is bound to occur. Alternatively, someone is letting off atom bombs in the sun and has been doing so for some considerable time.

Bowen concluded the paper with a comparison with the atomic bomb project:

This discussion has been confined to the field of radar and its military applications, and an attempt has been made to draw conclusions as to the correct conduct of scientific activities in war. Many examples of the same kind exist in other fields and many parallels can be drawn. Research in nuclear physics is an outstanding example of the contribution of fundamental work, while the intensive development on the application of knowledge of nuclear fission for the purposes of war was an equally important example of the close collaboration between the soldier and the scientist and incidentally between at least two of the Allies.

Then Bowen ended with an obscure statement; the use of the word “subsequent” may perhaps foreshadow the coming conflicts in the Cold War associated with secret nuclear weapon research: “The subsequent less fortunate history of suspicion and lack of understanding springs only from the failure to observe one of the other basic principles, the provision of complete freedom to the scientist and the avoidance of military control.”

**PAWSEY:**

In the same edition of *The Australian Journal of Science* (22 October to 21 December 1945) in which the Bowen article was published, Pawsey contributed a seven page summary of the nuclear weapons used the previous August in Japan. With the end of the war, meagre details of the process had been published in the press. The Manhattan District of the US Corps of Engineers published the official press release of the book *A General Account of the Development of Methods of Using Atomic Energy for Military Purposes Under the Auspices of the US Government*. This heavily censored volume was written by H.D. Smyth (1945) of the Department of Physics, Princeton.

Pawsey provided an overview of the physics of fusion using uranium with atomic weight 235 and of a “new” element plutonium of atomic number 94, an element which did not occur naturally on earth. (Uranium has an atomic number of 92.) “The explosion was due to a chain reaction in which the atoms of the explosive element were split into approximately equal halves by fast neutrons, the necessary neutrons being maintained by neutron emission in the disruptive process. This splitting process is known as nuclear fission.”

Pawsey devoted several pages as he provided a basic primer on the structure of the atomic nucleus. Transmutation of elements and radioactive transformations were described in simple terms. Simple explanations of the work of Hahn and Strassman and Lise Meitner in 1939 indicated in 1940 that nuclear fission was possible. Major results were: “(1) The energy released per fission of a uranium nucleus was about 200 million electron volts; (2) High speed neutrons were emitted in the process of fission.”

Pawsey’s description about the critical mass for the chain reaction was written in a colloquial style:

Hence small lumps of [U 235] are stable, large lumps unstable, and an explosion may be set off by rapidly bringing a number of small lumps together. [Smyth did not provide the size of the critical mass, except to say it was in the range 1 to 100 kg!--- the value is now known to be about 15 kg] ... The trickery consists in embedding a large number of lumps of uranium which can effectively slow up but not absorb the neutrons.

Pawsey provided a summary of where the US research was carried out [Los Alamos in the desert – sic- in New Mexico], Chicago, Berkeley, Columbia (New York City), Princeton, Hanford, Washington and Oak Ridge, Tennessee. Collaborators were in Canada and the UK (including the Australian Mark Oliphant), and the Dane N. Bohr. British collaboration was essential, “particularly in stimulating its inception. The fear of German success was an even more cogent factor in this last respect.” Pawsey also described the separation methods of U 238 to U 235, gaseous diffusion and electromagnetic means in a mass spectrograph.

Pawsey’s conclusion is prescient. The tragedy of the two sites in Japan devastated in August 1945 is stressed as well as the extreme danger of launching atomic weapons via guided missile. In addition, he provided a foreshadow of terrorist groups achieving mastery of nuclear weapons, a concept that was conceived some decades in the future. In addition, the nature of secrecy was recognised; any country with an advanced physics community could develop an atomic bomb, again a reality in the late 20<sup>th</sup> and early 21<sup>st</sup> century.

### **Pawsey's conclusion:**

It is tragic that man's first use of atomic power has been to forge and use a weapon of incredible destructiveness. The bombs which were exploded over Japan were carried by comparatively vulnerable aircraft, so that a superlative anti-aircraft defence system might conceivably protect a country. But the developments of this war clearly indicate the futility of such a defence. Uranium provided an explosive of incredible violence. Rockets such as the V2 provided a means of transport wellnigh immune from interception. Radar provided a means of directing aircraft with accuracies of a few tens of yards in hundreds of miles. These developments were used separately in this war. Nothing prevents their combination.

An aspect of the production of atomic explosives under present conditions which promises some measure of control is the enormous industrial effort needed for their production. They cannot be produced by hole in the corner methods or by nations not highly developed industrially.

On the other hand, secrecy is not an insurance against discovery by another nation. This has been stated in the strongest terms by top ranking British scientists and is, indeed, obvious to any scientist in possession of the facts summarised in this article and knowing that during the war at least three nations Germany, Britain, and USA independently advanced far along the road.

The possibilities of peaceful applications of atomic power are not yet clear. At this stage the uranium pile is clearly capable of producing large-scale power, but it is extremely doubtful as to whether it can produce it economically. It is probably best to regard the position as fluid. One or at most two nuclear reactions have been developed for use. The result will be a tremendous stimulant to research in a field with enormous possibilities. We cannot say with certainty what this may bring, but never yet has such a field proved barren. As President Truman has said, man has "harnessed the basic power of the universe".

### **Additional Note 3: J.L. Pawsey's ASIO File, released to the National Archives of Australia 2010**

The Pawsey Australian Security Intelligence Organisation file of only 19 pages of the original 27 pages were released to the National Archives of Australia and the CSIRO on 11 October 2010;

the file covered the years 1951 to 1962.<sup>17</sup> Rob Birtles of CSIRO provided the authors copies of this document after vetting by the NAA. Only eight pages had minor expunged text, in most cases the names of the ASIO individuals signing the forms. (One of the expurgations consists of the signature and not the printed name of the regional director of ASIO in NSW on 15 April 1954.)

The April 1954 report on the AASW and Pawsey's disagreement with their opposition to the Rocket Range Project is described in the main text. He was vetted successfully in March 1954 for a passport as requested in a letter from Guy Gresford, Secretary of Industrial and Physical Sciences of CSIRO to the Attorney-General's Department in Melbourne. Other names on the list were N.A. Esserman and G.H. Munro. At this period, ASIO reported that the Police Special Branch had no record on Pawsey, besides his past membership in the AASW and had been a member of the "Sydney No Conscription League" on 13 July 1927 when he was living in Victoria. As he was an officer of the CSIRO, he would be required to travel overseas and there was "no evidence of sympiant [sic, "sympathetic"] connection with communism. He would be (possibly) in a good position for recruitment by an enemy intelligence agency." Also in 1954, ASIO noted that Pawsey was a newly elected member of the Australian Academy of Science.

In 1958, the ASIO NSW regional director (whose name and signature are not expunged) wrote to ASIO Headquarters on 5 June 1958 that Pawsey had asked that his passport be validated for travel to the USSR. "Subject is a delegate from CSIRO to [the IAU, and would be a leader of the Australian delegation] in Moscow, starting 30 July 1958. The Regional Director added "We have nothing to add to my TOP SECRET memorandum P/4/62 dated 17 March 1958." This memo nor any sign of an expunged version has been found in the ASIO collection. ASIO knew that Pawsey would depart from Australia on 6 July 1959 on flight BOAC 711 and be visiting Amsterdam, Copenhagen and Helsinki and would visit France, Sweden and the USSR. (Each list was only partly accurate.)

After the trip to Moscow in 1958 and the return to Australia via India, ASIO had a number of entries in their file in late 1958, 1959 and 1961. There were three reports of Pawsey's transit through the Netherlands in 1958 and 1959, on his trip to Moscow in August 1958, his attendance in August 1959 to the Bolshoi Ballet in Sydney, organised by the Australian Soviet Friendship Society (ASFS) in Sydney with the collaboration of the Elizabeth Theatre Trust. There were three entries in June 1961 as Pawsey asked for a brochure from the ASFS in Sydney. Apparently, any superficial interest in the USSR attracted the attention of ASIO.

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<sup>17</sup> ASIO sent the NAA the file A6119 on 7 May 2010. By 14 October 2010, the file had been vetted. Rob Birtles then was allowed to photograph the 19 pages. "ASIO records are eligible for release of the Archives Act of 1983 after 30 years, subject to the exemption of any material of continuing sensitivity a prescribed by section 33 of the ACT."

The last two pages in the ASIO file were the newspaper article from the *Sydney Daily Telegraph* on 19 December 1961 describing the appointment of Pawsey as the NRAO Director and then finally the report of his death on 30 November 1962. Prof Bullen of Sydney University was quoted in the newspaper:

Dr Pawsey was one of Australia's greatest physicists and one of the most modest. It is principally due to [his] work that Australia became renowned [sic] in the field of radio astronomy. His death at a comparatively early age is a grievous loss to Australian science.