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Prospects for Enrichment: New Zealand Responses to the Peaceful Atom in the 1950s

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Abstract: The origin of the anti-nuclear movement in New Zealand is discussed. An assessment is made of the impact of the New Zealand Campaign for Nuclear Disarmament on New Zealand politics and foreign policy.

Keywords: Anti-nuclear movement, New Zealand, New Zealand Campaign for Nuclear Disarmament, politics, foreign policy, 'Atoms for Peace'.

INTRODUCTION

This paper forms part of a wider study of the history of anti-nuclear New Zealand before it became famous, its roots if you will, on which the transformations in that nation's identity and foreign policy of the 1970s and 1980s would grow. The heart of that project is the story of a peace group I first researched as a student two decades ago, the New Zealand Campaign for Nuclear Disarmament (NZCND). This country's first exclusively anti-nuclear national organisation, it tried to convert New Zealanders to the disarmament cause in the early 1960s, and was a local manifestation of the second stage of a three-stage global movement. In it, moreover, the influence of scientists was just as significant as it in other Western societies [2], and kept leaping out at me (in the same way that the role of other groups like Christians and mothers did) in the primary sources my study is based on – NZCND records, and reports on New Zealand society and politics sent home by the diplomats of all three Western nuclear powers based there.

In order to appreciate the full significance of NZCND's contribution to the development of New Zealand politics, identity and foreign policy, one must first examine those factors – some obvious, some not – which mitigated against the appeal of the anti-nuclear cause before and when this group appeared. That is where this paper seeks to make a contribution. Its aim is to discuss the influence in this country of President Eisenhower's attempt to calm the rising worldwide 'nuclear fears' of the mid-1950s through his 'Atoms for Peace' initiative. It does not argue that the ensuing excitement over 'the peaceful atom' was the only or even the main factor preventing New Zealand embracing the anti-nuclear cause until the 1970s and 1980s; anti-communism, anti-Japanese sentiment, faith in and friendship towards the two original Western nuclear powers, and a host of factors specific to the arms race itself were more important. Nevertheless, Eisenhower's initiative, in tandem with a coincidental burst of hope that this country might have uranium deposits of its own to exploit, did revive official and popular interest in the peaceful uses of atomic energy, just as it did elsewhere in the world, thereby diverting New Zealanders' attention away from more disturbing nuclear developments. Along the way, it helped New Zealanders come to see the United States as the 'true atomic workshop of the world', and encouraged them to be wowed and not just concerned by its technological might [3].

SCREENS AND WALLS

By the end of 1953, nine years after Hiroshima and Nagasaki, there was still much about nuclear energy that even citizens of democracies did not know, especially in regard to its bellicose applications. From their wartime origins in the Manhattan Project, when the US government cordoned off vast tracts of land in Tennessee and Washington State to build factories that appeared to produce nothing, the vast majority of nuclear weapons-related activities were not for public consumption, in any country. In fact, the opposite was true; so stringently protected did the whole process of

preparing for nuclear war become, that even in the democracies, defence labs and test-sites became states-within-states, replete with their own airplanes and nigh-sovereign secrets, and surrounded by guards with orders to shoot-to-kill unauthorised intruders [4]. Within these enclaves, moreover, officers and officials asserted their control to such a degree over scientists that in the US at least the information about the different parts of the bomb-building process was often divided between labs, and withheld from anyone whose political loyalties came to be deemed suspect. This was in sharp contrast to the pre-1939 days when scientists shared their research freely across borders and now neither atomic scientists nor their ideas could travel easily across the new Iron Curtain [5]. In such a context, therefore, information about nuclear tests was especially guarded, if it was divulged at all. Besides the lack of warning Britain gave about its atomic debut described elsewhere in this edition, the Soviets never did announce their atomic breakthrough, and neither President Truman nor the Atomic Energy Commission would say how many tests America conducted in the Pacific in 1951. They did not encourage coverage of its first H-bomb test or convey its 'leap in destructiveness' [6]. Indeed, even some defining facts about the new weapon's dangers – the adverse consequences of explosions, for instance, or the handling of radioactive material in bomb construction – were not merely censored, as occurred after Hiroshima and Nagasaki. With total disregard for the health of its citizens adjoining such sites, they could even be hidden by government lying, as occurred when Washington told hundreds of private companies processing radioactive elements there were no 'special dangers' for their workers, when America's Atomic Energy Commission (AEC) said the danger from its nuclear tests was 'no worse than having a tooth X-rayed', when its Commissioner said America was working on a clean bomb' while enhancing the radioactivity of its existing weapons, and when the residents of St. George, Utah, were given assurances though tests in Nevada 'apparently always plaster[ed]' them with fallout [7].

Important as these physical or propaganda walls to hide their preparations for nuclear combat were, they were not the only means Western nuclear powers employed to head off public concern about what they were up to. A further tactic – indeed, a giant distraction – was to play up the peaceful potential of the atom, thereby tapping into the utopian hopes and genuine scientific excitement that immediately manifested themselves, once the new energy source's power was first revealed in war.

NEW ZEALAND'S FIRST DOMESTIC NUCLEAR STEPS

To understand how this tactic played out in New Zealand though, we first need to consider New Zealanders' prior and autonomous aspirations for the peaceful atom. In telling this story, I will not address the role of Ernest Marsden in shaping those aspirations in any depth, as it features prominently in a companion paper in this issue. Nevertheless, it is impossible to leave Marsden out altogether. Once he was alerted to uranium's military potential in 1943, he not only set the wheels in motion by which this county's scientists became involved in the Manhattan Project, but immediately instructed the government Geological Survey team in December 1943 to see if this element was present in this country in any exploitable amounts. On his return from abroad in June 1944, he set up an atomic energy section within the same section of the DSIR that pioneered this nation's breakthroughs with radar. Within a week of Hiroshima, he was able to announce that small concentrations of uranium were present in a mineral found predominantly on the South Island's West Coast. As he conceded, its recovery was probably not 'economically practicable', at least not with 'old-fashioned methods' [8]. The *New Zealand Herald* later deduced from President Truman's announcement of the Bomb, that the appealing 'possibilities of harnessing atomic energy for peaceable uses', which some had raised, 'can very well be put aside for the time being', for scientists were 'definite that years of work will be needed before the new forces can be brought under control' [9].

When it came to peaceful possibilities of

the new energy source, nevertheless, some New Zealanders (like Britons or Americans) could not let facts stand in the way of dreams. Among those who preferred to be inspired by those overseas authorities who instead emphasised 'the great possibilities if energy on the scale represented in the bomb is made available to drive machinery and provide sources of power' were the *Christchurch Press* and the *New Zealand Herald*, who between them passed onto their readers the speculation of the *Manchester Guardian* that 'atomic power may provide energy for exploring the solar system and the universe', pronounced that 'atomic energy might supplement the power from coal, oil and falling water', and noted that New Zealand's Prime Minister in these years, Peter Fraser, 'had taken part in discussions with the British on the possibility of using atomic power' [10]. More importantly though, Marsden, Fraser's deputy Walter Nash, and the *Herald's* editor Leslie Munro, later New Zealand's Ambassador to the United Nations when Atoms for Peace was announced, were interested too. As Munro noted, 'but for a second world war, the labours of physicists . . . might . . . ultimately have borne only peaceful fruit'; for Marsden, the 'discovery of atomic energy' held out hopes as high 'as opening up the vast mineral resources that lie beneath the gigantic icecap of Antarctica' – including uranium [11].

Convinced by its wartime results and peacetime potential, therefore, the Fraser government announced just four days after Nagasaki that it 'would do all in its power to aid the development of atomic power and its application to the best purposes of mankind' [12]. In December 1945, moreover, it backed up this boast by passing an Atomic Energy Bill, which, like its foreign equivalents, gave the Crown a monopoly over the development within its domain of this energy and materials it relied on, and control of research on it. With the DSIR Minister noting that 'no subject was of greater importance to humanity than atomic energy' and hoping that 'within a year or two of receiving sufficient uranium [the DSIR] will be harnessing atomic energy in New Zealand', the Acting Minister of Mines asserted in moving the Bill's second reading that 'this energy is so wrapped up with the development of a country that it cannot be allowed to pass into the control of private interests', and that the West Coast black-sands held 'a fairly high percentage' of the 'radioactive ores we want so badly'. In January 1946, accordingly, the Labour government began discussing the possibility of a nuclear research programme, and in late 1948 Fraser discussed matters to do with an 'atomic pile' with Britain's Defence Minister in late 1948. As Nash announced to the 1948 Labour Conference, 'rather than have a cessation of atomic energy research, the Government was anxious to have it go to the limit. Its only concern was with the use of atomic energy and he hoped that it would never be used for military purposes' [13].

ADVANCES AND CONSTRAINTS

Even so, Fraser had felt a need to warn MPs in his speech supporting the 1945 Bill that 'there might be a race for atomic energy' and that 'prospectors from other countries had been wandering about New Zealand, and had found quantities of uranium without notifying the government'. This can not pass without comment. Fraser's intervention had been prompted by a complaint from an Opposition MP, W.J. Polson, that the Bill's penalties for offenders against its provisions were 'tremendously fierce and savage' [14], which in turn suggests that the new technology's full import was not obvious to everyone. In fact, even Fraser's initial interest in it may have been partly motivated by unrelated issues, as the British politician who first asked him for Manhattan Project scientists was the same person he was negotiating with to renew a vital bulk export contract [15]. Equally, some very real barriers to New Zealand's early nuclear development must be outlined. In the search for uranium, for example, the aforementioned unauthorised survey of New Zealand possibilities (by an American Embassy-linked Union Carbide mining engineer in violation of an Anglo-American deal for Britain to search in its Commonwealth) had proved fruitless, while in 1948 the DSIR itself concluded after Marsden's South Island searches that the percentage

of uranium oxide in the region's rocks was too low to make uranium extraction economic and ended its hunt for the sought-after ore. In a setback to the development of local nuclear research, Fraser's government had not taken up a suggestion made to Marsden by Sir John Cockcroft, the director of British reactor projects, that an experimental reactor be constructed with British help in 'this part of the world', even though the Americans were prepared in recognition of their services to allow a limited transfer of atomic know-how to New Zealand and the DSIR scientists whom Marsden had sent to the Manhattan Project had played vital roles in helping Britain build its first experimental reactors in Canada and then at the UK's own subsequent research facility in Harwell. Once Marsden forsook the DSIR for a spell as the government's scientific adviser in London, there was no influential nationally-based champion of a New Zealand research reactor [16].

As Rebecca Priestley's paper in this volume has demonstrated, however, this was not the end of a nuclear New Zealand. The DSIR's annual report had still been 'reasonably hopeful' as late as 1947 that a viable uranium deposit could be found on the West Coast, and five years on an article appeared in a popular British monthly (which the US Secretary of State had his Wellington Embassy investigate) claiming that 'the greatest uranium fields in the world' had been 'found in New Zealand and that production will begin soon' [17]. As for nuclear research, the flamboyant Gordon Watson-Munro, one of New Zealand's Manhattan Project scientists, had given an inaugural lecture as the new Professor of Physics at Victoria University College on the peacetime uses of atomic energy that focussed on thermonuclear possibilities (before he was enticed to Australia). The research team was set up and the DSIR had announced 'the erection of an atomic pile' for the use of scientists and medical researchers. In terms of applying nuclear knowledge, radionuclides were used in animal research tracer studies in 1946, for clinical purposes in Christchurch hospital in 1948 and in industrial radiography from the early 1950s, while two scientists, G. Page and Gordon Fergusson, who continued to work in the Dominion Physical Laboratory in Lower Hutt, and a dynamic counterpart, Athol Rafter in the Dominion Laboratory in Wellington, were undertaking and disseminating valuable applied research on such uses of isotopes in medicine, industry, agriculture and geochemistry. In fact, putting to good use both his graduate training in the US and the assistance he secured from the US developer of radiocarbon dating techniques, Rafter would ultimately develop applications for isotopes of such 'international interest and significance' that he would be invited by the original pioneer of those techniques, W.F. Libby, to participate in 'Project Sunshine', a late 1950s U.S. Atomic Energy Commission programme monitoring the dramatically rising levels of atmospheric radioactivity unleashed by the era's many thermonuclear bomb tests [18].

However, As Ross Galbraith and other have argued, the full flowering of nuclear research in New Zeland remained impeded throughout much of the 1950s by the fact that the new laboratory Rafter proposed in 1952 for such research would not be built for another decade, and by the cost of creating a national nuclear institute, the way in which the siting of it became a political football (as universities pressed the need for pure over applied research, and their competing cases to build any new facilities on their own campuses), the failure to arrange a framework for 'exchanges of information on defence science between the United States and New Zealand', officials' view as late as 1958 that atomic power production was not yet economically viable, and that New Zealand could not 'afford to gamble with the supply of power by considering the building of atomic power stations in the immediate future' [19]. Furthermore, the popular image of scientists in New Zealand was somewhat ambiguous, which did not help scientists' efforts to pitch for research resources [20]. Even so, by the end of that decade, and no matter how 'sluggishly', a Division of Nuclear Sciences had been established within the DSIR, a £8,917 grant had been given to the International Atomic Energy Agency to keep New Zealand 'up to date in the field of atomic energy', and the country was ready to work with the Americans to take nuclear research to a new level. In fact, it

had already received its first Atoms for Peace gift from them, a technical library on the uses of atomic energy that Sid Holland lauded before Parliament in mid-1955, and signed a bilateral agreement in June 1956 for 'Cooperation ... concerning civil uses of atomic energy' [21].

THE RATIONALE BEHIND ATOMS FOR PEACE

How though had the possibility of Atoms for Peace gifts come about in the first place? To answer that question, we need to discuss that programme and the President who announced it. Long seen as amiable and popular but more interested in golf than his job, Eisenhower has come to be reassessed as a subtle, engaged, and publicity-savvy Commander-in-Chief, who took a vital interest not just in his country's national security, but in how nuclear weapons affected that security, and what American voters thought of those weapons [22]. As scholars are now arguing, Eisenhower and his advisers believed not in reducing the West's reliance on nuclear weapons but in increasing it. To him, such weapons signalled Cold War resolve, were cheaper than keeping men in uniform, the 'best guarantee against the eruption of a global conflagration' and a 'source of strength in dealing with the Soviet Union; rather than being eliminated, they should become the 'central plank of US national security policy'. As a military man, the President believed they would be used in a future war, and also that, just as arms did not cause war, disarmament could not prevent it. Only elimination of the causes of war (in his eyes, a revolutionary change in the Communist system) could do that. While Eisenhower was in the White House, though most New Zealanders, Americans and other Westerners and their governments thought otherwise on account of his deliberate sops to their fears, American disarmament proposals would at best be confidence-building measures, at worst mirages [23].

For a brief moment early in his first term, Eisenhower did consider telling his people what the full consequences of a nuclear war would be, so as to prepare them for one should it break out [24]. After concluding this might unleash hysteria, the rest of his eight years in the White House were marked by a series of steps to portray American nuclear policy both at home and abroad in more favourable, peace-seeking terms. Years after this ex-Supreme Commander of Allied forces in World War II (and NATO forces thereafter) said of Hiroshima 'it wasn't necessary to hit them with that awful thing', years before his oft-quoted lament on leaving office at the growth of his country's military-industrial complex, and even as his nation continued to prepare for nuclear war, the popular President reassured his public that 'these armaments do not reflect the way we want to live; they merely reflect the way, under present conditions, we have to live' [25]. Contrary to his own budget-balancing instincts and belief that 'Americans recoil by nature from the idea of "propaganda" ', Eisenhower approved a 50 percent increase in the funding of the United States Information Agency to help it study foreign attitudes to the Bomb and counter the previously unchallenged Soviet peace campaign overseas, and sanctioned an AEC campaign at home which told Americans that nuclear dangers were not as great as often made out [26]. More dramatically, he launched two appeals at the United Nations that seemed to convey a deep personal wish for disarmament, the 'Atoms for Peace' proposal of December 1953, and its 'Open Skies' successor in May 1955.

The most successful of all Eisenhower's efforts to 'overcome' his country's already prevalent reputation in New Zealand and other countriess 'as a nuclear bully' and to 'convince the people in the world that we are working for peace and not trying to blow them to kingdom come with our atom and thermonuclear bombs', Atoms for Peace was premised on a simple idea. This was that the two rival superpowers and Britain hand some of the radioactive materials they used to make nuclear weapons over to a new, UN-supervised International Atomic Energy Agency, which would make those materials available to other countries in the world for research and other peaceful purposes [27]. Prior to this offer, progress on most non-military utilisations of nuclear energy had stalled around the world, as post-Hiroshima

dreams of atomic utopias had came up against the technical barriers in the way of producing nuclear power cheaply and against many governments' monopolisation of the technology involved and the total priority nuclear weapon states gave to research that developed bombs over that which led to power production or other uses [28]. Before 1953, admittedly, the medical applications of radioactive isotopes already noted in the New Zealand context above had been recognised. Groups like Britain's Atomic Scientists' Association, the AEC and two major US corporations had tried to keep public interest in the potential of nuclear power alive through exhibits like the 1947–48 'Atomic Train', which 146,000 people saw and 53,000 people read about, despite government hostility in England, and which UNESCO sent to Scandinavia and the Middle East. The 1948 'Man and the Atom' exhibit in New York's Central Park toured other American cities [29]. It took Atoms for Peace, nevertheless, to restore global excitement about the peaceful possibilities of the new energy source, for only it linked such possibilities to the need to make what Ike described to Churchill as 'even the tiniest of starts' in opening a hitherto-shut 'door of world-wide discussion' on humanity's nuclear future [30].

THE INITIATIVE'S AMERICAN AND OVERSEAS IMPACT

In the US, in keeping with Eisenhower's broad approach to national security, which embraced the nation's economic health and historic principles as much as its diplomacy and military defence, Atoms for Peace had deep repercussions, as the President connected it to his push to make nuclear power production commercially viable by unleashing 'the genius and enterprise of American business'. Soon afterward, in 1955, albeit through the will of a naval officer rather than that genius, the United States launched the world's first nuclear-powered submarine, the *Nautilus*, and became home to the world's first fully commercial electricity-producing reactors. In engineering terms, the AEC was emboldened to champion its 'Project Plowshare', which claimed harbours and canals could be built using controlled nuclear explosions. In the cultural field the peaceful potential of atomic energy was lauded anew by Walt Disney in *Our Friend the Atom*, the 1957 cartoon that showed in schools and on television 'how a menacing giant was turned into a faithful servant', and in the 1967 *How and Why Wonder Book of Atomic Energy*, which acknowledged that the atomic age had begun in deadly fashion but sought all the same to take the young 'science-minded reader along the exciting road of discovery about the atom that led to the first use of atomic energy in a controlled way' [31].

Beyond America's borders, the consequences were no less significant. Because it saw the clear propaganda potential of this 'Atomic Marshall Plan', and how through it 'atomic energy, which has become the foremost symbol of man's inventive capacities, could also become the symbol of a strong but peaceful and purposeful America', the USIA went into overdrive to popularise Atoms for Peace, placing celebratory articles and multi-media exhibits on it throughout the non-communist world. In response to their efforts, the targets of the propaganda did line up to access the American offer and sign individual bilateral Atoms for Peace agreements with Washington that helped America 'consolidate friendly relationships with countries sympathetic to US economic and foreign policy interests' [32].

COINCIDENTAL CATALYSTS IN NEW ZEALAND

One of them was New Zealand. We must also acknowledge that two other prompts appeared independently of Eisenhower's initiative in the mid-1950s to reinvigorate attention to the uses of radioactive elements. The first was only fully known by a select few officials, the expensive studies New Zealand undertook in response to a British request to examine the feasibility of using the North Island's geothermal energy belt to produce heavy water for Britain's new H-bomb programme as well as electricity for local use. But the other was much more public. This was the news that the West Coast's uranium deposits might be rich enough after all to

justify the huge cost of mining them, and give a mineral-poor country a potential new energy source and form of foreign exchange.

In one of the better-known vignettes of New Zealand's early nuclear history, two elderly prospectors had ventured their luck in the Buller Gorge in 1955 and come upon a seam of uranium ore with enough of the right isotope to spark not just 'a rush to buy Geiger counters', 'considerable amateur prospecting' and 'a rash of other discoveries', but renewed official interest in the region's radioactive potential as well [33]. In one expression of this interest, which lasted the rest of the decade, the Director of the Geological Survey reiterated that the prospectors' discovery was not commercially viable, but only in the context of a report that said it gave 'a valuable lead as to places where prospecting might have a favourable outcome'. In a second manifestation of it, and 'in response to the widespread interest in uranium prospecting', he re-issued a 1954 report on 'Prospecting for Radioactive Minerals in New Zealand' (the two prospectors had used it), which said it was 'worth the attempt to find out whether radioactive minerals occur in quantity in New Zealand', and told the US Embassy that 'a good commercial proposition is considered probable' [34].

For its part, and prompted by its backbenchers, who lauded the 'near-'miraculous' 'rise in importance of these radioactive minerals in the last decade', the way 'large deposits could be vital to a country's future', and how 'we need not fear for the future of the Commonwealth in the matter of the possession of nuclear weapons by other countries' should 'extensive deposits' be found there and in Canada and Australia, the response of the country's then-National government went well beyond seizing the public relations opportunity of having its Prime Minister Sid Holland photographed holding a Geiger counter. It tried to stimulate more prospecting for radioactive ores in 1956 and 1957 by introducing an Atomic Energy Amendment Act to make the rewards for finds more lucrative and by building a new road in the region to help a Nelson company prospect. Similarly, Labour politicians showed an interest in the uranium fields as well. On the one hand, some of that party's MPs complained that the surveying of potential ore sites 'had been made on a piecemeal and haphazard basis', that the new incentives for prospecting were still insufficient, and that the government 'had not done enough to encourage the finding of uranium'. On the other, the local Labour member said the area's proximity to a railway and settled community meant that 'never yet . . . has a prospecting area been located in such favourable conditions'. When it became the government again in 1957, indeed, Labour based a geologist in the region 'to search for radioactive materials', and amended the law again so as to better negotiate the use of any deposits that were found with the UK Atomic Energy Authority (which sent visitors to the field back in 1957 who now told Wellington and London that 'the outlook for uranium discovery was very good') [35].

NEW ZEALANDERS AND ATOMS FOR PEACE

As important as these real and potential mineral discoveries were, and as important as New Zealanders' ongoing pride and interest in the 'strides' British sources were telling them Britain was making 'in developing power from atomic sources' was too [36], President Eisenhower's 'epoch-making' speech had a impact upon New Zealand's early attitudes towards nuclear power. Within a year of his speech a group of American congressmen had come to see geothermal sites and to extol the peaceful uses of nuclear energy. At the UN, now-Ambassador Munro welcomed the 'generous spirit' behind the President's 'eloquent plea' and the accompanying call from Secretary Dulles to make 'this new force a tool of humanitarianism and statesmanship, and not merely a fearsome addition to the arsenal of war'. Not only was there now new hope that scientists 'from even the smallest countries, which may have little to offer by way of raw materials or industrial energy, may make vital contributions' as Rutherford had once done, the ambassador suggested that if 'real cooperation and understanding can be built up in a joint international enterprise devoted to the development of peaceful uses

of atomic energy, need we doubt the possibility of diverting all fissile material from destructive to beneficent ends?' [37]. The American Embassy observed that Ike's appeal and the 1955 Atoms for Peace conference in Geneva that followed it each received 'unusually full coverage by the New Zealand Press Association', and that editors were 'enthusiastic' about his 'sincere', 'bold-sighted' and 'constructive' proposal [38]. More notably, an interest in building power-generating reactors i sprang forth overnight after that Geneva conference, when the US offered to sell research reactors at half-price to willing partners.

Typically, Marsden was the first to react, urging the training in universities of nuclear physicists and engineers 'in view of [the] possible establishment of atomic power stations in [the] North Island within 10 years'. On more than one occasion, the head of the DSIR said nuclear power could be a solution to the North Island's anticipated need (even when geothermal energy was factored into the equation) for more power by the mid-1960s, while in Parliament the Labour Opposition asked National ministers to respond to calls from its officials and an Auckland physics professor, Percy Burbidge, to look into Britain's purported advances in the provision of nuclear energy for power and plan nuclear reactors. Throughout 1955 and 1956, Labour MPs seemed oblivious to their rejection when they were in government in the 1940s of Marsden's suggestion that a research reactor be built, and keen (like the editors of the *Here & Now* journal further to their left) to rush New Zealand into a nuclear-powered future. In fact, they accused their National opponents of being too tied to hydro-electric and coal-station interests and afraid to act in the matter without British sanction or Australian precedents [39]. As for those rivals occupying the Treasury benches, even they were not as hostile to nuclear power as they sometimes made out. The Minister in Charge of the State Hydro-Electric Department said that New Zealand had a 'vastly different' set of energy sources available to it than Britain. The Minister of Mines and one of the party's new MPs argued that New Zealand would not be in the age of atomic energy in ten years' time and that 'it was possible to overestimate the immediate benefits to be derive from atomic energy'. Prime Minister Holland never made one government department ultimately responsible for considering the adoption of nuclear power and no plans for a nuclear power station entered the country's formal plan for its energy future until 1964 [40]. Nevertheless, the National government should not have been accused of failing to consider the nation's atomic prospects. After all, it did send Marsden and the State Hydro-Electric Department's Chief Engineer to overseas conferences on nuclear power, and on the latter's return establish a Committee to make recommendations to it on 'the implications for New Zealand on the development of the peaceful uses of atomic energy'. Importantly, like the Labour government that succeeded it, it was willing to explore Atoms for Peace deals with the US to assist the preliminary task of boosting the nation's atomic research capacity [41].

AGREEMENTS AND CONSEQUENCES

Like a parallel deal Washington signed with Canberra the same month, the June 1956 deal between New Zealand's National government and the United States was 'more far-reaching than any except those concluded with Britain and Canada'. In addition, whereas many countries simply rushed to buy the half-price US-built research reactors Washington was offering in association with such arrangements, New Zealand's use of this agreement was more considered. As a consequence of the deal, New Zealand received enriched uranium from the Americans that could have been used for a research reactor. In 1958 the new Labour government led by Nash hosted a sales delegation from the US Atomic Energy Commission, which told the press 'the offer of assistance in obtaining a reactor' was 'still good' and of the 'various types of assistance' that were 'fair game' for New Zealand to choose from. In 1960, similarly, it succumbed to the urgings of the American Embassy and was about to apply for a subsidised one (instead of buying a British

model) before its application had to be withdrawn (to Foreign Affairs' pique) when an embarrassed State Department said US Senators had come to consider developed countries like New Zealand quite capable of paying the whole cost [42]. Even so, there was always a range of opinion, scientific as well as political, and even within the DSIR, that argued New Zealand had no need for a small research reactor that would only reproduce a little of what had already been done overseas when its links to the mother country ensured it would receive the fruits of British research. Tto those critics, a series of smaller pieces of equipment that would enhance the pure and applied research already being done that would lead to original results would be far more useful [43]. In the end, it was their views that won the day. When the US gave New Zealand a grant in March 1960 it was 'for procuring equipment and materials for nuclear research and training', and when £110,000 of Atoms for Peace gifts did arrive in 1961 and 1962, they did so as mass spectrometers, a pulse analyser, a differential thermal analysis apparatus and other smaller items that boosted the industrial, environmental and isotope-related work of the Institute of Nuclear Sciences that was finally created in Lower Hutt, and as other equipment for university radiochemistry and physics labs [44].

From the American point of view the money was well spent. In fulfilment of the original propaganda aims of the Atoms for Peace programme, the US Ambassador was told, on his visit to the University of Auckland in 1961 to see the gifts the USAEC had given that institution and the laboratory created for them (and named after an American nuclear physicist), of its Vice-Chancellor's 'very deep appreciation', and noted himself that 'the professors, students, and members of the executive Council were happy, enthusiastic, and generally grateful'. Beyond the recipients' predictable pleasure at receiving good equipment, the broader political advantages of the deal were clear. Aside from the 'essential boost' it gave to the New Zealand entities working to develop nuclear research – Canterbury University received a sub-critical reactor too – and the opportunity it afforded the Ambassador to put his country's nuclear intentions in the best possible light and have his remarks reported in the press, New Zealanders' reception of these gifts showed they could be wowed when their superpower ally showed them its technological might. Indeed, a recognition even grew among them that America and not their beloved Britain was the global centre of intellectual progress and true 'atomic workshop of the world' [45].

As one sign of that recognition, the rising Labour MP Michael Moohan was very impressed with his visit to the Oak Ridge plant during his all-expenses paid 1956 trip to the US. As another, the executive secretary of New Zealand's Atomic Energy Committee appreciated the information its US equivalent gave it on nuclear-related training courses available in the USA. Even so, the most suggestive indication of the broad appeal of the peaceful atom appears to have come in 1960, when Aucklanders and Wellingtonians flocked to their ports in their thousands in welcome when the *USS Halibut* underlined the ANZUS defence relationship by making the first visit by a nuclear submarine to this country's ports [46]. To them, the *Halibut* was no 'death ship', as its successors would be tagged by late 1970s and early 1980s protesters. On the contrary, it was a symbol of progress and its capacity to travel the oceans was a vivid and attractive manifestation of the possibilities, not the fears, that New Zealanders again hoped the atom could foster.

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