

Archival research in a planetarium: The first projector at Armagh Planetarium

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This paper will examine how a simple archival research project in a planetarium can uncover competing narratives and forgotten figures. We set out to uncover how a Goto “Mars” projector was selected for the Armagh Planetarium in 1965 by looking at the remaining archival material from the period. The projector was the centrepiece of a new planetarium that had been in the planning stages for over twenty years when the first stones were laid. The projector would occupy a pivotal place in the mythology of the Armagh Planetarium, and its short seven-year reign saw the establishment of an institution that would survive significant internal and external turmoil. Contrasting the narrative and mythology around this central piece of equipment with the evidence uncovered in the archive reveals important considerations for how planetariums can research their own history.

Introduction

The star projector lies at the heart of any planetarium in the post-Second World War period, as the dome became the focal point and linchpin of planetarium architecture. The futuristic vision of the planetarium was centred on the technological device that sat in the dome and merged the spectacle of cinema with a booming interest in the cosmos. The first projector for any institution is loaded with significance, not just as an object by which the public can be shown the stars, but also on a personal level to the staff who use it. Especially in institutions that go on to have multiple generations of projectors, the first projector enters its own mythology.

In this case study, we conducted a simple archival research project on the story of the first projector purchased and installed at the Armagh Planetarium in Northern Ireland, as seen in Figure 1. At first glance, the story was relatively straightforward; a projector was needed, and the Goto “Mars” was selected by a committee following a visit to America and Japan to meet the designers. Archival research revealed a more nuanced story of vying corporations and technological competition and, most importantly, highlighted the contrast between the story as told decades later and the material held in the archives. Part of this contrast is the result of the institutional history of Armagh Planetarium, which was in constant flux from its opening in 1968 to the appointment of its

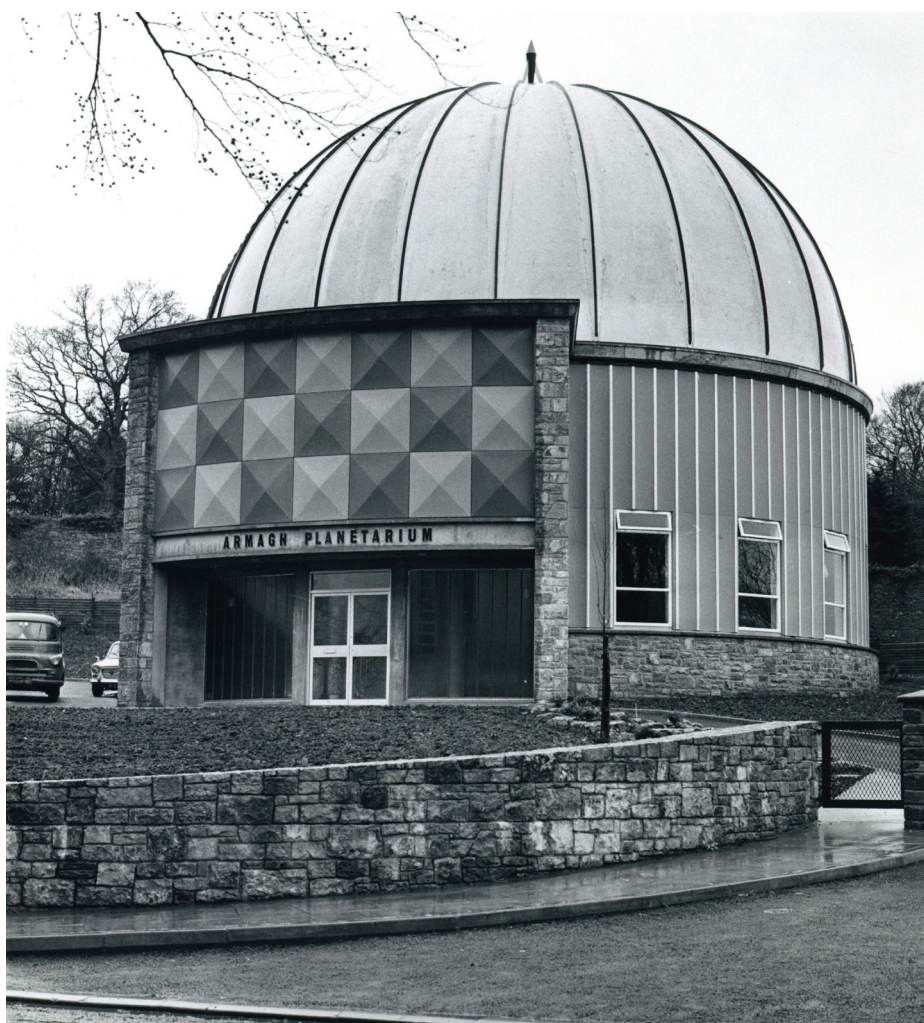


Figure 1: The completed Armagh Planetarium in 1968. Image Credit: Armagh Observatory and Planetarium

fourth Director in 1971. The rotation of Directors, assistant directors and lecturers created a perceived sense of increased chronological distance between the events in the spring and summer of 1965 that surrounded the purchasing of the projector and 1971, when the story had to be condensed into a readable guide to the planetarium.

Historical context

Armagh Observatory and Planetarium occupy the site of College Hill, Armagh, in Northern Ireland. The Hill was given to the Armagh Observatory in 1790 when it was founded by Archbishop Richard Robinson. After over 150 years of continuous research in astronomy, it came under the leadership of the seventh Director of the Observatory, Dr Eric Mervyn Lindsay, who spearheaded the efforts to build a planetarium in Armagh.

The Armagh Observatory and Museum Act 1791 – the Act of Parliament that officially established the Observatory – also established a museum in the same building under the same Director who would be known as the Keeper of the Museum. Between the 1840s and the 1930s, this aspect of the Director's responsibility had been quietly ignored in pursuing uninterrupted scientific research. Upon appointment in 1937, Lindsay immediately petitioned for resources from the Northern Irish Government to create an entirely new display room. This restored the building's dual purpose as a place of scientific research and public education, for which he was a passionate advocate.

The creation of the exhibition space also proved that there was an appetite at a governmental level for initiatives supporting public science education. This new display proved immensely popular. By the 1940s, Lindsay personally guided a peak of 4,500 visitors per year through the exhibition and showed them the night sky, weather permitting. This created mounting pressure on several fronts. The new exhibition space was positioned in the 1827 extension of the observatory. However, Lindsay and his family lived in the observatory, and as the institution expanded, visitors and staff encroached on the domestic space. Joined by a student, Moria L. Meredith, for a year in 1942 and undertaking plans to recruit additional astronomers, Lindsay sought to

replicate the futuristic planetariums he had seen in the early 1930s while studying in the United States. This purpose-built project would become the new centre for communicating astronomy to the public and relieve the pressure on the observatory building.

The Planetarium Archive effectively began in 1943. Lindsay began to correspond with government ministers, civil servants and his newly formed "Planetarium Erection Committee" to build a planetarium in Northern Ireland. The initial plan is summarised on the front page of the Committee's minute book: "Committee of Project for the erection of a Planetarium as a memorial of the stay of American Troops in Ulster" (*Planetarium Erection Committee, 1944*). The Second World War saw thousands of American servicemen stationed in Northern Ireland. Lindsay knew plans were already underway to build a memorial at Derry-Londonderry. It was hoped in Northern Ireland that by linking such projects, the United States might be persuaded to fund them both. After these unsuccessful efforts, the plan for a planetarium would be reignited in fits and starts, aided by fundraising efforts, for the next twenty years. In the 1960s, the Northern Irish Government hoped to alleviate growing social tensions through economic investment in cultural and educational projects. In 1964, meetings with the Department of Finance put the possibility of a planetarium in Armagh back on the table, and every effort was made to secure a projector.

Armagh Planetarium archives

The archives available at Armagh Observatory and Planetarium are incomplete. Like many planetariums worldwide, the archive was not viewed as historically important; in the 1990s, a significant portion of the collection was deaccessioned. A lack of cataloguing, combined with the deteriorating environmental conditions in the building before major renovations in the early 2000s, also contributed to the loss of material. However, key elements have survived, forming the foundation of ongoing research by both internal and external researchers. When the Armagh Planetarium and the Armagh Observatory merged into a single organisation in 2016, the collections began the slow process of integration and cataloguing.

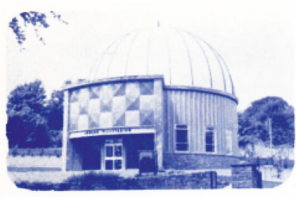
The primary collections for this research are the uncatalogued binders of letters to and from Lindsay that survived in the collection of Armagh Observatory but were not accessioned with the rest of his material because it was stored separately, and the contents were not explored until this project. In addition, photographs from the Eric Mervyn Lindsay Collection (collection code: ARM EML) and documents from the Armagh Administration Collection (collection code: ARM ADM) were considered. We addressed the research question chronologically, looking at the chain of letters as they arrived at their destination and grouped them by sender. We then began to examine the associated documentary sources that could corroborate the information in the letters. These sources ranged from an official minute book of the Board of Governors and Guardians (archival code M 136.1) and the visitor book of the Armagh Observatory (archival code ARM ADM 14) to a photograph album assembled by Lindsay after the opening of the Armagh Planetarium in 1968 (archival code P 34)

This case study examines a short chronological period from December 1964 to August 1965. The research question was: "How was the Goto 'Mars' projector selected as the first projector system?"

The myth

In 1971, three years after the Armagh Planetarium had opened to the public, the Planetarium published a short guidebook to give viewers an idea of what awaited them. The Goto "Mars" Projector appears on the front cover and then greets the reader again on the third page. However, it is explained only in function until the sixth page, where it is formally introduced.

"The Goto projector is the heart of the Planetarium. This complex machine is an intricate optical device which enables us to project a complete view of the sky, at any time past, present or future on to the 40' inner dome. This equipment is the last word in the visual presentation of our Universe and the fascinating sky shows projected on the celestial dome have earned it the title of 'The Theatre of the Stars' and incidentally the trophy for the outstanding new attraction in British Tourism." (*Murtagh, 1971, p. 6*)



Ireland's Only Theatre Of The Stars

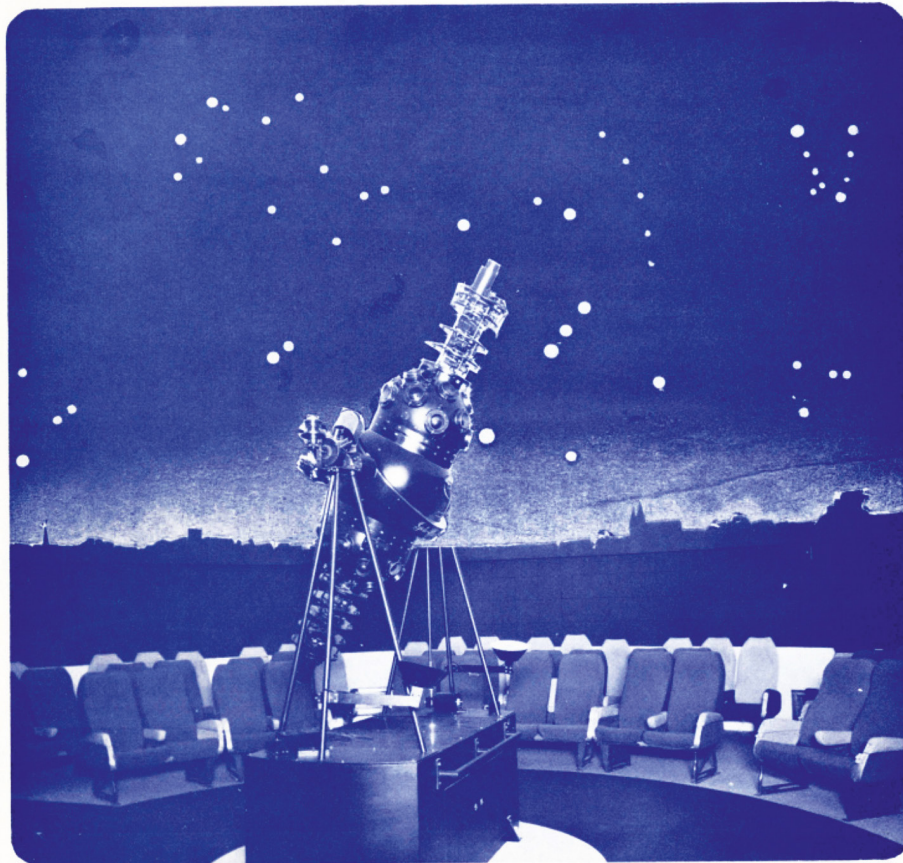


Figure 2: *A Guide to Armagh Planetarium* by Terence Murtagh (1971) featuring the Goto "Mars" Projector. Image Credit: Armagh Observatory and Planetarium

This description was written by the newly appointed Director of the Armagh Planetarium, Terence Murtagh. He was the fourth Director in the post since the planetarium opened. He positioned the Goto front and centre of the Planetarium's advertising efforts, seen in Figure 2 and pitched it in futuristic terms as a "great black machine which sits in the middle of the Theatre looking as if it had just arrived from Mars" (Murtagh, 1971).

The other primary source for the origin of the Armagh Planetarium is a short fifteen-page booklet published by the Armagh

Observatory in 1968. *The Story of the Armagh Planetarium* (Lindsay, 1968) is a remarkable document primarily concerned with the efforts of the author, Lindsay, to raise funds for the construction of the Planetarium. It does not dwell on how a projector was chosen, perhaps because, as we will see, the story is convoluted.

The Spitz letters

Armand Neustadter Spitz was a titanic figure in the history of planetariums globally. His first appearance in the historical record at Armagh Observatory is a letter he wrote to Lindsay in September 1947. Lindsay was

on a trip to the United States and had been invited to visit Armand and view the brand-new Spitz Planetarium Projector. The letter references prior communications about the possibility of a planetarium in Armagh, and in the final paragraph, Spitz promises "[his] help in any way in furthering [Lindsay's] plans for the promotion of astronomy" (Spitz, 1947). Lindsay had many connections to the United States: his wife, Sylvia, was an American, and he frequently visited many American astronomers and lifelong collaborators that he met in the 1930s while at Harvard University and the Harvard Observatory station in South Africa, which later became the Boyden Observatory. His connections to America and his own experience of seeing the futuristic planetariums in the United States added to his vision of the planetarium that would be built at Armagh.

Their communication picked up again in November 1952 when Armand sent Lindsay a letter enquiring how the planetarium project was coming along (Spitz, 1952). It took over six months for Lindsay to respond, in part because he had been in South Africa at Boyden working with the newly completed Armagh-Dunsink-Harvard Telescope (funded in a model he envisioned repeating with a planetarium by contribution from both governments on the Island of Ireland). In his eventual response, Lindsay requested the approximate cost for an entire Spitz projector system (Lindsay, 1953a).

The response from Spitz was much more prompt, hurtling back across the Atlantic eleven days after Lindsay got in contact. Spitz offered to assist as he could. He requested further information from Lindsay on exactly what type of projector was required in Armagh (Spitz, 1953a). Just as quickly, Lindsay had responded in another letter, enquiring as to the optimal size of the dome required, indicating that at this point in 1953, the Armagh Planetarium was planned to be a 50-foot dome, seating 250 guests (Lindsay, 1953b). Again, Spitz responded promptly, confirming his own approval of a 50-foot dome and recommending the Spitz Model B for such an installation. During this period of planetarium building in the United States, the interest was in 60-foot domes to seat up to 400 people. Lindsay had hoped to save costs by building the smaller 50-foot dome, and Armand added a handwritten line, "I prefer a smaller dome because of its

comparative informality" (Spitz, 1953b). He does, however, caution that a smaller dome will not be proportionately cheaper, as the plans required for a 50-foot dome were not on hand.

A period of relative calm follows in the archives: over six weeks pass without a letter between the men, and on 20 July, Spitz reached out tentatively to enquire how progress fared with the planetarium (Spitz, 1953c). Months came and went without a response, and the plan to build a planetarium in Armagh once more went dormant. At the end of 1953, the two again exchanged a flurry of letters attempting to coordinate a reunion but were ultimately unable to do so.

Once more, the correspondence between the two men ceased, only to restart a few years later in 1961, along with the efforts to get a planetarium built in Armagh. The vision of the planetarium was changing from a dome seating 250 people to one that seated under 100. Lindsay named the Spitz Model A- 1 as a potential instrument (Lindsay, 1961a) and wrote to Spitz requesting "all the information possible... cost of projector, size, and type of dome required" (Lindsay, 1961b). Within a month, Spitz responded and wrote candidly on the issue of a projector for Armagh: "My friend, let us face the facts of life: the cost of such an instrument, if you get the best, is far more than it was in the days when you and I were planning hopefully" (Spitz, 1961).

Spitz recommended a Model A- 3-P and claimed it was as versatile as any Zeiss or Goto instrument on the market. He lists the cost of \$13,000 for the projector system and \$10,000 for the dome and suggests that the seating and sound systems be sourced in the United Kingdom to save on expenses (Spitz, 1961). This cost was not what Lindsay had anticipated, and in a letter to his old friend and mentor, Harlow Shapley, he expressed his shock at the price and requested advice on potential funds or trusts in the United States that might assist with the purchase, mirroring his original plans from 1943 (Lindsay, 1961c). In a letter to Spitz, Lindsay outlined his plan for financing his proposed planetarium but highlighted that it was entirely dependent on funding from an external source (Lindsay, 1961d).

By 1964, Spitz had withdrawn from the day-to-day operations in Spitz Laboratories, but

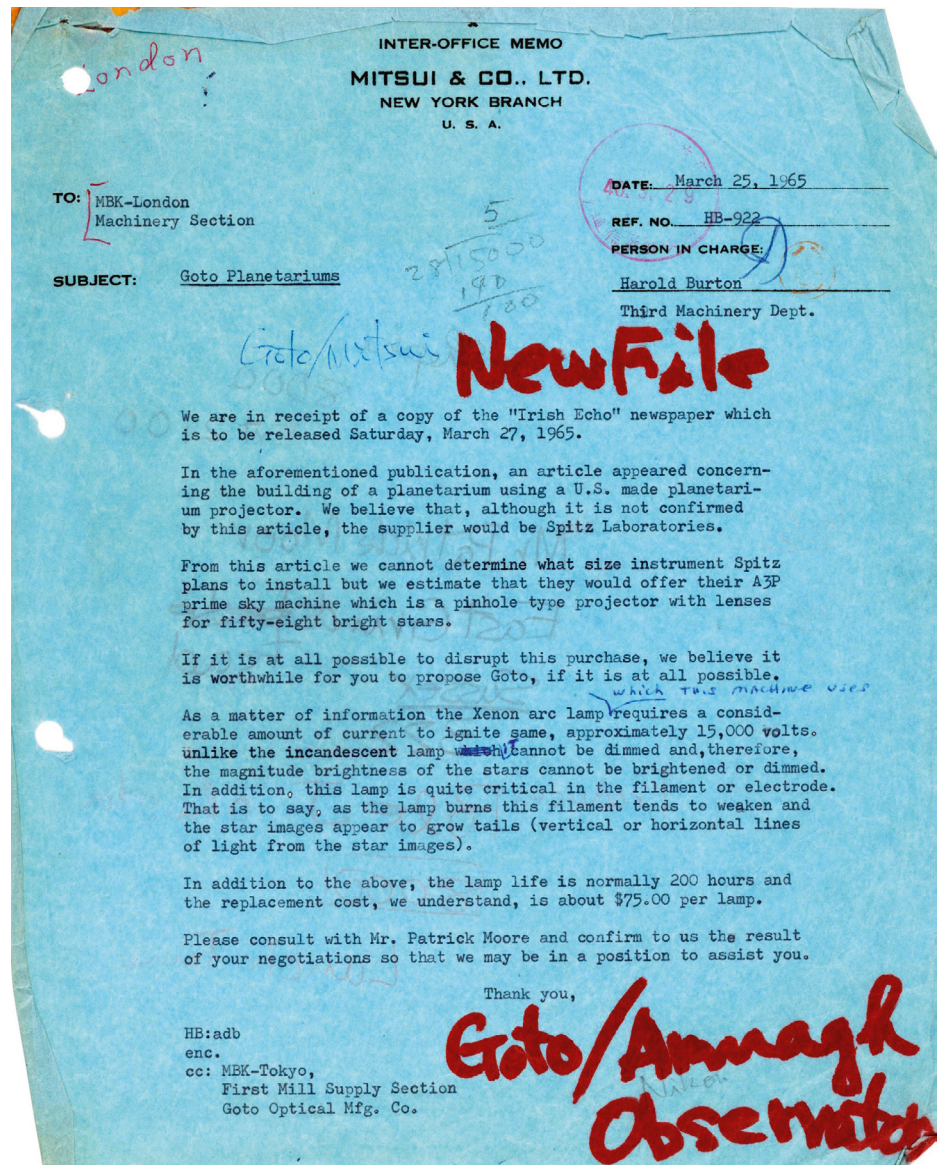


Figure 3: The Goto Memo. Image Credit: Armagh Observatory and Planetarium

his personal friendship with Lindsay remained strong. He was informed that a new Director was appointed to the planetarium project: Patrick Moore, a rising star in the world of popular astronomy in Britain (Spitz, 1964). Moore was already a presenter on 'The Sky At Night', a regular television show on the British Broadcasting Corporation schedule, which informed the public of basic astronomical concepts and the most cutting-edge developments in the Space Race. Herb Williams, the Vice President of Spitz Laboratories, reached out to both Moore and Lindsay in a letter dated 3 December 1964. He confirmed the earlier assessment that the Spitz Model A- 3-P would be ideally suited to a dome of the

type envisioned by Lindsay (Williams, 1964). The response to his letter came four months later, on 5 March 1965. The funding for the planetarium had been secured through the Northern Irish Government, and the letter opens, saying, "We are now definitely going ahead with our Planetarium, and we propose to purchase the Spitz A- 3-P Prime projector" (Lindsay, 1965a).

The next day, he sent a letter to Spitz, declaring, "At last success!" (Lindsay, 1965b) and confirming that they had firmly decided upon the Spitz projector. At this point, it appeared that the efforts that had begun in 1947 were about to be completed. The final step was to clarify the size of the

dome that would be built in Armagh, and to do so, Patrick Moore would travel to the United States to view various Spitz installations. As Lindsay explained in a letter to Spitz, their priority was to produce the best display on the dome. Patrick Moore would arrive in the United States on April 13, 1965 (*Lindsay, 1965c*).

April to June saw a considerable change in the planning, and by June, nothing was to be as simple as it had appeared only a few months earlier.

The Goto letters

Goto was established in 1926 in Tokyo, Japan, by Seize Goto. Originally established as an entry-level telescope manufacturer, the business grew steadily until the 1950s. In 1954, the Japanese government passed the “Enactment of the Science Education Promotion Act”, which saw massive investment in scientific equipment in schools across Japan. Taking their expertise in optical manufacturing, the company began to provide planetarium projectors for the school market, and by the end of the decade, they had acquired over ninety per cent of the industry market share in Japan.

The end of the 1950s also saw the release of Goto’s flagship planetarium projector, the Model M. The Goto company intended this projector system to catapult them into the global planetarium market. The second Model M to be constructed was installed overseas, in the Museum of Art, Science and Industry in Connecticut, in the United States.

Lindsay had originally contacted Goto in early 1962, requesting that the company present a projector to the Armagh Planetarium Board as a gift to provide advertisement for the company and a flagship installation in the United Kingdom. This request, and an additional one later made to the Japanese Government, were both met with silence until March 1965.

Figure 3 shows an inter-office memo from the New York to London branch of Goto, with the Tokyo office in copy. The memo concerns an article in *The Irish Echo* that mentions that the Armagh Planetarium will install a projector in the United States. The memo’s author, Harold Burton, an employee of the Goto branch in New York, speculates that the supplier will be Spitz Laboratories and instructs the Goto London branch to

contact Patrick Moore immediately. The memo outlines the aggressive campaign: “If it is at all possible to disrupt this purchase, we believe it is worthwhile for you to propose Goto” (*Burton, 1965*).

Following a series of correspondences in April 1965, Goto flew a representative to Belfast to meet with Lindsay in Armagh (*Mitsui & Co, 1965a*).

After a trip to the United States to tour the various Spitz installations, Patrick Moore was excited about the possibility of using a Spitz instrument in Armagh. Goto representatives met with Moore shortly after their rendezvous with Lindsay and offered to sponsor another trip to the United States to view their projector installations. Before his trip, Moore received a letter from a prominent planetarium consultant, George Lovi, praising the Goto export Model M, the “Mars” model, and comparing it to the Spitz Model A- 3-P installation in Connecticut (*Lovi, 1965*). This sequence of events represents a curious set of coincidences that began to push the Armagh Planetarium towards a Goto instrument.

Moore wrote to Lindsay upon his return, reporting his impressions of the Goto instruments. The praise he had earlier heaped on Spitz was now focussed on the Goto, and his report put his feelings on the matter in no uncertain terms:

...I am rather sorry to have to say that the Goto is not only better, but infinitely better. There is, I fear, no doubt in my mind that we should be making a crass error to have the Spitz, which is clearly less rigid, less reliable, less well serviced, has less performance, and doesn’t produce a better sky in any case (*Moore, 1965, p. 1*)

This starkly contrasts the reports he wrote to Lindsay after his trip to meet Spitz and see the Spitz A- 3-P. The Board of Governors and Guardians of the Armagh Observatory established a sub-committee of astronomers and physicists to determine which instrument they should purchase. This sub-committee was established just days after the report by Patrick Moore. They aimed to “deal with such technical matters as the type of projector and outer dome” (*McCann, 1965a*).

The rationale for this decision was briefly outlined by Lindsay; the primary deciding factor was that the dome provided by Goto was significantly cheaper, allowing them to purchase the more expensive projector system, the Goto “Mars”. He stressed that the sub-committee would make the final decision, but the committee members with the most subject matter expertise were Lindsay and Patrick Moore. Whilst no minutes of this sub-committee’s deliberations survive, they decided in under



Figure 4: Patrick Moore with the installed Goto “Mars”, 1968. Image Credit: Armagh Observatory and Planetarium

a month. The decision would be made quickly and unanimously. By mid- 1965, Goto wrote to confirm they would supply Armagh with a “Mars” model planetarium (*Mitsui & Co, 1965b*).

Word of the decision had reached Spitz Laboratories by local channels. Herb Williams sent a letter to Patrick Moore on 30 June 1965, informing him that he had heard Armagh would have a Goto and expressing his disappointment (*Williams, 1965*). In July 1965, Goto wrote to confirm the agreement to supply the projector, and Patrick Moore held a press conference to announce the purchase. On 5 August 1965, the agreement was formally signed by the Archbishop of Armagh in his role as the Chair of the Board of Governors and Guardians (*McCann, 1965b*).

Conclusion

When the planetarium opened to the public on 1 May 1968, as shown in Figure 4, the public was introduced to the night sky by the projector and the lectures delivered by Patrick Moore. There was no mention of the role played by Armand Spitz over the previous two decades in the planning of the Armagh Planetarium.

The last letter that was sent by Spitz to Lindsay is undated, but from the contents, it seems to have been sent at some point between late May and the end of June 1965. This letter, which was rediscovered in 2020 during the COVID- 19 pandemic, sparked the current research into the history of the projector systems at the Armagh Planetarium. The letter illustrates the optimism and spirit of the planetarium as it was embodied in the 1960s and, we hope, to the present day:

Maybe I'm an incurable idealist, but methinks that planetariums and all they stand for should bring people together and should not be separative in effect. Any planetarium, Goto, Zeiss, Spitz or any other, that is well conceived and operated will do an acceptable job. Its [sic] all dependent upon the spirit of its sponsors and operators. One thing I emphasize to you... and I told this to Patrick when he was here: I believe in planetariums as an educational and cultural asset to any community. I have offered to lend him and you any

support within my power, whatever instrument you buy, and I mean time. Naturally I'd be happy if it bore my name, but my interest in your success is not predicated upon this. (*Spitz, 1965, p. 1*)

What appeared at the outset to be a simple story of acquiring the first projector for the Armagh Planetarium has turned out to be a complicated process, reflecting the realities of buying a planetarium projector in the 1960s. The intricacies of funding from multiple bodies, shipping from overseas and the technological hurdles that had to be overcome all deserve further research in their own right. This case study highlighted the changing nature of the planetarium projector from the 1940s through to the 1960s. The 18-year period examined here saw a global explosion in the number of planetariums and the rapid development of intercontinental networks of supply, collaboration, and competition. This trend was boosted by the Space Race, which, in turn, increased competition in the market.

Competition in the planetarium industry was increasingly fierce in the 1960s, and the entry of Goto to the deliberations around Armagh Planetarium was a well-coordinated project. All three company branches approached Lindsay and Moore to sell them on a Goto system. It presents a stark contrast to the sales tactics employed by Spitz Laboratories over the previous years, which relied upon personal connections and well-established networks.

As more planetariums across the globe join the Centennial celebrations, attention will shift to their own histories. Many planetariums, like the Armagh Planetarium, contain rich historical archives that can provide excellent material for exhibitions. Guests who attended the planetarium in their childhood may now be returning with grandchildren, and they are particularly interested in seeing images of the projectors, exhibitions, and architecture they remember from their first visit.

This archival research project was conducted with a simple chronological methodology, focused on letters and their senders. But even in this, it must be noted that people have been left out of the story for brevity. Whilst the archives cannot tell us who was responsible for posting, editing, and typing the letters sent from Goto and Spitz, we know that in the Armagh Observatory, that role fell to the Secretary,

Sheelagh Grew. Her role as counsel and editor for Lindsay cannot be understated, and she was certainly regarded at the time as instrumental in the complex decision-making that occurred in the Observatory.

As we have seen, the history of an institution as relatively young as the planetarium is often only considered when it needs to be streamlined into a few paragraphs for a brochure, an exhibition, or a website. This, however, can obscure important events and individuals from institutional history, even if they were crucial for the existence of the institution as it stands today. The full story has yet to be unearthed and presented in its full complexity. Perhaps the Centennial of the Planetarium will encourage institutions to dig into their own history and present it to visitors alongside their astronomy.

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Biographies

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