The Marine Biological Association, Plymouth

How It All Began

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The establishment of the Marine Biological Association (MBA) came about because of differences in opinion over the health of the fishing stock around the UK. In 1866, the Royal Commission on the Sea Fisheries of the UK stated that 'fisheries were inexhaustible' and said there was no need to change current fishery practice.[1] By the mid 1880s, this idea was still being supported by leading scientists of their day, as others began to change their thinking around fish stock and marine biology. One of these was Thomas Huxley, although he would later move towards these new ideas and was even voted as the first president of the MBA.

In 1883, London hosted the International Fisheries Exhibition, and discussion began to evolve. The change of the model of fishing, as well as faster transport to cities and towns and larger fishing vessels, were thought to seriously affect fishing stock, leading to depletion. Interest in the need to scientifically assess and study the oceans began to grown amongst more socially conscious naturalists and these ideas were generally supported by the man who would become the first honorary secretary (and future president) of the MBA, Professor E. Ray Lankester. It was he who would lead the MBA for almost 40 years, including during the 1920s.

The idea of establishing a body to achieve this aim was put into practice at a meeting of the Royal Society in 1883, which was attended by many leading scientists of the day from all fields. Here it was proposed that a 'Marine Biological Association' would be founded. Funding from the UK government was immediately offered, as they wanted the new Association to provide them with research and statistics to advise and support any new legislation that they wished to put in place. Support particularly came from Joseph Chamberlain, who was, at that time, president of the board of trade and also from Plymouth Town Council.

One of the aims of the Association was to build a laboratory in the UK for the study of marine biology, and a proposal was received from Plymouth Town Council and other benefactors of a possible site on The Hoe. Although other sites were considered, the support in Plymouth and the access to clean seawater nearby meant that the building of the MBA

[1] Report of the Commissioners (1866). *Report from the Commissioners on the Sea Fisheries of the United Kingdom, with Appendix and Minutes of Evidence*, 2nd edn. London: Eyre and Spottiswoode.

laboratory began on Plymouth Hoe in 1887 and completion was achieved by 1888. The building was built of local Devonian limestone and a lease was drawn up for the piece of Crown land on which is still stands today. The laboratory was named 'Citadel Hill' and was officially opened on 30 June 1888.

Funding for the new building and for the Association was also provided by wealthy benefactors and by the model of the MBA as a 'learned society', a society formed to promote a particular field of academic study. Membership was offered, and, in return, members could make use of the laboratory's facilities, including the library, and receive copies of *Journal of the Marine Biological Association (JIMBA)* – an arrangement that still exists to this day.

Figure 1: Construction of the Citadel Hill Laboratory, 1887.[2]

[2] MBA archives at the NMBL.

Figure 2: The official opening of Citadel Hill, 30 June 1888. [3]

Figure 3: The Citadel Hill Laboratory, 1900.[4]

[3] MBA archives at the NMBL.
[4] MBA archives at the NMBL.

The MBA in the 1920s

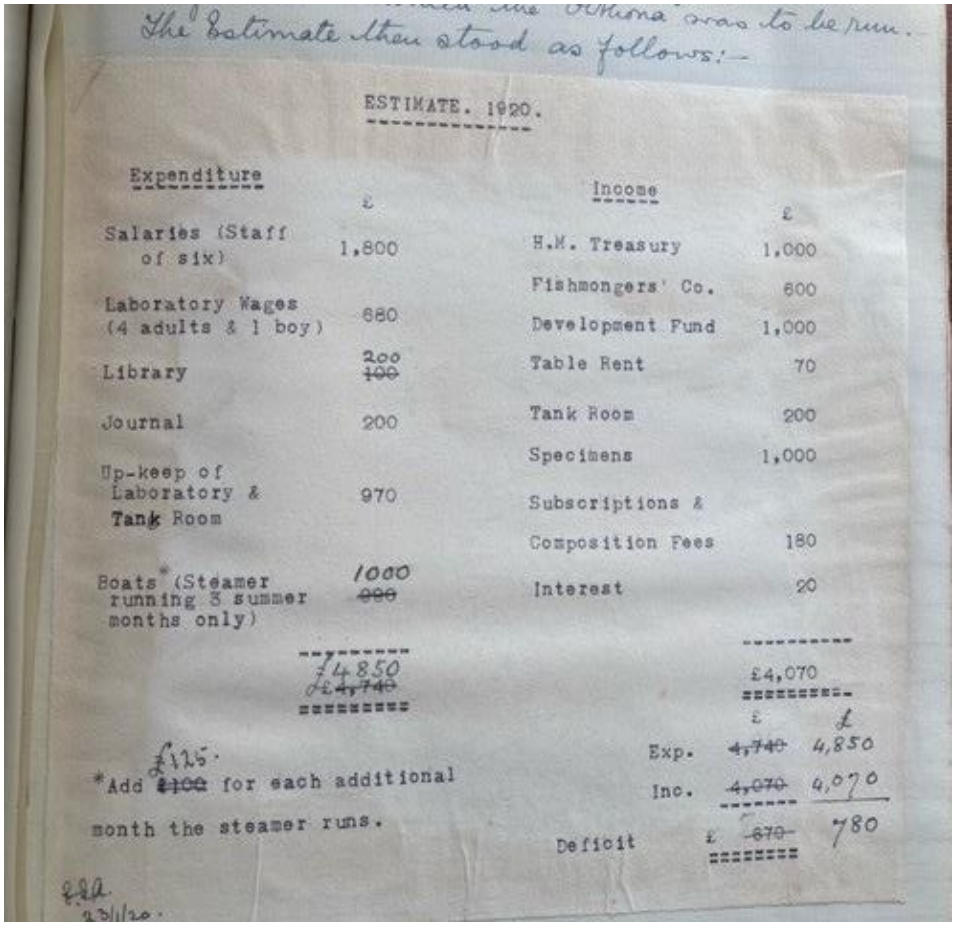
Like much of the country, the MBA and Citadel Hill found themselves deeply affected by the Great War, which saw many of the male population taking part in the conflict, including amongst the fishing and scientist communities.

Edgar Johnson Allen, who had been the MBA director since 1894, managed to keep the laboratory open throughout the war. The 1920s saw financial matters as his greatest concern. The post-war period also saw a reorganisation of government fisheries policy and research, and the conversation began on what the aim of the MBA was; was it academic study or government research?[5]

With scientists returning from the conflict and national and international co-operation beginning to grow, it was felt that an enlargement of the building and the number of staff at the MBA should be a priority. However, this would require funding. The government was only willing to provide two-thirds of the total amount needed to run the MBA, on the proviso that all research results were made available. This funding came via a development committee and the treasury, and so fish stocks and fishing would be very much the focus of the MBA's research during this period. Research centred around such subjects as invertebrate physiology; plaice, herring and oyster stocks; fishing nets; and crustaceans, with the results of the research being used as a basis for future fishing legislation. Another subject was hydrographic chemistry, which involved mapping the surface temperature and salinity of the oceans.[6]

The MBA needed to find additional funding in order to continue its work and for expansion of the building and staff. An excellent source of information for this is the MBA minute books – the original set is held in the National Marine Biological Library (NMBL) at the MBA. The estimate for 1920 shows expenditure for eleven members of staff – six scientists and five working in the laboratory – as well as costs for the library, journal and boats used for research.[7]

[5] A. J. Southward and E. K. Roberts, 'The Marine Biological Association, 1884–1984: One Hundred Years of Marine Research' in *Occasional Publication No. 3* (Marine Biological Association of the United Kingdom, December 1984).
[6] *Minute Book No. 12 of the Marine Biological Association, 1915–1924* (held in the NMBL).
[7] Ibid.



The Estimate then stood as follows:-

ESTIMATE. 1920.

Expenditure	£	Income	£
Salaries (Staff of six)	1,800	H.M. Treasury	1,000
		Fishmongers' Co.	600
Laboratory Wages (4 adults & 1 boy)	680	Development Fund	1,000
Library	200 ~~100~~	Table Rent	70
Journal	200	Tank Room	200
		Specimens	1,000
Up-keep of Laboratory & Tank Room	970	Subscriptions &	
		Composition Fees	180
Boats* (Steamer running 3 summer months only)	1000 ~~900~~	Interest	20
	4850 ~~£4,740~~		£4,070

£ £
Exp. ~~4,740~~ 4,850
Inc. ~~4,070~~ 4,070
Deficit £ ~~670~~ 780

£125.
*Add ~~£100~~ for each additional month the steamer runs.

£80 23/1/20.

Figure 4: Details of 1920 projected expenditure from MBA Minute Book.[8]

As well as government funding, the MBA also received an income from the Fishmongers' Company, one of the oldest livery companies of the City of London, who, it could be assumed, had a vested interest in maintaining good fish stock around the coast of the UK. Other sources were from membership fees, rent of tables and the tank room for visiting scientists and students (paid for by their universities or the Department of Scientific and Industrial Research), and more unusually for the modern reader, the sale of marine specimens, totalling £1,000 (approx. £41,000 in 2024).[9]

These minute books reflect the small number of staff working at the laboratory in 1920. Other material held at the NMBL, such as wage books, show the actual names and salaries of those working there, including the crew of the boats and administrative staff.[10] The minutes for later meetings show that throughout the 1920s staff would temporarily leave the MBA to take part in expeditions, for example, the Great Barrier Expedition of 1928–1929, and would, therefore, no longer be paid by the MBA. They would need to ask permission for these leaves of absence, and they were automatically approved.[11]

[8] MBA archives at the NMBL.
[9] *Minute Book No. 12 of the Marine Biological Association, 1915–1924.*
[10] *Wage Book of the Marine Biological Association, 1923* (held in the NMBL).
[11] *Minute Book No. 13 of the Marine Biological Association, 1925–1934* (held in the NMBL).

Even with these other sources of income, the MBA needed to accept funding from benefactors in order to expand the building as planned. Two of those who provided much of the money for the 1920s extension were George Parker Bidder, who was a marine biologist studying sponges, and Edward Thomas Browne.[12] G. P. Bidder was later to serve as the MBA president during World War Two. Further expansion of the laboratories was also planned, along with bringing electric power to the building, which was currently lit by gas. Gas power was also used to run the engines for the sea water pumps, but this was an expensive commodity for the Association. As previously mentioned, further funding was raised by renting tables and space in the laboratory to students, which were often paid for by their universities.[13] A more direct approach was also made by the MBA, who contacted all noteworthy biological professors at universities to appeal for funding for the expansion work.

The nature of research undertaken by the MBA and the need for increased space and staff with a different set of skills was shaped by the government's proposed re-examination of funding for fisheries research. An advisory committee, chaired by the biochemist William Hardy, was set up, and the MBA was asked to advise on the future of this type of research, with its recommendations being adopted. This led to a request for the MBA to create plans for its future research, including costings for such work. The result was the idea of a 'Department of General Physiology',[14] increased wages for the scientists and a new vessel for their use (the SS Salpa). Also, more treasury involvement in the running of projects and a more formal system of accounting needed to be followed.[15]

Work at this time included more study of the chemistry of the ocean around Plymouth, as well as plant production. Scientists based at the MBA included such figures as marine zoologist Charles Maurice Yonge and Ebenezer Ford, who was studying herring stock. As well as this, a major study of the inland fishing grounds was carried out by Robert Selbie Clark in 1921–1922. Clark had been the biologist on Ernest Shackleton's 'Imperial Trans-Antarctic Expedition' between 1914 and 1917. His replacement in 1923 was First World War veteran and future director of the MBA, Frederick Stratten Russell.[16]

The increase in interest and funding for the subject of physiology in the marine environment meant further expansion was needed for both permanent MBA staff and the large number of visiting scientists, so that they had the facilities they required for their research. The next stage of this was the extension to the North Building, which was completed in 1926. Visitors could also experience a summer course in this subject. These were carried out by eminent men in the field, such as the Nobel Prize winning scientist Archibald Vivian Hill – another future president of the MBA – who attended the course in 1924.

[12] A. J. Southward and E. K. Roberts (1984).
[13] *Minute Book No. 12 of the Marine Biological Association, 1915–1924.*
[14] A. J. Southward and E. K. Roberts (1984).
[15] *Minute Book No. 12 of the Marine Biological Association, 1915–1924.*
[16] A. J. Southward and E. K. Roberts (1984).

As well as this course, it was seen as important that the MBA was involved in the training of the next generation of fishery naturalists, and so for this purpose, new classrooms were built at Citadel Hill. The famous 'Easter Vacation' courses, run by the marine zoologist, James Herbert Orton, included the writing of rhymes and verses, some of which are still preserved in the NMBL archives.[17] Orton continued to run these courses into the 1930s, visiting the MBA in the University of Liverpool's summer vacation, where he was now chair of zoology. Members of staff at the MBA often moved on to prestigious roles at academic institutions, and Orton is an example of this progression.

In general, the MBA's staff did reflect the wider societal situation at the time, in that science and academia were dominated by men. However, female scientists did begin to make an impression at the MBA as early as 1905. In that year, the first female fishery scientist and assistant naturalist, Rosa Mabel Lee, was appointed. The involvement of women in the studies at the MBA was often on an informal basis and was not always acknowledged formally. An example of this was the work of Elsie Sexton, who had studied at the Truro School of Art and provided many illustrations and drawings for the work of male scientists. She was able to become a part of the MBA through her friendship with Dr E. J. Allen. Women at this time often had to have the support of their families and the right social contacts to allow them to have access to the academic world.

One of the most notable female scientists at the MBA in the 1920s, and someone who spent the majority of her working life there, was Dr. Marie Lebour. She studied the life cycles of various creatures, including molluscs, and created drawings of plankton and other organisms. Her personal library and papers are still held in the NMBL today. Working alongside F. S. Russell during the 1920s, the two of them carried out world-famous research on zooplankton, using 'plunger jars' created there to study crustacean larvae and other zooplankton animals.[18]

As well as scientists and visitors, the MBA did employ a small number of local people at this time, mainly working in the laboratory or on the steam boats used for research. An example would be William (Bill) Searle, who is identified in the wage records as the laboratory fisherman and who had joined the MBA as a boy in 1895.[19] Women were often employed in clerical roles or to look after the fledging library, which had been started as soon as the MBA was established, using donation of books as its first collection, based in the director's office.[20]

[17] Ibid.
[18] A. J. Southward and E. K. Roberts (1984).
[19] *Wage Book of the Marine Biological Association, 1923* (held in the NMBL).
[20] *Minute Book No. 12 of the Marine Biological Association, 1915–1924* and *Minute Book No. 13 of the Marine Biological Association 1925–1934*.

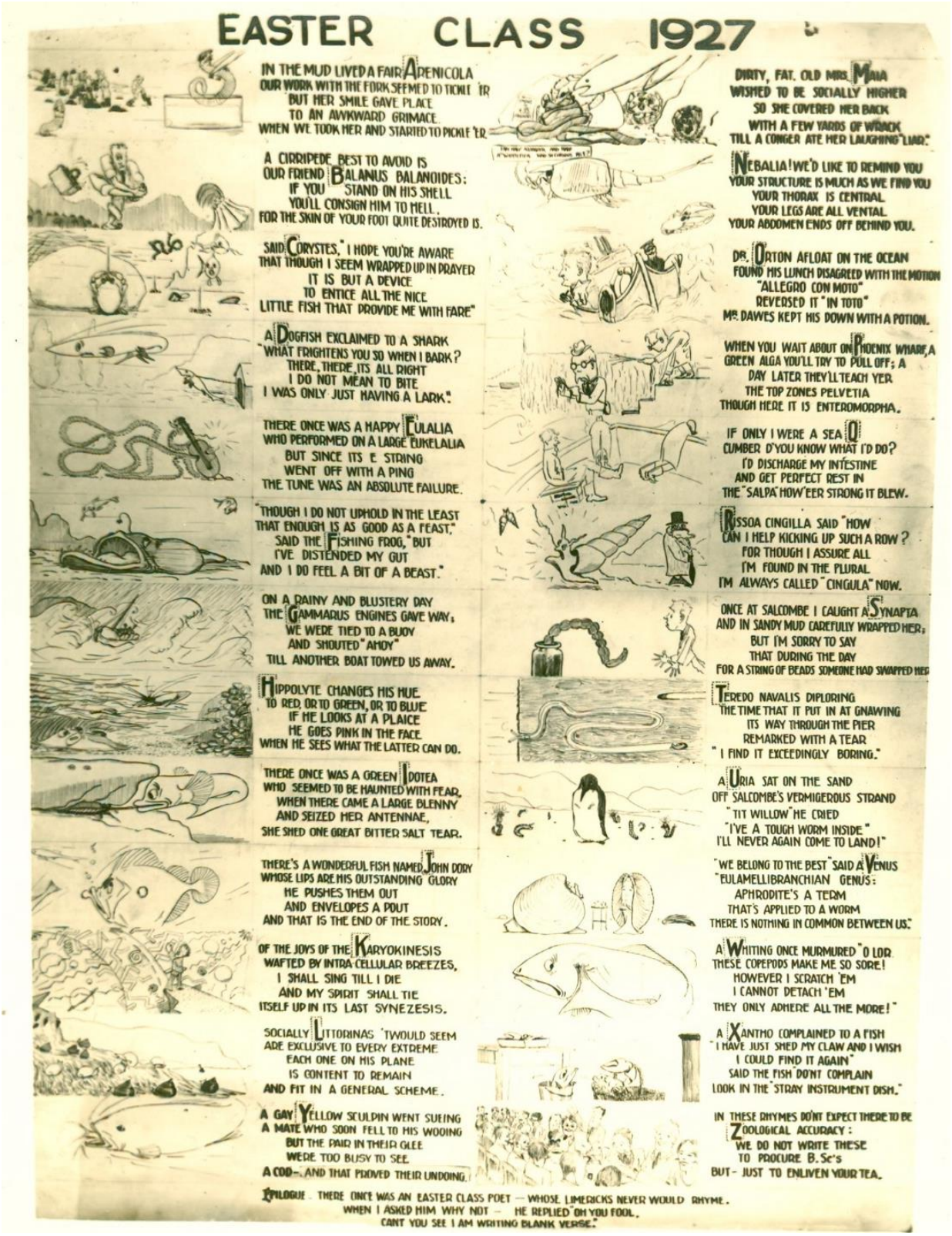


Figure 5: Poem created by the Easter class of 1927 with illustrations.[21]

[21] Original is part of a display in the NMBL.

As well as setting up its own courses to train future marine biologists, the MBA was also part of an attempt to establish university education in the South West of England. It supported an appeal to this effort made by the Board of Education. It was already possible to gain a university degree in the South West by attending the Royal Albert Memorial College, which was, at that time, based in Gandy Street in Exeter. This institution prepared students for University of London external degrees, but was not able to award degrees itself.

However, in 1922, the University College of the South West was established, and a senior member of staff at the MBA sat on the court of governors, giving the organisation direct influence over university-level education in the area. This institution ultimately evolved into the present-day University of Exeter.[22]

The link to academia for MBA staff also developed in other ways during this period. One of the comments the MBA staff had made in the past, which was recorded in the MBA minutes books, was the fact that pay wasn't comparable at the MBA when looked at alongside salaries on offer at the universities for academic roles. In the 1920s, the MBA began to try and correct this, so that staff would stay and carry out their research at the laboratory. Arrangements were also put in place for the staff to be able to join the university pension scheme.[23]

This link to both government and academia can be evidenced throughout the 1920s, but there were also other ways in which the MBA tried to educate people in marine biology. The Plymouth Aquarium was housed in Citadel Hill until the late 1990s, where it was moved to a purpose-built building in the Barbican area. At the MBA, free entrance was given to children and also to local fishermen. The MBA also hosted visits from schoolboy groups and entered into agreements with external bodies, such as British Instructional Films, who funded a series of films on marine life to be shown in educational settings.

So, in the 1920s, the MBA provided international, national and local effects in the fishing industry, marine science, education and government policy. It became an international hub for marine science, attracting eminent visitors from countries such as the USSR and Germany. Its research was used directly to inform UK government policy for the local industry of fishing. It offered employment opportunities and helped the local economy by its demand for accommodation for visiting groups and staff. As well as these aspects, it provided visitors with the attraction of the aquarium and made efforts to expand the education of people on marine biology using the new medium of film.

Moving into the 1930s

By the end of the 1920s, the success of the research at Citadel Hill meant that further expansion was still being considered. It was also the end of a stable period of leadership, which began with the death of Sir E. Ray Lankester in August 1929 and the retirement of

[22] A. J. Southward and E. K. Roberts (1984).
[23] *Minute Book No. 12 of the Marine Biological Association, 1915–1924.*

longstanding director E. J. Allen in 1936. The presidency of the MBA passed to Walter Guinness, Lord Moyne, who left the post when the Second World War began in 1939 and who was sadly assassinated in the Middle East in 1944. The director's post was taken up by marine biologist, Stanley Wells Kemp, who was resident when the building was hit by a German bomb during the war and who died in 1945.

The later 1920s saw discussions continue around the topic of finance so that the laboratory could continue to expand, both in terms of space and staff numbers. The conclusion was reached that government funding should be limited and more private funding would need to be found. A proposal was therefore put before the Rockefeller Trust for both expansion of the buildings and a new vessel, which would replace SS Salpa for more long-range voyages. This was partially successful and resulted in the expansion of the North Building, completed in 1931. Subjects such as seashore and benthic animals and those living on the sea bed continued to be studied, with the number of new graduates undertaking training at Plymouth being supported by funds such as the Lankester Fund and the opportunity to work as a student probationer. Figures who joined the staff in this way went on to be both directors and deputy directors of the Plymouth Laboratory, as well as editors of *JIMBA* and chairman of the National Environment Research Council.

Attention also turned to the library (later named the NMBL), which had outgrown its home on the top floor of the west end of the South Building. A library committee was set up in 1928 to discuss the ever-increasing cost of scientific journals, particularly the newer titles and those which were being published in Germany. By 1930, the Allen Building of 1921 had been converted into a new library space.[24] Funds were also requested to improve the space, and many donations of books were made by leading scientists working at the laboratory, including G. P. Bidder, E. T. Browne and, before his death in 1929, E. Ray Lankester.

Conclusion

The MBA, established in the 1880s when concerns about fishing were beginning to be expressed in the scientific community, faced many challenges in the post-war era of the 1920s. The main focus for directors in this time was how to expand its primary purpose of academic research with the demands of government departments and other bodies who were able to offer funding for this work.

In the 1920s, the marine biology community viewed the MBA and its newly expanded laboratory at Citadel Hill as an international centre for research, and many famous names of the day both trained and worked at the MBA, including female scientists. The MBA was seen as part of the academic community, which influenced staff concerns such as pensions and salaries. Funding was a constant concern, although there were many ideas put in place to cover costs; these included renting laboratory space, classes for both amateur and professional marine scientists and the sale of marine specimens.

[24] *Minute Book No. 13 of the Marine Biological Association, 1925–1934*.

Overall, the 1920s were a very productive time for the MBA, with expansion in both laboratory space and number of staff, and the organisation found itself well prepared for the challenges of the 1930s.