

UC Berkeley

Charlene Conrad Liebau Library Prize for Undergraduate Research

Title

Betrayal in Brussels: The Conference that Changed International Science

Permalink

<https://escholarship.org/uc/item/2302498d>

Author

Richardson, Glenn

Publication Date

2016-04-01

Undergraduate

Betrayal in Brussels: The Conference that Changed International Science

Glenn Richardson

11/21/15

Abstract: In 1853, despite a rising sense of nationalistic, militaristic, colonial, and economic competition between countries, many European nations participated in the Conference of Brussels, which organized a cooperative, scientific venture to help chart and understand the oceans. The reason that the nations ignored their competition and worked together for the promotion of science was the economic and political need for scientific development that came with large scale empires, as well as the work of scientists and intermediaries who formed a worldwide network to pressure governments into participating. Following the conference, however, intermediaries were shunned by their scientist counterparts and forced to leave the field, creating a “professionals only” vocation that is now the standard schema for science. In this way, the Conference of Brussels not only demonstrates what type of science was valued in this period of history, but also how science came to be the exclusive profession that it is today.

*"Henceforth, when naval officers of different nations met in such numbers it was to deliberate at the canons' mouths upon the most officious means of destroying the human species. To-day, on the contrary, we see assembled the delegates of almost every maritime nation, for the noble purpose of serving humanity by seeking to render navigation more and more secure. I think, Gentlemen, we may congratulate ourselves with pride upon the opening of this new era."*¹

The quote above recounts how Matthew Fontaine Maury, superintendent of the U.S Naval Observatory, greeted the delegates gathered for the International Maritime Conference. Prior to this conference, ships met mostly to kill each other in warfare. But, as Maury states, this conference, held in Brussels in the year 1853, was convened in an effort to unite all maritime nations of the world through the standardization of meteorological practices and the implementation of a universal database of measurements.² Sponsored by the United States (U.S.), supported by Russia, organized by Britain, held by Belgium, and including delegates from ten different nations, this conference truly was an international undertaking.³ Despite the conference's noble intentions, it suffered from nationalistic, political and scientific disagreements, demonstrating how difficult it was to organize.⁴ In fact, so great was this lack of co-operation that the British delegates did not appear until the second day of the conference, the Dutch delegate did not appear until the last day, and Maury was forced to sail across the Atlantic Ocean without knowing whether or not the conference would even occur.⁵

Despite these problems, the conference did take place, largely thanks to the economic and social climate of the time, as well as through the collaboration of two types of naturalists: scientists - university educated men who focused on theory and made their living as naturalists, and intermediaries - self-taught men who studied science in order to apply it to their profession for

¹ Matthew Maury, "Metrolological Observations" (Paper presented at the First International Maritime Conference, Brussels, Belgium, August 28 – September 9, 1853).

² Alexander Findlay, "A Comparative Atlas of Ancient and Modern Geography," *The Athenaeum: Journal of English and Foreign Literature, Science and the Fine Arts* 1340 (1853): 968, accessed November 11, 2015.

³ Roger Charfier, "Fratres in Maribus 150 Years Ago, the First International Ocean-Science Conference," *Journal of Coastal Research* 20 (2004): 349, accessed November 10, 2015.

⁴ Maury, "Meteorological Observations."

⁵ Charfier, "Fratres in Maribus," 349.

practical gain. Overall, the creation of this conference revealed the dependence upon practical science that dominated this time period, as well as the belief that the pursuit of science was greater than any one nation's desires. Similarly, the conference itself changed meteorology's status as a minor science, as well as the educational and professional experience necessary to study science.

The idea of an international maritime conference and the creation of a unified database of measurements at sea was not a new one. This exact conference had been proposed to the world twice before. The Russian scientist Adolph Kupffer made one such offer a few decades before Maury did. After Kupffer's proposal failed, a Dutch scientist, Christopher Ballot, proposed the same idea. Yet, just like Kupffer's proposal, Ballot's proposal was ignored.⁶

However, as the world entered the mid-nineteenth century, social context began to change with the rise of imperial hegemonies; the idea of an international maritime conference became more appealing. Following the work of Charles Darwin and Isaac Newton's natural laws, as well as the practical success of Alexander Von Humboldt, people around the world began to fantasize about exploring the oceans and discovering the natural laws that governed it.⁷ Additionally, after Britain expended almost all of its might fighting the Napoleonic Wars, the British bourgeois began a massive social push across Europe for world peace that lasted from 1848 until 1853.⁸ Furthermore, with most European nations now managing distant, overseas colonies - such as Britain, whose empire stretched from the mainland to India - the desire for fast and effective communication and shipping was paramount.⁹ In fact, when the Dutch intermediary Marin Jensen visited Maury in the U.S, he made official inquiries into the establishment of a steamship connection between America and Europe.¹⁰ Similarly, the discovery of gold in California and Australia demanded the fastest travel possible

⁶ Azadeh Achbari, "Building Networks for Science: Conflict and Cooperation in Nineteenth-Century Global Marine Studies," *Isis* 106 (2015): 257, accessed November 11, 2015.

⁷ Alphonso Smith, *Matthew Fontaine Maury* (Charlottesville: University of Virginia, 1924), 2.

⁸ David Nicholls, "Richard Cobden and the International Peace Congress Movement, 1848-1853," *Journal of British Studies* 30 (1991): 351, accessed November 10, 2015.

⁹ "The Maritime Conference of Nations at Brussels," *Debow's Review and Industrial Resources, Statistics, etc. Devoted to Commerce, Agriculture, Manufactures* 16 (1854): 520, accessed November 13, 2015.

¹⁰ Achbari, "Building Networks for Science," 261.

between the Atlantic and Pacific Oceans.¹¹ As historian Helen Rozwadowski notes, “early ocean science,” as one of the many new Humboltian sciences, “blended the promise of tangible economic benefit with the political potency that derived from mapping and discovering.”¹² Thus, with nationalism and world trading beginning, governments saw the potential for expedited travel across the Atlantic as a means of nurturing national identity, international pride and economic profit.¹³

It was at this point that Maury, the father of the Conference of Brussels, was appointed superintendent of the U.S Naval Observatory. Once there, Maury began to collect and compile data from ships’ logs spanning decades into the past.¹⁴ From these logs, Maury outlined the currents and winds that ran through the Atlantic Ocean in an organized and systematic manner, much different than the haphazard manner of previous years. Eventually, he published these results in his *Wind and Current Chart of the North Atlantic*, outlining how a captain could make use of the natural flow of the ocean in order to travel as fast as possible from any given port to another.¹⁵ Soon, almost every captain in the North Atlantic was using these maps, and as a result the U.S. began to save thousands of dollars a year on shipping costs.¹⁶ Other countries, seeing both the practical use of science and the economic power that Maury’s work granted America, began to look at these charts with growing interest.¹⁷ In this way, Maury’s charts led nations to the idea of an international maritime conference by their promise of advanced and practical scientific knowledge achieved through mutual cooperation; the more ships that contributed logs, and the more geographically spread out these ships were, the more comprehensive and extensive the resulting charts were.¹⁸

¹¹ Chester Hearn, *Tracks in the Sea: Matthew Fontaine Maury and the Mapping of Oceans* (Camden: International Marine, 2002), 134.

¹² Helen Rozwadowski, *Fathoming the Ocean* (Cambridge: Harvard University Press, 2005), 5.

¹³ Hearn, *Tracks in the Sea*, 134.

¹⁴ Ship logs were daily records that a captain, or appoint officer, would take while at sea. What this entailed prior to the conference of Brussels varied captain to captain, but usually included such things as direction and strength of the wind, temperature of both the air and water, any storms or clouds in the area etc.

¹⁵ Charles Lewis, *Matthew Fontaine Maury: The Pathfinder of the Seas* (Annapolis: United States Naval Institute), 61-63.

¹⁶ Jacquelin Caskie, *Life and Letters of Matthew Fontaine Maury* (Richmond: Richmond Press, 1928), 32.

¹⁷ Ibid, 107.; “The Maritime Conference,” 523.

¹⁸ Achbari, “Building Networks for Science,” 260.

However, while the desire for economic prosperity certainly interested governments in Maury's charts, it was the scientists and intermediaries who, forming a network of correspondence, convinced their governments that international collaboration was the best way to produce these charts. In general, the intermediaries - who wanted to use the conference for practical reasons like improving shipping and commerce - hoped that by cooperating with scientists they would gain the scientific acumen and social standing necessary to make their voices heard among influential, upper-class patrons. Likewise, the scientists - who wished to use the conference as a means to expand and promote their field - hoped that by aligning themselves with intermediaries they would gain more funding and support from the government.¹⁹ Thus, as each European nation began to express open interest in Maury's charts, the intermediaries and scientists of the nation would work together to pressure, and sometimes mislead, their governments into agreeing to the conference, rather than simply instituting their own system of log books.²⁰

Belgium, the site of the conference, was the exception to this rule. As the king of a newly formed nation, Leopold I saw the conference as a means of asserting his country's new independence on an international scale.²¹ As a result of this enthusiasm, Adolphe Quetelet, Director of Belgium's national observatory, and the network's contact in Belgium, did not need to pressure his government as other members did. As such, Quetelet only served in a correspondence capacity, adding his name to the network's and maintaining contact with both Maury in America and Kuppfer in Russia.²²

The Netherlands, however, was not like Belgium at all. In order to secure Dutch participation, the network relied on Jansen, an intermediary in the Dutch navy, to rally support among the people, expand the network in the Netherlands, and convince the Dutch government that the conference was the best way to secure economic and colonial strength. In 1831, at the age of 14, Jansen, a Belgium-born Dutch citizen, applied to the Royal Institute for the Navy, eventually becoming an officer four

¹⁹ Ibid, 259.

²⁰ Ibid, 257

²¹ Charfier, "Fratres in Maribus," 349.

²² Ibid, 248.

years later. As a lieutenant, Jansen first saw the practicality and benefits of an in-depth study of the sea while serving in Surabaya, one of the Netherlands' colonies. After returning from overseas duty, Jansen wrote a pamphlet in which he urged the Dutch government to focus more on its colonial holdings by building a stronger navy, encouraging more trade and providing better protection for merchants. To this end, Jansen advocated for more comprehensive wind and current charts. However, he soon received anonymous criticism on his pamphlet concerning the lack of understanding he presented on the astronomical aspect of what he advocated.²³ In order to correct this shortcoming, Jansen reached out to the Dutch astronomer Frederik Kaiser for help in revamping the Dutch Navy's maps. Thus, the first scientist-intermediary bond was formed to promote the expansion of practical meteorology as a means of securing economic and colonial power.²⁴

Jansen and Kaiser soon formed a strong relationship, and it was in fact Kaiser who first introduced Jansen to Maury's *Wind and Currents* charts. After using the charts for himself, Jansen saw the potential such an idea would have if every ship in the world participated in data collection. As soon as he was able to, Jansen traveled to Washington D.C to discuss this idea with Maury in person.²⁵ After spending the summer working together, the two decided that they each would rally support for the idea in their own country and attempt to convince as many other scientists and intermediaries as possible to do likewise.²⁶ Thus, the network of scientists and intermediaries was born for the express purpose of making the conference a reality.

Upon returning to the Netherlands, Jansen immediately began pressure the Dutch government by giving public speeches on the potential of an international conference, thereby rallying support from Dutch ship owners.²⁷ It was during this stage of Jansen's work, that he came into contact

²³ While the person, or persons, who wrote this criticism remains unknown, Achbari does state that it is commonly believed to be Kaiser himself who wrote the criticism in order to make himself useful in Jansen's work, and by extension, the Dutch government's work.

²⁴ Achbari, "Building Networks for Science," 257-260.

²⁵ Ibid, 261.

²⁶ Können, "The Brussels Conference and its Legacy" (Paper published by KNMI on the 150th anniversary of their founding, de Blit, Netherlands, May, 2003).

²⁷ Charfier, "Fratres in Maribus," 350.

with Ballot who was not only in contact with Quetelet, but was also working on an international system of meteorology. Jansen immediately perceived that Ballot's work was very similar to Maury's and his own, and that it would also benefit greatly from more governmental support. As a result, Jansen began to serve as Ballot's liaison in the government, emphasizing the usefulness of his work, while also placing Ballot in contact with Maury, expanding their network even more, and creating a stable base of support in the Netherlands.²⁸

However, while Maury and Jansen focused on strengthening their network in the Netherlands, Britain began to encounter more problems managing its over-seas empire, and it soon needed Maury's charts even more desperately. For example, it took royal decrees so long to cross the ocean and reach a governor that oftentimes Britain was not sure it was responding to a current problem, or that its command had been received at all.²⁹ Additionally, in an effort to preserve their hegemony of the seas, Britain began to refit many of its ships with the latest in maritime technology, leaving its navy severely understaffed. Furthermore, British agents across the world were making numerous scientific discoveries, which required confirmation and action, a process that demanded British ships sail to far-off locations. This difficulty in logistics was not a mere discomfort, but a clear and serious problem. The House of Lords eventually had to ask citizen ship-owners to help carry letters across the Atlantic, as the Empire simply lacked the available ships necessary to maintain that function and would soon have to rely on private industry for the task.³⁰ It is thus understandable why the British press marveled at the US President's proclamation that "the passage from the Atlantic to the Pacific ports of [America] has been shortened by about forty days", thanks to the *Winds and Currents* charts.³¹ Maury's work offered the solution to the British Empire's problems. Britain's need for these charts and maps presented itself most clearly at the actual conference, when the British delegate, Captain Frederik Beechy, who missed the conference's opening, expressed complete surprise to learn

²⁸ Achbari, "Building Networks for Science," 260-262.

²⁹ Findlay, "A Comparative Atlas," 968.

³⁰ Ibid, 891.

³¹ Ibid, 1075

that Maury has no direct orders from his government to expand the log collection to merchant marines.³² Thus, both Britain's economic and political needs made Maury's system of charts and maps incredibly appealing to the British government.

As great as the economic and political factors were, the intermediaries and scientists of Britain still had to convince their government that an international conference was the best way to obtain the charts it so desperately needed. This process first began in 1851, when Sir John Buryogyne of the Royal Engineers asked the government to sponsor a joint conference between America and Britain.³³ The government consented and approached the U.S. government. At that point, the Royal Society joined in pressuring the English government, informing them that by participating in an international conference Britain could save up to half a million pounds annually.³⁴

In addition to the Royal Engineers and the Royal Society, socially influential scientists, working with Maury and other intermediaries, began to pressure the British government from the inside.³⁵ The core of this force was the deputation made of Lord Wrottesley, Lord Harrowby, the Bishop of Oxford, and the Earl of Rosse, all of whom met with the First Lord of the Admiralty in an effort to convince him to adopt Maury's idea.³⁶ It was, however, Lord Wrottesley, a member of the House of Lords, who pressured the British government the most. In his attempt to rally support for Maury and his plan, Lord Wrottesley gave a rallying speech that depicted Maury as an unappreciated genius, and emphasized the "practical recommendations" that Maury offered.³⁷ He also made specific references to neural networks and the telegraph, the expansion of water vapor and the steam engine, as well as France's use of polarized light in the sugar industry.³⁸ These allusions not only served to convince the

³² Maury, "Meteorological Observations."

³³ Duncan Agnew, "Robert Fitzroy and the Myth of the 'Marsden Square': Transatlantic Rivalries in Early Marine Meteorology," *Notes and Records of the Royal Society of London* 58 (2004): 25, accessed November 9, 2015.; Richard Cummings, "The Growth of Technical Coöperaton with Governments Aboard, 1849-1853," *Pacific Historical Review* 18 (1949): 208, accessed November 10, 2015.

³⁴ Findlay, "A Comparative Atlas," 1137.

³⁵ Guy Houvenaghel, "Ocean Sciences: Their History and Relation to Man" (paper presented at the 4th International Congress on the History of Oceanography, Hamburg, September 23-29, 1987).

³⁶ Findlay, "A Comparative Atlas," 891.

³⁷ Ibid, 915

³⁸ Ibid, 915.

British government that participating in the conference would bring them the economic and political results it needed, but also to emphasize how science in this time period was seen as a practical tool, and not as merely theoretical knowledge.³⁹

Furthermore, the intermediaries and scientists in Britain not only worked to convince their government of the conference's viability, but also the general public. Much like Jansen, they began to use public speeches to rally the people around the idea of Maury's practical science as a means of solving insecure shipping and commerce. In this respect, these men were incredibly successful. As one newspaper noted, "the great services which [Maury's] science has rendered to commerce have been gracefully recognized by the trade and shipping interests of Liverpool ... by gift of \$5,000 and a service of plate."⁴⁰ In this way, Maury's network soon won the support of Britain's government and its people.

While Maury and his network of associates were able to convince the European nations to participate in the conference relatively quickly, America, by contrast, had to endure many years of foreign threats and loss of national pride before it was willing to attempt an international conference. In the beginning of the 19th century, the British army and navy began to encroach on American borders, resulting in the Aroostook War, Henry Clay and the Warhawks, and the War of 1812. In response to these new threats, America began to create a stronger navy, and to place more emphasis on maritime science.⁴¹ In addition to the threat of Britain, the Mexican-American War, while less intimidating, also necessitated practical, hydrographical research. To this end, Maury was assigned to the Naval Observatory for the purpose of creating his *Winds and Currents* charts to aid the Navy against these foreign threats.⁴²

In addition to the physical threat of foreign nations, America also had to contend with a massive loss of national pride. Prior to Maury's charts, American sailors who traveled around the

³⁹ Ibid, 891.

⁴⁰ Ibid, 1137.

⁴¹ Lewis, *Matthew Fontaine Maury*, 41.

⁴² Ibid, 50.

world had to rely on foreign charts and maps not only to guide themselves back to their own coast, but even to navigate their own rivers and bays.⁴³ In addition to charts and maps, the U.S. government also lagged behind other nations in terms of published works. Before Maury wrote his first book, *A New Theoretical and Practical Treatise on Navigation*, no American had ever created a nautical science book.⁴⁴ Thus, in order to rectify both of these issues, the foreign threat and the intellectual inadequacy, the federal government began to increase their budget power, allowing themselves to spend more money on science and research, such as the U.S Coast Survey, and Maury's hydrographical office.⁴⁵

While Maury's charts were well received by merchants and civilians, some intellectual societies of America, specifically those of Alexander Bache, head of the U.S Coast Survey, criticized Maury's work for its lack of proper scientific method.⁴⁶ Despite his poor reception at home, Maury and his work were praised all across the world.⁴⁷ Thus, in an effort to promote his work where it was appreciated and desired, Maury began to appeal to foreign naturalists and governments for support.⁴⁸ Maury first made contact with the Hamburg astronomer Carl Rumker, Prussian scientist Alexander Von Humboldt, and the president of the Berlin geographical society, Carl Ritter. All of these men publically praised Maury's work and put him in contact with other scientists and intermediaries. In this way, Maury became a well-known naturalist across the world, earning the respect and praise of his peers, many of whom became a part of his growing network of collaborators.⁴⁹ Furthermore, as a well-respected naturalist, Maury gained the social standing necessary to move about in upper European society.⁵⁰ In this way, Maury continued to expand his list of correspondents, forming even more relationships between the two groups of naturalists, with himself as the head of the network.

⁴³ Ibid, 52.

⁴⁴ Ibid, 27

⁴⁵ Caskie, *Life and Letters*, 114.

⁴⁶ Achbari, "Building Networks for Science," 265.

⁴⁷ Lewis, *Matthew Fontaine Maury*, 74.

⁴⁸ Achbari, "Building Networks for Science," 257.

⁴⁹ Lewis, *Matthew Fontaine Maury*, 82.

⁵⁰ Ibid, 175.

All of these factors, distinct and separate as they were, eventually came together into one force for global unity when Britain, under pressure from Sir John Buryogyne, reached out to America asking for joint participation on a new system of meteorology.⁵¹ Upon receiving the request, Maury saw an opportunity to promote the international maritime conference that he had so long desired. He responded to Britain's request by suggesting, instead, an international conference. He even went so far as mislead Britain by implying that his scientist contact in Russia, Kupffer, had already secured Russia's willingness to participate in the conference, which was not exactly true. Under the combined pressure of the intermediaries in the Royal Engineers, the scientists in the Royal Society, and Lord Wrottesley in the House of Lords, Britain accepted the offer. As soon as Maury received approval from the British government he contacted his remaining correspondents, such as Jansen, Humboldt, and the French astronomer Francois Arago, urging them to continue to pressure their respective governments, and to raise as much support as possible for the conference from any other source available.⁵²

Evidently, the network succeeded not only in pressuring the governments into participating, but also in winning the support of other sources, such as the civilians and intellectual communities. The scientific journals of the time, such as *DeBow's Review and Industrial Resources*,⁵³ praised both the unassuming nature with which these naturalists met, and the practical information they produced.⁵⁴ In particular, this article clearly demonstrates not only the desire for peace and a secure economy among the middle class, but also how the idea of science as a practical tool began to spread even into the common populace. Thus, the main attraction of science at this point of history was evidently the practical aspect, rather than the theoretical portion. In fact, the entire rhetoric of the convention and its report was saturated with the diction of "men of commerce," and clearly

⁵¹ Agnew, "Robert Fitzroy," 25.

⁵² Houvenaghel, "Ocean Sciences."

⁵³ This particular source contrasted it directly to the "flourish and extravagant preparation" of the "European sovereigns" that eventually resulted in "no [useful] knowledge

⁵⁴ "The Maritime Conference," 519.

emphasized that the conference was held as a means to use science for the promotion of trade and economic profit.⁵⁵

However, while Maury was able to gain support from numerous groups around the world, there still was a large degree of opposition to the conference from his rival, Bache and his Lazzaroni movement in America.⁵⁶ While it is certainly paradoxical that Bache and his fellow scientists attacked the one man who most had the respect of their European counterparts, this animosity certainly provides a nuanced look into the relationship between intermediaries and scientists, as well as a foreshadow of the future of meteorology. Bache and his Lazzaronis felt that intermediaries, such as Maury, ruined science with their use of common sense and personal experience. They felt that science should be based solely on the scientific method, rigorous study and observation. Additionally, Bache and the Lazzaronis detested the intermediaries' lack of formal education and training.⁵⁷ Of course, part of this hatred could also have resulted from the fact that Maury and Bache continuously battled over territorial rights. Bache, for instance, had proposed a cooperative research project on the Gulf Stream with Britain months before Maury submitted his proposal for an international conference. Bache's idea would have threatened Britain's hegemony of the seas less than Maury's would. Yet, the British government denied Bache's proposal and instead chose to accept Maury's.⁵⁸ However, while this conflict does reveal the underlying tensions between the two types of naturalists, these tensions only appeared overtly in America prior to the conference. Across Europe, the two groups worked well together in the mutual pursuit of their goals.

Thus, in August of 1823, delegates from across the world gathered for the first ever maritime conference. While they each came from a different country, they came together united by science and the desire to serve "humanity by seeking to render navigation more and more secure."⁵⁹ Of these

⁵⁵ Maury, "Meteorological Observations."

⁵⁶ A scientific movement which attempted to enhance American standards of science in an effort to make them equals with their European counterparts.

⁵⁷ Achbari, "Building Networks for Science," 265.

⁵⁸ Findlay, "A Comparative Atlas," 1064.

⁵⁹ Maury, "Meteorological Observations."

twelve men, only two, Quetelet and James, were not a part of their respective nation's navy. However, Quetelet was the director of Belgium's Royal Observatory, and James was a member of Britain's Royal Engineers. Thus, all of these men were intermediaries to some extent.⁶⁰ In that respect, it was the intermediaries who determined the outcome of the conference, and not the scientists with whom they had allied. While this fact emphasizes the desire for practical science that dominated the governments of the time, it would later result in disagreements between scientists and intermediaries on the direction that meteorology should take following the conference.

The actual conference, though, both helped and hindered science. Of course, its very existence proves that people and nations of various backgrounds and interests were able to set aside their differences in order to pursue a human practice bigger than any of them. On an individual level, this sense of cooperation for a larger purpose presents itself most notably in the interaction between delegates. As noted in *DeBow's Review and Industrial Resources*, the majority of the time the delegates voted in unison, and there was hardly ever any disagreement between them.⁶¹ Additionally, at the beginning of the conference, Quetelet, the president, announced that the official languages of the Conference would be French, since the conference was held in Belgium, and English, as it was the universal language of the time.⁶² However, the majority of the diplomats, including Maury, chose to speak French, rather than their native English, out of respect for the country they were in and their growing sense of international cooperation and brotherhood.⁶³

The most notable example of this higher commitment to science was the resolution made at the end of the conference that asked in times of war, any ship that sinks another ship carrying a log would retrieve the log and deliver it to an appropriate hydrographical office so that even "enemies in

⁶⁰ Achbari, "Building Networks for Science," 267.

⁶¹ "The Maritime Conference," 522.

⁶² The position was originally offered to Maury, who turned it down and nominated Quetelet instead. Quetelet was than unanimously voted as president.

⁶³ Houvenaghel, "Ocean Sciences."

other respects may in this continue their friendly assistance.”⁶⁴ In this regard, at least, the conference was the pinnacle of the international cooperation being achieved through science at the time.

However, even the pinnacle was not without fault, as there was also political maneuvering, nationalistic competition, and debates over scientific ability. The delegates, for instance, did not simply meet in Brussels, but rather in the Home Office of the Belgian government. Furthermore, the conference was opened by an elaborate state dinner hosted by King Leopold I, his family, chief dignitaries, and governors. That is to say, the conference was, from the beginning, firmly under the control of the Belgian government, which used it as a means of strengthening their position in international politics. While this unto itself is not enough to ruin the cooperative nature of the conference, the delegates, at the beginning of the conference, resolved that their participation in no way bound them, or their government, to any action.⁶⁵ Of course, this resolution was a decision of security and most likely a standard response for a conference of this nature. However, it still hints to the fact that this conference was not a completely pure attempt at international cooperation for the good of humanity, but rather to a small extent, an attempt by each nation to further its own goals through mutual, and possibly temporary, collaboration.

There still was, though, the influence of nationalistic sentiments that mostly appeared while the delegates discussed the measurements to be taken in the logs. Alexis Gorkovenko, the Russian delegate, for example, expressed his doubt that a Navy, who’s primary directive was militaristic rather than scientific, could be trusted to make the precise, scientific measurements needed for the logs. Maury’s reply, “In the United States Navy these observations are obtained without difficulty,” demonstrated the sense of national pride that Maury felt for America as the first nation to institute this system.⁶⁶ In fact, during the course of the conference Maury often made comparisons such as this, emphasizing the fact that the United States had already implemented and refined the system.

⁶⁴ Maury, “Meteorological Observations.”

⁶⁵ Houvenaghel, “Ocean Sciences.”

⁶⁶ Maury, “Meteorological Observations.”

Yet, the most nationalistic moment of the conference came about when the delegates were debating whether or not barometers were precise enough to warrant inclusion on the list of recommended instruments. A. Delamarche, the French delegate, noted that there was “in France barometers sufficiently accurate” and it was only other nations who could not make precise enough barometers.⁶⁷ While Delamarche was overwhelmingly outvoted and barometers were not included as a necessary instrument, his deviation from the group clearly demonstrates that while this conference does mark an international pursuit of scientific information, it was not completely free of petty disputes among nations.

In addition to nationalistic sentiments though, the conference also suffered from questions of authority. On September 4th, as the conference neared its end, Maury received a letter from his contact in Russia, Kupffer. Read before the entire conference, this letter asked that the delegates attempt to expand their work from maritime meteorology to both land and sea meteorology. After much debate, the delegates decided that while they wished to do that, it was beyond their designated power.⁶⁸ In this sense, the conference ran into barriers of authority and was not the complete and ultimate solution that the intermediaries and scientists desired. Even countries willing to submit to science in pursuit of higher knowledge had their limits. Furthermore, when deciding what categories were to be placed in the log, Delamarche voiced concerns over the inclusion of the gravity of water, claiming it had “too scientific a character.”⁶⁹ While Delamarche was unanimously outvoted, again, his comment on the scientific character of such a measurement reveals a growing tensions between the practical science of the intermediaries and the theoretical work of the scientists. This tension was especially troublesome as it previously existed primarily in America with Bache and his Lazzaroni movement, but was now beginning to appear in Europe as well.⁷⁰

⁶⁷ Ibid.

⁶⁸ Ibid.

⁶⁹ Ibid.

⁷⁰ Ibid

Despite these differences and questions of authority, the conference came to a close and the plan for international logs was enacted. In order to compile and analyze these logs, it was decided that each nation would attempt to create a hydrographical office.⁷¹ In the Netherlands, Ballot's observatory was turned into a state institution and made the office of the new KNMI, the Dutch hydrographical office, with Ballot and Jansen in charge.⁷² In Britain, the Meteorological Department was created within the Marine Department of the Board of Trade with Robert Fitzroy, former captain of the HMS *Beagle*, as head.⁷³ At this point, it seemed like the intermediaries and the scientists had completed all of their goals. The conference had been achieved; a worldwide system for tracking and charting winds and currents was beginning, and soon massive amounts of data would be processed and shared among nations. Additionally, as a result of the conference, meteorology and oceanography became esteemed sciences, on par with physics and chemistry.⁷⁴ Unfortunately, the cooperation between scientists and intermediaries created by this conference would not last.

After the British hydrographical office was formed, Fitzroy, lacking the funds necessary to begin the project as intended, decided to begin it the same way that Maury did, by going through old logs. While doing so, he came across what he believed to be proof that Maury had stolen his idea for log books from the unfinished work of a British officer, Sir Francis Beaufort.⁷⁵ Fitzroy immediately began to pursue this accusation of theft, even though Maury ignored the allegation and Sir Francis himself denied it. In this way, the intermediaries began to appear weak and lose credibility due to their infighting.

Simultaneously, in the Netherlands, Ballot decided to redesign the log book. Jansen attempted to stop him, claiming that Ballot had no right to change what the conference had decided upon. Similarly, Fitzroy, while attempting to change the categories of the log, encountered tensions

⁷¹ Maury, "Meteorological Observations."

⁷² Achbari, "Building Networks for Science," 273.

⁷³ Agnew, "Robert Fitzroy," 27.

⁷⁴ Houvenaghel, "Ocean Sciences."

⁷⁵ Agnew, "Robert Fitzroy," 27.

with Beechy, who also refused to change the logbook decided upon at the conference. Likewise, Maury, upon returning to America, was forced to defend his professional and intellectual capabilities from the fiercest onslaught Bache had ever unleashed.⁷⁶

When these disputes were brought before a government for resolution, the governments constantly sided with the scientists. In this way, Jansen was forced to resign from the Dutch office and Ballot changed the log books, Fitzroy continued on in a failing office with little funding or political power, and Bache gained almost unchecked power of the hydrographical work done by the U.S.⁷⁷

Consequently, the intermediaries, who had united with the scientist in a mutually beneficial pursuit of their goals, were systematically expelled from the field of science that they had elevated, losing their very status as naturalists. This expulsion of the intermediaries is most apparent at the Congress of Vienna, the successor of the Brussels conference. While the Brussels conference was composed solely of intermediaries and contained only two men who were not naval officers, the Congress of Vienna only contained one military officer, American General Albert Myer, who was also the director of the U.S Weather Service. The rest of the delegates were dedicated, professional scientists.⁷⁸ Hence, the conference of Brussels, which was created through the cooperation of scientists and intermediaries, resulted in the ejection of intermediaries from meteorology, as well as the complete professionalization of the field. No longer was meteorology the prerogative of any person who wished to learn it, but rather of those who decided to study it as their profession, for it was only those men whom governments, and other entities, would trust to do science correctly.

Thus, the Conference of Brussels occurred because of the association of intermediaries and scientists, as well as the economic, and political factors of large scale empires, which necessitated expedited travel across the seas. The significance of this conference, though, was the way in which it united various nations together, proving that despite rising nationalism, science was still viewed as a

⁷⁶ Achbari, "Building Networks for Science," 280.

⁷⁷ Ibid, 279.

⁷⁸ Ibid, 281.

human endeavor larger than any one nation. In addition to this testimony, the conference also revealed the image of science as a practical tool capable of solving the problems of nation building that dominated the Age of Empires. Furthermore, the conference itself essentially terminated an entire division of naturalists and elevated the fields of meteorology and hydrography, while simultaneously restricting the fields to professional, career scientists. That is to say, the Conference of Brussels not only demonstrated the practical and universal image of science at the time, but that it also contributed to one of the most fundamental changes to science ever, the professionalization of the field, a change that still dominates the field to this day.

Works Cited

Primary Sources:

Findlay, Alexander. "A Comparative Atlas of Ancient and Modern Geography." *Athenaeum: Journal of English and Foreign Literature, Science and the Fine Arts* 1340 (1853): 808 - 1150. Accessed November 11, 2015.

"The Maritime Conference of Nations at Brussels." *Debow's Review and Industrial Resources, Statistics, etc. Devoted to Commerce, Agriculture, Manufactures* 16 (1854): 519-523. Accessed November 13, 2015.

Maury, Matthew. "Meteorological Observations." Paper presented at the First International Maritime Conference, Brussels, Belgium, August 28 – September 9, 1853.

Secondary Sources:

Achabri, Azadeh. "Building Networks for Science: Conflict and Cooperation in Nineteenth-Century Global Marine Studies." *Isis* 106 (2015): 257 – 282. Accessed November 11, 2015.

Agnew, Duncan. "Robert Fitzroy and the Myth of the 'Marsden Square': Transatlantic Rivalries in Early Marine Meteorology." *Notes and Records of the Royal Society of London* 58 (2004): 21-46. Accessed November 9, 2015.

Caskie, Jacquelin. *Life and Letters of Matthew Fontaine Maury*. Richmond: Richmond Press, 1928.

Charfier, Roger. "Fratres in Maribus 150 Years Ago, the First International Ocean-Science Conference." *Journal of Coastal Research* 20 (2004): 347-350. Accessed November 10, 2015.

Cummings, Richard. "The Growth of Technical Cooperation with Governments Aboard, 1849-1853." *Pacific Historical Review* 18 (1994): 199-212. Accessed November 10, 2015.

Hearn, Chester. *Tracks in the Sea: Matthew Fontaine Maury and the Mapping of the Oceans*. Camden: International Marine, 2002.

Können. "The Brussels Conference and its Legacy." Paper published by KNMI on the 150th anniversary of their founding, de Blit, Netherlands, May, 2003.

Lewis, Charles. *Matthew Fontaine Maury: The Pathfinder of the Seas*. Annapolis: United States Naval Institute, 1927.

Nicholls, David. "Richard Cobden and the International Peace Congress Movement, 1848-1853." *Journal of British Studies* 30 (1991): 351-376. Accessed November 10, 2015.

Rowzadoswki, Helen. *Fathoming the Ocean*. Cambridge: Harvard University Press, 2005.

Smith, Alphonso. *Matthew Fontaine Maury*. Charlottesville: University of Virginia, 1924.

Houvenaghel, Guy. "Ocean Sciences: Their History and Relation to Man." Paper presented at the 4th International Congress on the History of Oceanography, Hamburg, September 23-29, 1987.