# Marta Vannucci's Research about Plankton at the Oceanographic Institute of the University of São Paulo (1946-1969)*

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**Abstract**

In the line of research that studies science and gender relations, this article reflects on scientific research conducted by Marta Vannucci at the Oceanographic Institute of the University of São Paulo (IO-USP). Marta was a researcher recognized in her time, but has not received the attention she deserves, which has impeded the dissemination of her work. Her research was dedicated to the study of plankton and her field trips led to the publication of various articles in the IO-USP Bulletin. These articles demonstrate her commitment to the production of knowledge and active participation that allowed her to conquer space and recognition in the Brazilian university environment.

**Keywords:** Marta Vannucci, Gender, Sciences, Oceanography, Plankton.

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Marta Vannucci (1921-) was one of the most important Brazilian scientists, and was recognized internationally. She worked at various universities and research institutions and published a number of books and many articles with scientific knowledge about the sea. Nevertheless, her academic trajectory has not been properly studied, and her scientific production has not been deeply analyzed. Therefore, there are gaps that must be filled in by scholars dedicated to studying the relationship between the sciences and genders and broad and profitable routes should be explored to stimulate new reflections.

We have studied the scientific trajectory of Marta Vannucci.[1] In this article we focus on her scientific production after 1946 when she entered the Instituto Paulista de Oceanografia [São Paulo Oceanography Institute]. She was invited to join this institution by its director Wladimir Besnard. She conducted various scientific activities at the institution where she established her career as a scientist before leaving in 1969.

Our main objective is to analyze the scientific articles produced by Vannucci while associated to this institution. These were original articles based on fieldwork. They are testimony to the intense scientific production about the seas conducted in Brazil after World War II. The articles written and published by Vannucci in the institution's journal are one of the contributions she made to the emergence and consolidation of the sciences in Brazil.

Marta Vannucci's scientific texts will be analyzed by considering the social context in which they were conceived, as has been proposed by the new historiography of the sciences. A contextualized reading of the texts reveals the theories that she formulated, the arguments she presented and the degree to which she accepted and appropriated, questioned and challenged, or at times even ignored the ideas that were predominant in the scientific debate at that time, particularly in the field of oceanography. The texts also indicate the works read and analyzed by Brazilian scientists. Therefore, her scientific texts will

[1] About the scientist Marta Vannucci, see Varela (2012; 2015).

be analyzed based on the context in which she wrote, given that they are "constructed according to rules that are variable in social time and space, an object that it would be naive to consider transparent on its own, as if they reported raw facts" (Pestre, 1996:37).

Since the 1990s, there have been an increasing number of Brazilian researchers interested in the relations between genders and the sciences. This is seen in various congresses that agglutinate a significant number of studies about the situation of women and gender relations in the sciences, in scientific policy, technology and development and rethink scientific practice itself based on feminism (Lopes et al., 2014:235). Nevertheless, there is still resistance in the academy to the incorporation of studies about women scientists who are producers of knowledge in university environments and in our research institutes. As an example we can mention the fact that the *História das Mulheres no Brasil* [History of Women in Brazil], organized by Mary Del Priore, first published in 1997 does not have a single article about women scientists. In 2012 the *Nova História das Mulheres no Brasil* [New History of Women in Brazil], was published, organized by Joana Maria Pedro and Carla Bassanezi Pinsky, and also has no articles about the relationship between gender and the sciences. Thus, in the words of Lopes (2006:55), works such as these that are notable for the absence of a theme

> reveal how much we are still missing to undertake our analyses about the gender relations that mark the trajectories of women who since at least the late nineteenth century were formally inserted in the systems of science and higher education in the country [Brazil].

Even with these omissions that are still present, important works are being produced by various scholars in the field of the relations between the sciences and genders. One of the objectives of these studies is to highlight the role of women in the production of scientific knowledge, and their action at universities and

research institutions. Among these works I can highlight those by Maria Margaret Lopes about the scientist Bertha Lutz. The works by Lopes, a science historian, reveal the inseparable trajectory between the feminist, scientific and political Bertha, who was immersed in the culture of her time (Lopes, 2007; 2008).

This article about the scientist Marta Vannucci follows the line of work that is being conducted about the relationships between the sciences and genders. We have examined the trajectory of the life of the scientist in Brazil in earlier works. (Varela, 2012; 2015) In this article we present a critical analysis of her textual productions, considering the broader social context in which they were produced.

Marta Vannucci was born in Florence, Italy in 1921. She came to Brazil as a girl in 1930. She lived and worked in Brazil until 1969, participating in various projects and many struggles in the scientific field.

Her father, Dino Vannucci, was from a famous and wealthy family. He was a surgeon, and professor emeritus of the universities of Pádua and Florence, who as a militant antifascist, had to leave Italy. He came to Brazil in 1927. He was a man of culture and was deeply engaged in Brazil's community of scientists and intellectuals. This gave Marta contact with the Brazilian universe of sciences as well as language and literature.[2]

Marta studied Italian and Portuguese at the Colégio Dante Alighieri in São Paulo. She did her undergraduate studies in natural history at the College of Philosophy, Sciences and Letters at the University of São Paulo (FFCL-USP), where she graduated in 1943.

Marta defended her doctoral thesis in the sciences in 1946, under the supervision of German professor Ernst Marcus (1893-1968), a world-renowned zoologist, who came to Brazil from

[2] Marta Vannucci was similar to other scientists who also had ties with the sciences and humanities from their fathers. This was the case of Bertha Lutz, who was the daughter of Adolfo Lutz; Heloísa Alberto Torres, daughter of politician and intellectual Alberto Torres and others. See Lopes (2008); Corrêa (1997).

Germany to escape the oppression of Jews. Marcus invited her to be his assistant in the chair of zoology. This required her to request Brazilian citizenship, which she obtained during the war (Mendes, 1994).

In a recent interview with the Brazilian Academy of Sciences, Marta revealed that her vocation as a naturalist began in childhood: "We can say that I was a naturalist ever since I was a child. I always loved the sea and animals, we had a beach house. And I am practically a zoologist; my first work was about marine animals" (Cudischevitch, 2015).

It was at the University of São Paulo that Marta met her first husband, Erasmo Garcia Mendes (1916-2001), who was a professor in the departments of zoology and general and animal physiology with important academic activity at the university (Xavier *et al.*, 2001).[3]

Marta participated in many scientific societies, including the Brazilian Academy of Sciences. Her first scientific article was published in 1939, in the *Boletim de Biologia*, and was about plankton (*Sobre uma lesma planctônica do litoral do Guarujá – Glaucus atlanticus Forst*) (Melo & Rodrigues, 2006).

Marta belonged to a generation of women scientists, which included Leda Dau, Aída Hasson-Voloch and others, who graduated from the colleges of philosophy, sciences and letters at the University of São Paulo and the University of Brazil, and many were students of natural history. These women were part of a generation for whom a new world of institutionalized education was revealed. They received university diplomas and had careers dedicated to research and teaching, and increasingly became part

[3] One of Marta Vannucci's children with Erasmo Garcia Mendes was Érico Vannucci Mendes. He was arrested in 1971 and taken to OBAN (Operação Bandeirante), where he was tortured, and then to DOPS and the Tiradentes prison, where he awaited trial for six months. He was accused of involvement with "subversives". He died on Sept. 13, 1986. Érico was part of a family of intense political militancy, both on the part of his maternal grandfather, Dino Vannucci, and his father. See Chiappori (2008).

of the previously restricted male world of science (Azevedo & Ferreira, 2006).

In the 1940s, Marta was invited to be part of the team of researchers at the Instituto Paulista de Oceanografia (IPO) by its director Wladimir Besnard (1890, São Petersburgo, Rússia – 1960, São Paulo, Brasil). This was Brazil's first research institute dedicated to the oceanographic sciences (Decreto 16685 de 31/12/1946), and was subordinated to the Division of Protection and Production of Fish and Wild Animals of the Department of Animal Production, of the Secretariat of Agriculture (Varela, 2012). It should be emphasized that at this time, Brazil had a range of naturalists in sufficient number to conduct productive field research in oceanography (Lopes, 1998; Figueirôa, 1997).

Oceanography is an interdisciplinary scientific field, given that it involves many fields of scientific research. It involves the process of discovering the unifying principles in the data obtained in studies of the ocean, the existing life forms and the regions of the Earth where they are found. The research fields of the oceanographic sciences include marine geology, physical oceanography, marine biology, chemical oceanography and naval engineering (Garrison, 2010).

Marta was invited by Besnard to enter the institute of oceanographic research when it was crated. The two established a relationship that was very important to the development of oceanographic sciences in Brazil. They shared the idea that the institute should not be restricted to studies related to fishing, but should be an institute for research in the sciences of the sea, that is, an oceanography institute in a broad sense. With this in mind Vannucci and Besnard went to the current dean of USP, Luciano Gualberto, to request that he incorporate the IPO to the university, which was a scientific research center and affirming that it would be best for the oceanographic institute to be associated to the university. The dean accepted the request and in nine months IPO was transferred to the University of São Paulo. The incorporation took place under Law 1310 of 04/12/1951, which made the

Oceanographic Institute a research unit at USP (IO-USP) (Varela, 2014)

With the incorporation to USP, the Oceanographic Institute led by Besnard began to conduct studies in the field of marine biology and physical oceanography. The divisions of physical, chemical and biological oceanography were organized. Biological oceanography, for example, included the study of planktons, nektons and benthos. Professor Besnard, who had visited mangroves in Asia and worked in Vietnam, was interested in the mangroves on the São Paulo state coast. In 1949, routine studies were begun in the mangroves, to which Marta was dedicated for nearly her entire life. Her interest was in biological oceanography, in which she conducted countless studies with excursions, collections of species and publications and even contributed to the formation of plankton collections at the Oceanographic Institute.

Besnard was responsible for the installation of two oceanographic research bases at the northern and southern extremes of the São Paulo state coast: one in Cananéia, and the other in São Sebastião. Various researchers went to the Cananéia region to conduct research.

Marta Vannucci was one of the researchers from IO-USP who conducted various excursions to the Cananéia region, and participated in the expedition to the Island of Trindade. On these excursions she collected marine plankton species, which were taken for inventory and classification at the institute. She published various articles based on these studies, which strengthened her career as a scientist dedicated to field studies of biological oceanography, particularly plankton.

Marta published a total of 14 articles in the Boletim do Instituto Oceanográfico from 1950 to 1969, five of them as a coauthor. Her productivity as a researcher allowed her to fortify her research operations and consolidate her action as a scientist at the Oceanographic Institute at USP (Varela, 2012).

In the first issue of the Boletim do Instituto Paulista de Oceanografia,[4] in 1950, she published the article *Resultados Científicos do Cruzeiro do "Baependi" and "Vega" à Ilha da Trindade – Hydrozoa*. In the second year, in volume one, she published two articles: *Hydrozoa e Scyphozoa Existentes no Instituto Paulista de Oceanografia*; and *Distribuição dos Hydrozoa Até Agora Conhecidos nas Costas do Brasil*. In the same year, in volume two, she published *Resultados Científicos do Cruzeiro do "Baependi" e do "Vega" à Ilha da Trindade (o gênero Firoloida, Prosobranchia, Heteropoda)*. In 1952, in coauthorship with K. HOSOE, Martha published *Resultados Científicos do Cruzeiro do "Baependi"* and *"Vega" à Ilha da Trindade: Chaetognatha*.

These articles were published by Marta as a result of a trip to Trindade Island. In 1950, Wladimir Besnard was named by the Directory of Hydrography and Navigation of the Ministry of the Navy to direct an expedition to Trindade Island, which was organized by the Brazilian government under the coordination of Minister João Alberto Lins de Barros. The objective was to study the economic and strategic potential of that portion of Brazilian territory. The São Paulo Oceanographic Institute was responsible for conducting scientific studies of the fish and hydrozoa of the region (Saraiva, 2006).

During the expedition, plankton samples were gathered at different depths and at various points of the waters off the island, and at various points between the island and the coast. This material was taken to the Institute for analysis.

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[4] The *Boletim do Instituto de Oceanografia* was created in 1950 – the first journal in the country in the field of oceanography. The *Boletim* was the main vehicle for the dissemination of hundreds of scientific works by researchers and professors at IPO and members of scientific communities in Brazil and abroad. The articles published in the *Boletim* focused on oceanography, general biology, biological statistics, hydrobiology, general zoology, embryology, microbiology, comparative anatomy, animal physiology and botany (phytoplankton and algology). Articles were also published dedicated to industrial technology, to promote recommended norms for the extraction and manufacturing of marine products and by-products.

In the studies of the *Hydrozoa*[5], Marta emphasized the importance of studying the species found on the Brazilian coast, given that they could be useful for the methodological work of conducting an inventory of Brazilian fauna and in future years attain important zoogeographic conclusions. According to Vannucci, knowledge about the fauna of the Brazilian coast was still "too limited to be able to reach definitive conclusions" (Vannucci, 1951:3).

In one of the articles published as a result of the trip, Marta emphasized the importance of the study of Brazilian marine fauna:

> All and any zoological material collected on our coasts, especially in the south, is of great zoogeographic interest. The study of our marine fauna can provide important clarifications about the state of fauna in our seas, and the immediate scope is to better know the geographic distribution of many different species of numerous zoological groups. To do so it is essential to conduct methodical and continuous studies, not only of the flora and fauna but also of the physical and chemical conditions of the environment, such as temperature, salinity, PH, chemical components and other local factors (Vannucci, 1950:5).

Based on the material collected by Wladimir Besnard and João Paiva de Carvalho, two scientists who also worked at the Institute, Marta directed a study about the genre *Firoloida*, *Prosobranchia Heteropoda*. She emphasized that this genre was the most specialized, although it was less studied. Other genres had been the object of detailed investigations, from both an anatomical-histological perspective, as well as a physiological one. Thus, the article about the genre *Firoloida* sought to fulfill a gap in the literature.

[5] The technical terms that we use in this article are based on the articles written by Marta.

Another study she conducted concerned the *Chaetognatha*, which are constituent elements of animal plankton. The article sought to establish the taxonomical bases of the study of these elements of marine fauna so that in the future the biological data could be related with the environment in which the organisms lived, thus allowing scientists to understand and explain the movements of Brazilian coastal waters.

Marta emphasized the scientific importance of studying the *Chaetognatha*:

> For quite some time the Chaetognatha are object of great zoological interest, due to special theoretical problems that they present and that have not been completely clarified, particularly concerning their embryology and their phylogenetic position in the animal kingdom. For a long time they have also been known as important constituents of animal plankton, because of their abundance, general occurrence in all the seas, the vast distribution of the species and their great voracity. In certain cases they are true plagues because they feed abundantly on fish alevins and among them, frequently alevin of species of commercial interest (Vannucci & Hosoe, 1952:6).

As a result of an excursion to the Cananéia research base from March to July 1953, Marta Vannucci joined with researcher K. Hosoe to publish an article entitled *Sobre Embletonia Mediterrânea (Costa), Nudibranquio da região lagunar de Cananéia*. This study analyzed the materials collected during the trip and taken to the Institute, which were nudibranches in various stages of development, as well as their spawnings, from the salty waters of Cananéia. They were described and classified as *Embletonia mediterrânea* (Costa), and a rapid comparison was conducted with nearly all of the other species of the same genre that had been described until that time. The complete cycle was described from spawning until the following generation. The habitat and feeding habits were noted and the absence of cnidocytes was verified in animals not fed with hydrozoa. The

lethal temperatures and the length of the main development phases at different temperatures were established. The authors considered the species "excellent material for the study of the relationships between the internal environment and the external osmotic pressure" (Vannucci & Hosoe, 1953:117).

As mentioned, Marta published various articles in scientific journals in Brazil, and classified various species: *Hebellopsis besnard* (Vannucci, 1950)*; Halocordyle fragilis* (Vannucci, 1951)*; Calicella gabriellae* (Idem. Ibidem)*;* and *Pterosagitta besnardi* (Vannucci & Hosoe, 1952).[6] The first and the last are classifications that pay homage to the first director of the Instituto Oceanográfico, Wladimir Besnard.

In an article published in 1954, when she continued her studies about *Hydrozoa* and *Scyphozoa*, Vannucci reported that of 20 species of Hydrozoa that were mentioned, five were identified as being new: *Eudendrium carneum*, *E. capillare*, *Campanularia laevis*, *Amphisbetia pulchella* and *Aglaura hemistona*.

Marta explained that the greater objective in doing the work of systematizing the various species was not the "simple cataloging, arrangement or methodical ordering of large quantities of different species". She sought to achieve broader results. According to the author, her goals were:

> The knowledge of the bionomy of the species of our seas, their geographic distribution, their ecology and finally the importance they have or should have as species that are part of the plankton, during at least one phase of their individual cycle, particularly with species that are indicators of the physical and chemical conditions of the environment in which they are found (Vannucci, 1954).

[6] In an earlier article, in 1956, the species *Pterosagitta besnardi* was considered to be synonymous with *P. Draco*. According to the authors, "P. Besnardi cannot therefore be regarded as a new species but rather a population different from the other previously described by P. Draco, coming from other localities" (Vannucci; Hosoe, 1956:196).

However, she emphasized that the research was still in its initial phase:

> It is not at all possible to think of elaborating a key for the classification of the Brazilian hydrozoa. Therefore, I am trying to conduct a review of the genre that have medusas. The polyps present much greater difficulties, and for my purposes, are of lesser interest. As was said at the beginning, my purposes are: 1) to know the distribution of the species, to expand the zoogeographic knowledge of the group; 2) to know the specific ecological requirements and adaptations; 3) to know the metagenetic relations; and 4) to finally be able to understand the fauna of the planktonic hydrozoa in their relations with the environment and establish which species can be used as indicators (Vannucci, 1954:97).

In 1957, Marta published a theoretical-methodological article entitled *A Nova Sistemática e a Planctonologia*. This work had been presented in 1955 at the I Simpósio Latino-Americano about plankton, organized by UNESCO, in collaboration with CNPq and USP.

In this study, Marta mentioned that the expression New Systematic had been coined by Julian Huxley, in a book edited in 1940, entitled *The New Systematics*. According to Marta, the New Systematic no longer addressed the species as the central object of its interests, because it verified and confirmed that the definition of a species based on morphological data was not sufficient. According to the author,

> The New Systematic addresses species considering all their biological aspects, in the broader sense of the word, even considering the fact that what we have before our eyes is only a certain phase of a long chain of forms in continuous evolution. This is valid for the large majority of species belonging to the most varied groups, except perhaps some whose evolutionary rhythm is especially slow. It is for this reason that the new systematic is mainly concerned with

> series of conspecific individuals and with the study of the systematic categories of the infraspecific level, above all the sub-species (Vannucci, 1957:218).

According to Marta, for these studies, it is necessary to have a large series of species collected in all parts of the area of its distribution, to be able to study their variability. In addition, it is necessary to have the greatest possible details about the ecological conditions in which the individuals in question lived, given that the thesis concerns the importance of geographic variation for speciation.

With these questions raised, Marta then commented on the work done in this regard in planktonology and the study and applicability of the concepts and methods of the New Systematic in these studies.

In the New Systematic, it is necessary to collect a large number of species in the entire area inhabited by the species to be able to proceed to biometric studies and the statistical analysis of the data collected. For the large majority of planktonic species the material collected includes a large number of individuals and the geographic location can be precisely registered. Nevertheless, Marta affirmed, this is where the great difficulty resides, given that it is not enough to situate the geographic point, because the habitat in which the individuals live is mobile and planktonic organisms move together with the movements of the water masses to which they belong. In this way, it became much more interesting to understand the physical and chemical characteristics of the water in which the collection was conducted, than to know the geographic point itself.

According to Marta,

> ecological variation and ecological isolation (…) are the decisive phenomenon for the speciation of the planktonic animals because the geographic variation looses a great part of its meaning in virtue of the mobility of the environment and of the population existing within it (Vannucci, 1957:219).

Marta sought to explain in the article that geographic variation is a secondary phenomenon in plankton studies, so that speciation must essentially be a phenomenon caused by ecological variation. For this reason it is important to know the ecological data, that is, hydrographic and oceanographic data, to be able to study the variability of planktonic species. Due to the scarcity of this data, according to Marta, it was

> totally impossible to apply the methods of the New Systematic to the studies of plankton. The concepts of the New Systematic, however, can be applied and not only can, but should guide the planning and execution of the work (Vannucci, 1957:220).

She mentioned another difficulty in the study of the geographic and ecological variation of planktonic species:

> The existence of a large number of generations per year; the occurrence of different morphologies, mainly of size, between the generations of winter and those of summer of a species and the strong influence that the environment has on the individual phenotype in all the poikilodermas. This individual variation, in season and generations, in sum, this intraspecific variation introduces to this situation more numerous factors that impede the study of intraspecific variability (Vannucci, 1957:220-221).

She highlighted another difficulty in the studies about plankton: "the near impossibility of experimental crossings" (Vannucci, 1957:222).

Marta completed the article commenting that

> this is the general situation that I find upon striving to apply the methods of the New Systematic to plankton research. In this type of work we are, in part, still in the phase of depending on random, incomplete collections conducted by expeditions. This, is particularly true in the South Atlantic. In the North Atlantic, in the English Channel and in the

> North Sea, the research is much more advanced and some notable fruits have been harvested, such as the clarification and understanding of the problem of indicators (Vannucci, 1957:222).

Still in 1957, Marta published a study with the support of the National Council on Scientific and Technological Development (CNPq),[7] about the fauna of hydromedusas in Brazilian waters and their systematic and distribution. These species were collected from January 1954 to December 1956 at different points of the Brazilian coast. For a number of them the author provided a succinct review of the genre. All of the species were described in detail because the majority were considered to be new to this part of the Atlantic. One species was described as new, *Laodicea minúscula*, and she presented its characteristics. She also reported that the medusas studied typically belong to warm water fauna. Finally, she presented the zoogeographic affinities of the collection of hydromedusas studied (Vannucci, 1957:23-129).

In the following year, Vannucci published another article about the *hydromedusae* in the Fernando de Noronha region. The fauna of hydromedusas and hydropolyps there was collected during a single seven-day period in January 1954. A small quantity of plankton was collected, representative of the local hydrozoa, and no Scyphozoa was found. After analysis of the species collected in the waters of Fernando de Noronha, Vanucci emphasized two characteristics: the large preponderance of oceanic species, and the relative abundance of species or fragments of benthonic forms collected with plankton nets. The author believes that the first characteristic may be explained by the geographic position of the island, located 175 miles from the eastern limit of South America's continental shelf and nearly 195 miles from the closest shore. The second fact can be explained by the strong impact of the South Atlantic current on the insular

[7] Marta Vannucci's research was supported by CNPq with grants and other assistance. See: Varela; Bertol; Coimbra (2013).

platform that may be strong enough to break and remove fragments of benthonic hydroid colonies (Vannucci, 1958:03-12).

In relation to the medusas, Marta published three articles. The first was published in 1961 in conjunction with W. J. Rees, with the title *A Revision of the Genus Bougainvillia (Anthomedusae)*. The authors conducted a review of the genre *Bougainvillia*, a well-defined genre of the *Bougainviliidae* family in the *Anthomedusae* order, including all the species described under this name and all those truly belonging to this genre, which were previously described under other names. For each species, as complete a list of synonyms as possible is given, as well as a detailed description. The species considered valid were combined in a synoptic table with the data that it was possible to gather for each species. Once the synonym was established at the base of the morphological characters, the zoogeography of the genre was studied.

Of the species analyzed by the authors, they indicated that *B. ramosa* was the simple primitive form from which the other species derived (Vannucci; Rees, 1961:57-100). From this form, or from another close to it, a group of temperate water species had derived with certain morphological characteristics that were common to all, and other than one from Japan, inhabitants of the Atlantic or adjacent seas. A second group of species had evolved in cold Arctic or boreal and Antarctic waters, also with common morphological characters. Finally, a third group of species had evolved in tropical waters of both the Atlantic and Pacific, and had common morphological characteristics. Considering the number of species and their distribution, the *Bougainvilia* genre appears initially as an Atlantic genre, with only two species distributed exclusively in the Pacific or Indo-Pacific.

To conduct this study Marta had help from international institutions such as the British Museum of Natural History, the Zoological Museum of the University of Copenhagen and the Museum of Comparative Zoology at Harvard University and was able to obtain various preserved and living materials from Brazilian and European waters.

Marta Vanucci was author of a second article about the medusas, in partnership with M. G. B. Soares Moreira, which described a new species of hydromedusa, collected in coastal waters close to Santos (SP), belonging to the genre *Octocanna* Haeckel (1819). According to the author, this genre was considered obsolete by Kramp, but the current findings showed that it should be re-established (Vannucci; Moreira, 1966:86). The new species called *Otocanna haeckeli*, in homage to E. Haeckel, belongs to the *Phialucidae* family. It differs from the two species of the same genre by being smaller, it has a high umbrella in the form of a hood, 4 tentacles, 8 bulbs and 8 marginal vesicles when it reaches sexual maturity. The validity of the *Octocanna* genre was re-established for the *Phialuciidae* with 8 radial canals, 8 gonads, 4 or more tentacles and never more than 4 lips.

The author reported that the *Octophialucium Kramp* gender (1955) continued to be valid for *Phialuciidae* with 8 radial canals, 8 gonads and 8 lips. In the same series of samples some species of *Octophialucium bigelowi* Kramp (1955) were collected that were similar at first sight to *Octocanna kaeckeli*, but differed from the latter by having 8 lips, 8 tentacles, rudimentary bulbs and a higher number of marginal vesicles when they are sexually mature. Both species reach maturity with approximately the same size, according to the author, and were collected in the same water mass, on close dates on the same year.

According to information from the author, the two species, one of *Octocanna haeckeli* and one of *Octophialucium bigelowi* were donated to the British Museum of Natural History. She expressed appreciation for the collaboration of researcher W. J. Rees from this institution for receiving the authors for a short visit and conducting a critical reading of the manuscript.

The third article produced by Marta about the medusas was published in 1963 entitled *On the Ecology of Brazilian Medusae at 25º Lat. S.*. The article consisted in the analysis of 247 quantitative samples of plankton collected over three years (January 1958 – December 1960) at three fixed stations in the Cananéia region, in

São Paulo State, and revealed the presence of 28 species of medusas, 17 of which were studied in detail.

Of these 247 samples of medusa species collected, Marta reported that no new one was found. Nevertheless, three species were observed for the first time in the region, including: *Eucheilota duodecimalis, Eucheilota paradoxica,* and *Amphogona apstein* (Vannucci, 1963:146).

This article is dense, with a detailed analysis of the samples collected. The author comments on the methods used, presented the list of species and their abundance; provided information about the indicators of coastal water mass, the platform water mass, and tropical water mass; she provided information about the distribution of species in space and other issues. The article has various graphs and tables related to the analysis of the material analyzed.

All the articles published by Marta mentioned here were products of field trips she conducted, either to oceanographic research bases, such as Cananéia, or to coastal regions, such as the Fernando de Noronha archipelago. On these scientific excursions she collected species and took them to IO-USP, where she analyzed and identified them. Therefore, these articles are the result of the author's practical work, which sought to collect, identify, classify and describe planktonic species. She emphasized that the majority of the studies were followed by designs of the species studied, a fact that allowed better understanding of them.

Marta was not alone on her travels and respective studies. To the contrary, she had a team to conduct these projects and accompany her, because she had a fixed tie with an oceanographic research institute. This is a change from the working conditions of women scientists in the first half of the twentieth century in Brazil, who traveled alone and studied in the interior of the country without institutional ties or any type of financing, as was the case of the Austrian traveler and researcher Wanda Hanke and others (Sombrio; Lopes, 2011).

The planktonic research supervised by Marta consisted in the organization of a study of fauna that labeled and classified

specimens of various groups such as Spongiaria, Coelenterata, Pantopoda, Chaetognatha, Annelida, Bryozoa, Hemichrdata, Tunicata and Turbellaria. Identification records for each of these groups were then drafted. She concomitantly worked on the geographic distribution of the plankton, preparing records from the research stations worked at for the study, with a list of the species found and those already determined. In the field of biological oceanography, Vannucci also began a survey of the fauna of the Cananéia-Iguape region, as well as a catalog containing information about maritime expeditions. To realize all these activities, Marta had the support of technicians and students (Carvalho, 1956:1-2). The travel that she conducted resulted in studies about plankton, the formation of collections and compilations of data about distinct groups of plankton, efforts that were enough to guarantee her recognition in the field of oceanography.

The articles published by Marta in the Boletim do IO-USP revealed her intense production of scientific knowledge about the seas. All were fruit of practical work, the results of excursions taken by the author on the Brazilian coast to identify and classify the plankton species that constitute Brazilian marine fauna. These studies reveal the team spirit present at IO-USP, which even at its initial phase of installation and with a just a few researchers, revealed the participation of a number of researchers dedicated to the construction of scientific knowledge. Marta was the author of articles on her own or in partnership. She never failed to express appreciation for contributions from Brazilian or foreign scientists or scientific institutions who participated in her work. This allows us to affirm that scientific practices are community undertakings.

The study of Marta Vannucci's life trajectory as presented in this article about her scientific productions reveals that the situation of women in scientific careers in Brazil in the 1940s and 1950s had changed enormously from that of earlier periods. Women began to conduct important activities at universities and research centers. Scientists like Marta Vannucci, Bertha Lutz and many others should have their profiles highlighted because of their roles and

especially for their work in the production of knowledge. These individuals deserve to be increasingly recognized in the literature of gender studies.

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