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The Parisian School of Bryozoology

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1. Introduction

The study of the Bryozoa in France was essentially carried out in the Muséum National d’Histoire Naturelle (Paris), and in six universities, those of Bordeaux, Lille, Lyon, Marseilles, Montpellier and Paris. In Marseille and Montpellier, the scientists were only interested in Recent species, in Bordeaux and Lyon principally by the fossils, and in Lille and Paris in both living and fossil forms. The Parisian University ran some marine stations, where the scientists carried out research in the field, as well as undertaking further studies at their laboratories in Paris. The observations made in the marine station were an extension of research carried out at Roscoff, Banyuls-sur-Mer and Villefranche-sur-Mer. The Museum also owns the marine station of Dinard. Various investigators were not attached to a particular marine laboratory but carried out their research topics elsewhere sometimes in relative isolation, perhaps owing to the requirements of their own specialities.

The works on the Bryozoa were conducted successively during several centuries in Paris, beginning in Muséum National d’Histoire Naturelle from the 17th century and continued up to now in the faculty of sciences. The research programmes on the Bryozoa started later in the provincial universities. In Marseilles, Antoine-Fortuné Marion (1846–1901), professor at the faculty of sciences and founder of the Endoume marine station, initiated at the end of the 19th century some works on the benthic ecology and the provision of a faunistic inventory, work which was continued by his successors, Jean-Marie Pérès (1915–1998) who recruited one of his motivated students, Yves-Victor Gautier (1930–1997) (Figure 1), to undertake a general ecological and systematic study on the Mediterranean Bryozoa (Harmelin and d’Hondt 2000). After Gautier’s nomination as professor of Animal Biology during the university year 1962–1963 in the Oran University (Algeria), Jean-Georges Harmelin was appointed to continue in Marseilles his



Figure 1. Yves-Victor Gautier

research on the Bryozoa. He has occasionally directed the works of some students.

In Montpellier, Professor Armand Sabatier (1834–1910), founder of the biological station of Sète and pioneer of histological studies in France, entrusted to one of his students and further collaborator, Louis Calvet (1868–1930) a research subject on the histology and on the dynamics of the larvae, the metamorphosis and the adult structure of the marine Bryozoa. This was to be a morphogenetic model and used selected material for application of histological stainings (the thesis was presented in 1900). Before and after his recruitment as Professor of Zoology in the Clermont-Ferrand University, Calvet studied the Bryozoa collected during

various oceanographic expeditions. He unfortunately had no direct successor for his work.

In the marine station of Wimereux, part of Lille University, Professor Alfred Giard (1846–1908) suggested to one of his collaborators, Jules Barrois (1852–1943), a doctoral subject investigating the morphology of the larvae and the postlarval morphological stages in various Bryozoa, also without scientific posterity. After the departure of Barrois to the station of Villefranche, Paul Hallez (1846–1938), Giard's successor in this chair of zoology in Lille University, continued to develop the inventory of the Bryozoa from the Wimereux area, but both were not succeeded by younger scientists.

For many of these researchers, the program of research on the Bryozoa has been carried out over a relatively short period; in Marseilles bryozoans have been studied for just under a century. In contrast, the tradition of the biological study of Bryozoa in Paris extends back to the beginning of the 18th century. The greater part of this paper will be devoted to the most famous French neobryozoologists. Meanwhile, I will now summarize quickly research in France on the fossil Bryozoa, research that has been undertaken more recently than that by the neontologists.

In the Bordeaux area, the richness in Tertiary Bryozoans found in the close vicinity of the city increased the interest around 1920–1923 of an amateur naturalist, Jean Duvergier (died 1933) who was also an expert in the study of otoliths. After his death, Fernand Daguin (1899–1948), director of the laboratory of geology in the Bordeaux University purposed to a young mathematics student Michel Vigneaux (born in 1921) who came from the north of France and recently arrived in the area, to change the topics of his research and to undertake a thesis on the Aquitanian and Burdigalian Bryozoa. On account of his research Vigneaux was soon afterwards appointed as professor of palaeontology in the university and director of the Museum of Natural History, and a member of the Academy

Figure 2. Pierre Balavoine

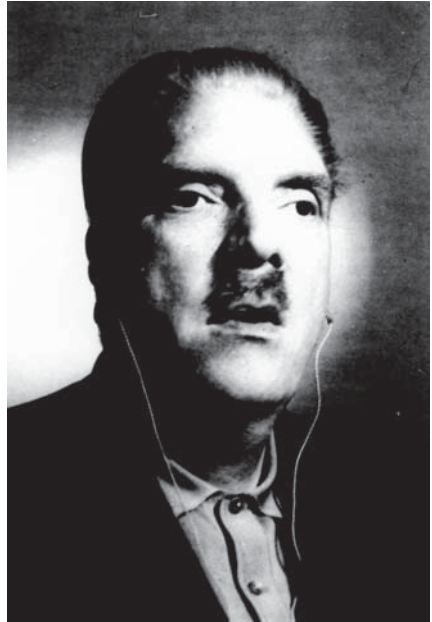
of Sciences and Letters of Bordeaux. He founded the Institute of Geology of the Aquitanian Basin, where some of his collaborators (Monique Labracherie, Jeannine Prud'homme) have continued his work. Now unfortunately, the bryozoological school he founded in Bordeaux is extinct.

In Lyon University, another school devoted to the study of the Tertiary fossil Bryozoa was founded by Professor Louis David who schooled many bryozoologists (Simone Pouyet, Bernard Walter, Noël Mongereau, André Schaaf, and Pierre Moissette), some of them being later becoming university professors.

In Paris, a school of Palaeontology of the Bryozoa, initiated in the Museum by Alcide d'Orbigny (1802–1857) floundered after his death. It was, however, restarted and developed at the beginning of the 20th century by Ferdinand Canu (1883–1932) a schoolmaster who acquired universal fame. Canu reunited a particularly rich collection of fossils (where the Recent material was poorly represented), which was integrated after his death in the collections of the department of palaeontology of the Museum. The acquisition of Canu's material led the subdirector of this laboratory, Jean Roger, to suggest to Emile Buge (1924–1992) a young scientist, that he should study the Neogene Bryozoa fauna in the Parisian Basin. At the same time, a technician of the Museum, Pierre Balavoine (died 1983) (Figure 2) in relation both with Buge and Georges Lecointre, has also undertaken identifications of Recent and fossil bryozoans. More recently, Françoise Bigey, formerly a student of Pierre and Geneviève Termier, professors in the Sorbonne, was recruited by the University Pierre et Marie Curie in Paris, and she chose to work, on her own initiative, on Devonian bryozoans.

The palaeontological collections of the Museum have been enriched also by specimens collected by various isolated amateurs collectors: Jean-Louis Hardouin Michelin (1786–1867), chef clerk in the “Cour des Comptes”, Jean-Louis Marie Defrance (1758–1850), Lamarck's friend and financial administrator, Jules Haime (1824–1856), assistant at the Faculty of Sciences, Georges Lecointre (1868–1972), engineer at the “Bureau des Recherches géologiques et minières”, Charles Barrois (1850–1939), professor of geology in the faculty of sciences in Lille, Jules Jullien (1862–1897) a medical doctor and traveller, and Alcide d'Orbigny (1802–1857) also a long time naturalist-traveller.

The study of the living, marine, Bryozoa has been ongoing without interruption in the Muséum National d'Histoire Naturelle in Paris since the beginning of the 17th century, starting with Réaumur and his collaborators. The Parisian Bryozoology originated under



the influence of three personalities, a discrete anatomist, Jean-Claude Mertrud, a polyvalent and exceptional scientist, André-Antoine de Réaumur, and a Catholic priest, Abbe Jean-Paul Bignon, who occupied an essential position in the world of letters and sciences at the time. Since Buffon, many generations of bryozoologists have worked in Paris; some of them have been the students or the collaborators of their elders of the previous generation, before becoming themselves famous scientists. The older researchers personally recruited some students, who went on to become the teachers for the following generation, who taught in the university in Paris or in the country, and built new schools of bryozoology. In some cases, the bryozoological continuity “jumped” one generation (with, for example, the non-bryozoologists Delage, Quatrefages, Duméril, Gratiolet, Lacépède, Lévi, Mertrud, Teissier or Valenciennes) to recommence again a generation later. Many of the French bryozoologists have been true investigators; others (such as Alphonse Milne-Edwards, Lacaze-Duthiers, and Valenciennes) were only managers or curators of collections.

Sometimes, the interactions have been mutually beneficial to two investigators. In other situations, the influence was in one direction, only from the master to the pupil, or a succession without direct relation (between Jullien and Calvet, Canu and Buge, or Duvergier and Vigneaux). In some cases, the benefit was gained from a distant eminent scientist whom the ‘pupil’ never met (d’Orbigny-Canu).

In this work, I will retrace the influences of the authors belonging to the successive generations, thus illustrating the collateral relations between researchers working at the same time. I will remember in any case the collaborations and their results, and the relations between Parisian laboratories and the provincial ones. The impact of some eminent scientists on their colleagues was particularly important, not only on their contemporaneous, but also on their successors (for example the case of Réaumur, Lamarck, Blainville, Cuvier, Lacaze-Duthiers, Prenant).

The relations and interactions between neo-bryozoologists of the Parisian school are summarized in Figure 3. In the following pages each of these authors is listed in alphabetical order, and a synopsis presented of their scientific affinities and of the influences they have exercised on other scientists.

2. The authors and their influences

Jean-Victor AUDOUIN (1797–1841)

Audouin was a fervent naturalist from the time of his youth, and was introduced at a precocious age to the Paris scientific community where he was noted by Cuvier. Under his recommendation he was appointed by the French government to study the collection of bryozoans assembled by Savigny during the French expedition in Egypt. Savigny who was then almost blind fortunately kept his precious material. Audouin made his study from engraved plates as he was unable to examine the specimens, and he only had access to a succinct bibliography. Next Audouin became professor in the Muséum National d’Histoire Naturelle, founder - with his friend and collaborator Henri Milne-Edwards - of the littoral biology in France, and a specialist of the crustaceans (Joussaud and Brygoo 2004).

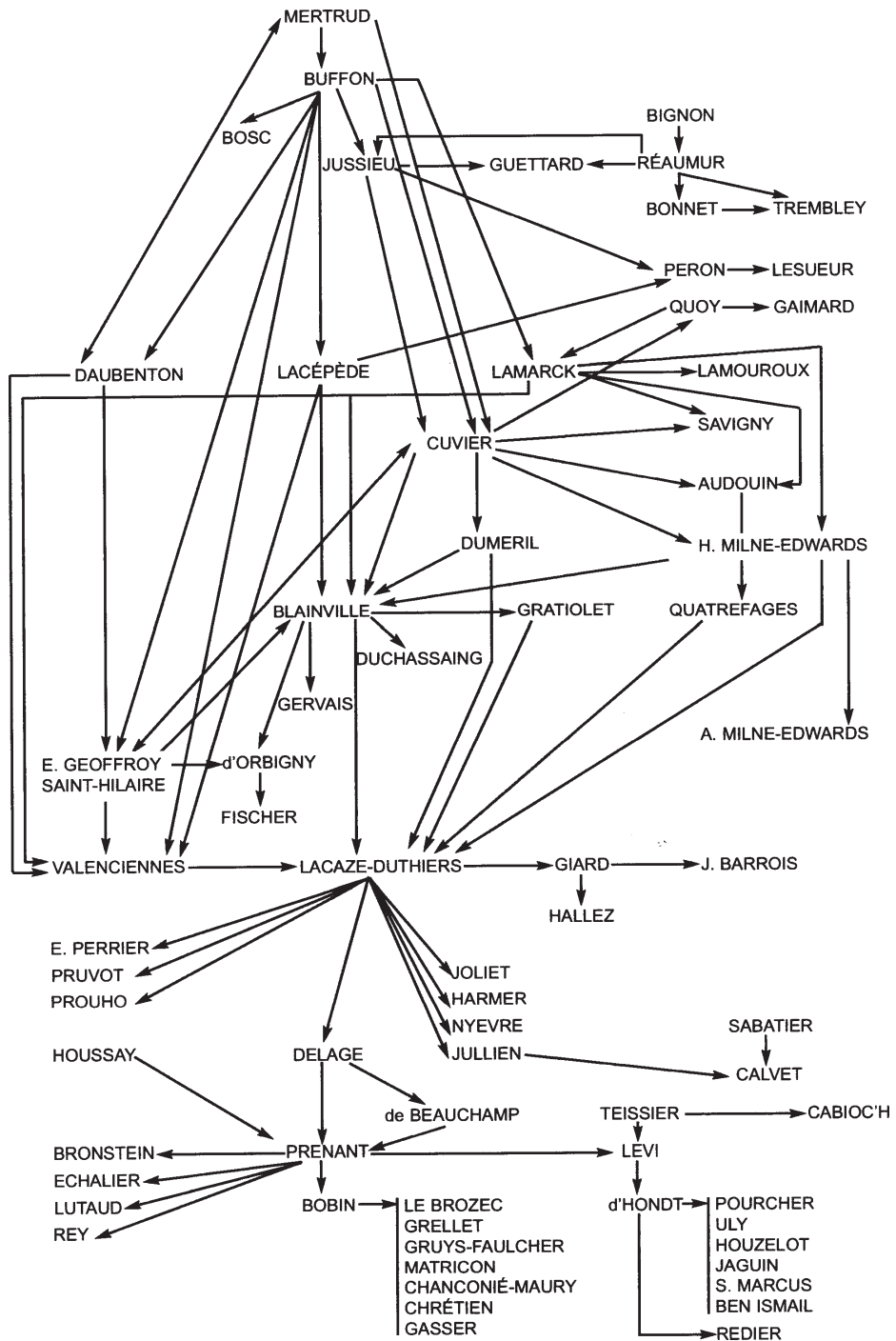


Figure 3. Relationships between researchers of the Parisian school of Bryozoology.

Jules BARROIS (1852–1943)

A student of Giard and so he belonged indirectly through his intermediary to the school of Lacaze-Duthiers. Jules was the brother of Charles Barrois, a professor of geology in the Lille University where he completed his thesis at a time when the embryological and morphogenetical study of the bryozoans had become a topical question as well as being an original subject. He worked on the development of the morphology and anatomy of some larval stages in various types of larvae of bryozoans that were known at the end of the 19th century. He continued his scientific career firstly as a researcher in the marine laboratory of Villefranche-sur-Mer, and later while living on income derived from his property.

Paul Marais de BEAUCHAMP (1883–1977)

He produced a remarkable thesis on the mastax of the rotifers under Delage's supervision in the Station Biologique de Roscoff. Following this, during his post-doctoral research, he wrote his famous reference handbook *Les grèves de Roscoff* where he studied the marine biodiversity, the coastal ecology, the distribution and the succession of the faunal levels, including bryozoans, in this area of the Channel. Then he was appointed as professor in the Faculty of Sciences of Strasbourg, and later as president of the French Zoological Society and director of the National Office of Faunistics (d'Hondt 1989b, 2005b).

Dorsaf BEN ISMAIL

The Tunisian scientific community needed a specialist on the systematics and the ecology of littoral marine Bryozoa in order to study of these organisms along the North African coasts. Dorsaf Ben Ismail acquired the necessary knowledge working with J.-L. d'Hondt, to enable her to write her doctoral thesis on the Bryozoa of Tunisia and Algeria.

Jean-Paul BIGNON (1662–1743)

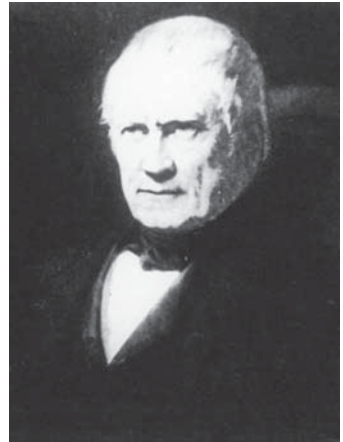
Although he never worked on the Bryozoa, this priest was directly the promoter of the French school of bryozoology. Curious about everything, he descended from a family of men of letters and of lawyers of many generations, some of which were the high master of the King of France's library. Ordained as priest in 1691, this allowed him time to indulge in his passion for the study of literature. In 1696 his uncle, Louis de Pontchartrain, secretary-statesman at the Royal Household, gave him control of the Kingdom Academies, and Bignon quit his religious community. As Chapter dean of one of the most valuable Parisian parishes, Saint-Germain l'Auxerrois, he became a person of high rank and one with considerable power,



and deputy of the French clergy to the King. He then distributed favours and advantages to the French scientists and writers. He provided a structure for the French Academies of Sciences, and of Inscriptions and Belles-Lettres, becoming president of both, and instituted their statutes allowing them to attain true state status. He was also member of the Académie Française, the protector of the most innovating scientists at the time, who included, for example the botanist Tournefort and the zoologist and first French bryozoologist Réaumur. He was also for many years from 1702 the editor of *Journal des Savants*, one of the first French scientific reviews.

Henri-Marie Ducrotay de BLAINVILLE (1778–1850)

He attracted the attention of Cuvier who took him on as a collaborator and substitute. Thanks to Cuvier's influence de Blainville was recruited as assistant-professor of Zoology and Comparative Anatomy in the Parisian Faculty of Sciences. De Blainville later quarrelled with Cuvier following many years of collaboration. He had discovered that Cuvier had taken advantage of him, but Henri-Marie was afforded protection by Duméril against Cuvier's hostility. He succeeded Lamarck as full professor in the chair of Natural History of Worms, Molluscs and Zoophytes. Then he wrote some manuals of Zoology in which he described some new species of bryozoans and perfected the classification of the group. A man of principal, rigorous, susceptible, benevolent, who hated dishonesty, he was positively influenced by Auduste Comte, and was indeed the best specialist of the Bryozoa at this time. Lacaze-Duthiers was one of his students (Joussaud and Brygoo 2004).



Geneviève BOBIN (1912–1989)

A student of Prenant, Bobin worked firstly on the histology of annelids. She became a collaborator in the preparation and the writing of the French fauna of the Bryozoa. This work unfortunately remained unfinished, with only two volumes published of the four planned. Research for these books caused her to specialize in a general study on the biology of the entoprocts, in the mechanisms and the polarity of the intrazoidal relations and communications, and on the histogenesis and the cytology of the peristomial region of the ctenostomes. She was more interested by the ctenostomes than by the cheilostomes. She died during the International Bryozoology Association conference held in Paris in 1989 (d'Hondt 1989a, 2005b).



Charles BONNET (1720–1793)

This Swiss naturalist never published on the Bryozoa. Bonnet is mentioned here because he submitted his observations for comment to his master Réaumur, whom he contacted through his cousin Abraham Trembley, and became one of his next scientific pupils. Bonnet meditated a long time on Réaumur's teachings, and was directly encouraged by him to express his notions and pioneering ideas on the theory of evolution.

Louis Augustin Guillaume BOSC (1759–1828)

This important civil servant during and after the French Revolution, was a naturalist by vocation and an early student of Buffon. By accident Bosc became the first French scientist to describe a new species of living Bryozoa, which he named in 1802, *Membranipora tuberculata*. He was asked by Buffon to participate in the oceanographic expedition of La Pérouse, organised on the request of the King Louis XVI, but he declined the proposal, which was fortunate as the ship smashed on the reefs of Vanikoro and many drowned. Next, he became French Consul to the United States of America, and finally professor in the Muséum National d'Histoire Naturelle. He was the pioneer of ecological studies and nature conservation in France (d'Hondt 19789c, 2002).



Georges BRONSTEIN (1914–1940)

One of the first pupils of Prenant, Bronstein began a doctorate on the nervous system of the Bryozoa, during his time as a school headmaster, and assembled a reference collection of the species present in the Roscoff area. He was unable to complete his thesis before his tragic death during the Second World War.

Georges Louis Leclerc de BUFFON (1707–1788)

Successively interested, when he was a young man, in theology, law and mathematics, Buffon was appointed at the age of 32 years old as Superintendent of the Royal Garden. He kept this job for 50 years thanks to his friendly and political relationships with ministers under whose protection he profited. When he inherited a large estate (near Dijon) he became interested in the physical resistance of different categories of woods, and expanded his research interests into new activities. Indeed, Georges undertook to enrich the royal collections, to develop some new teachings, to arrange the King's Garden and to increase its acreage. The Minister of Education ordered him to write a description of the royal collections of natural history, and Buffon choose then to modified this project into a general work on the whole animal kingdom, *L'Histoire Naturelle*. He was

surrounded by valuable collaborators carefully selecting (such as Daubenton) and recruiting the young promising scientists of the time, so that they would become the future generation of researchers, such as Lamarck, Lacepède and Bosc. *L'Histoire Naturelle* influenced also the scientific development of some later naturalists such as Cuvier or Valenciennes (Joussaud and Brygoo 2004).

Louis CABIOCH (born 1933)

Deputy director of the biological station of Roscoff, Cabioch familiarized himself with the identification of the bryozoans of the French northern coasts as part of his preparation for his thesis on the benthic biodiversity of the English Channel under the direction of Teissier. He assembled a reference collection from this area (now preserved in the Muséum National d'Histoire Naturelle), and became a specialist on the geographic distribution and the ecological significance of the bryozoans and the sponges in the Channel.



Louis CALVET (1868–1930)

Born into a very poor family, his exceptional scholar capacities marked him out and Calvet received successive grants to receive a secondary, then university education. He was Sabatier's student, who gave him responsibility for the sub-management of the marine station of Sète. It was Sabatier who suggested that Louis study the development of the Bryozoa on the basis of histological methods for his thesis, in which he made major advances. This important work remains the 'Bible' of the bryozoologists. As a specialist of the Bryozoa, Calvet was also requested to identify some collections made by Jullien (i.e. the material of the *Travailleur* and *Talisman*, contained in the Muséum National d'Histoire Naturelle). He finished the works of Jullien. After his tragic death, his family donated his own collections

to the Muséum National d'Histoire Naturelle (it is one of the reasons why Calvet appears in this paper even though he never worked himself in collaboration with the Parisian school) (d'Hondt 1985).

Ferdinand CANU (1863–1932)

A schoolmaster and palaeontologist by inclination, Canu collaborated with the Conservatoire des Arts et Métiers. He continued to study d'Orbigny's works in the Muséum National d'Histoire Naturelle and as such he is a marginal character associated with the bryozoological school of Paris. Much of his work he carried out in collaboration with Ray S. Bassler, curator of the bryozoans in the Smithsonian Institution in Washington (USA). He was at this time the French authority in the systematics of the Recent and fossil Bryozoa (Tertiary) and he finished the outstanding identifications of the late Louis Calvet (with whom he had apparently very little connection, but more so with the Spanish bryozoologist Barroso) (d'Hondt 2005b, Sanner 2002).



Marcelle CHANCONIE-MAURY

A student of Bobin she briefly worked on the mechanisms of fixation of entoprocts to their substratum before becoming an ichthyologist.

Monique CHRETIEN

The first step of her scientific career was a histological study, under the direction of Bobin, on the development of the ovary in the *Alcyonidium* genus.

Georges Jean-Léopold CUVIER (1769–1832)

He first became interested in natural history at the time when he was employed as a private tutor of aristocratic children in Normandy, Cuvier then became a professor in a secondary school. He was highly appreciated by Etienne Geoffroy Saint-Hilaire but subject to hostility from Lamarck. He was finally recruited as his substitute by the anatomist Mertrud in 1795 to the Muséum National d'Histoire Naturelle. Later, he would replace him as professor in the Museum, and succeed Daubenton as professor in the



College de France. He declined to be one of the scientists of the Napoléon Bonaparte's Egypt expedition. Cuvier assumed many high administrative responsibilities on the request of the King's government. Familiar with the whole range of zoology, vertebrates and invertebrates, his teachings contributed to the formation of some bryozoologists of the next generation: Henri Milne Edwards, André Marie Duméril, Henri de Blainville and

peculiarly Jean-Victor Audouin. He recommended to the latter that he study the Bryozoa collected by Savigny. He coined the word “Invertébrés” and proposed a new classification of the Animal Kingdom that included the Zoophytes (Joussaud and Brygoo 2004).

Louis Jean-Marie DAUBENTON (1716–1800)

Son of an attorney, Louis studied theology and became physician. On account of his ability he was recruited by Buffon, who was a native of the same city of Montbard, to become his collaborator. Daubenton systematically reorganized in a rational way (according to the zoological knowledge of the time) the collections of Natural History in the former King’s Garden. This institution had just been renamed the Muséum National d’Histoire Naturelle where Daubenton was a professor and the first director. He selected Lacepède as a collaborator.

Yves DELAGE (1854–1920)

Delage succeeded Lacaze-Duthiers as professor in the faculty of sciences of Paris and as director of the Station Biologique de Roscoff. He continued the tradition of assembling an inventory of the local marine fauna and studied experimental zoology on the marine invertebrates, initiated and promoted by his master. Such studies Yves arranged to be continued by two of his pupils, de Beauchamp and Prenant. He did not publish papers on the Bryozoa, but some of his collaborators utilized his observations. However he wrote in collaboration with his assistant-professor in the Sorbonne, Edgard Hérouard (1858–1932), a reference chapter on bryozoans in his handbook *Zoologie Concrète*, a volume that was very much appreciated at the time.

Edouard Placide DUCHASSAING de FONTBRESSIN (1818–1873)

A doctor both in medicine and in sciences, Edouard was a student of Etienne Geoffroy Saint-Hilaire and Blainville. He prepared a thesis on the morphological variability of the marine invertebrates under the influence of the environment. While a physician in the Caribbean (Panama, Guadeloupe, la Desirade, Saint-Thomas), Edouard collected numerous specimens for the collections of the Muséum National d’Histoire Naturelle in Paris, principally bryozoans and octocorals. Unfortunately, the bulk of the descriptions of his new species were unpublished and many of his species were lost at the time of his premature death (d’Hondt and d’Hondt, 2001).

André-Marie Constant DUMERIL (1774–1860)

Vir probus, “La science était honorée en lui, et c’est là ce qui le touchait le plus” and he testified to a “sérénité d’esprit qu’il devait au sentiment d’une vie honorablement passée et qui lui permettait de s’observer, de suivre ses pensées jusqu’au bout” (Obituary 1860). Herpetologist and entomologist, this son of a medical doctor made his first natural history field excursions when he was 15 years old. Cuvier’s student and collaborator, Dumeril was supported by Lacepède (whom he succeeded in the Museum of Paris) and

Etienne Geoffroy Saint-Hilaire, and his first appointment following the recommendation of Cuvier was as Lacepède's substitute in the Muséum National d'Histoire Naturelle. In 1803 he published his *Eléments d'Histoire Naturelle*, a university handbook of zoology that was remained the authoritative text for many years. He published on the Chalk Bryozoa, describing about 1,929 Recent and fossil species (879 from the calcareous sediments) and recognized the existence of 18,000 animal species. He was recruited as professor of Ichthyology in the Museum, where he occupied his chair for 22 years. He was, as was Blainville, one of the two mentors of Lacaze-Duthiers (Joussaud and Brygoo 2004).

Guy ECHALIER (born in 1926)

On the request of Georges Teissier, director of the Marine Station of Roscoff, Echalier coauthored, with Prenant his supervisor, a catalogue of the Bryozoa from the Roscoff area. He went on to become professor in the Faculty of Sciences of Paris, where he specialized in the study of the Amphibians and the Drosophilidae, and wrote some manuals on university teaching.

Henri Milne EDWARDS (1800–1885)

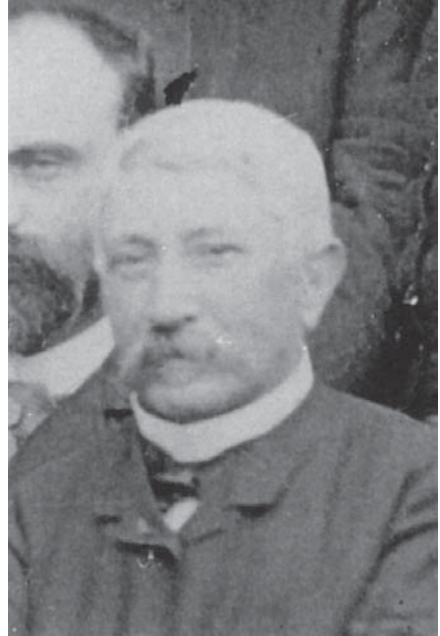
Henri followed the teachings of Cuvier, Lamarck and Audouin in the Museum of Paris, and was recruited by the latter as a collaborator. Milne Edwards and Audouin are considered to be the co-founders of the study of marine biology in France. Together they collected numerous specimens belonging to most zoological groups found in the field. Following Audouin's premature death, Milne Edwards succeeded him as professor in the Museum, and completed the second edition of the Lamarck's *Histoire Naturelle des Animaux sans Vertèbres*. He was principally



an arthropodist, but published some interesting papers on the fossil and Recent French and British Bryozoa (d'Hondt 2006).

Paul FISCHER (1835–1893)

A Parisian, he was orphaned when three years old and was brought up in Bordeaux by a physician, Dr Dégranges, who was his mother's second husband. His father-in-law was a collector of shellfish, so he was himself attracted naturally by these animals, to which he later dedicated the majority of his research (many books and 324 scientific papers, alone or in collaboration). He was the holder of the silver medal of the Société Linnéenne de Bordeaux awarded to him when only 16 years, for a study on the terrestrial and freshwater malacological fauna of Gironde. He was a resident medical student in the Pitié Hospital (Paris), and practiced as a physician from 1863. He then abandoned medicine to become assistant naturalist in the Museum laboratory of palaeontology, where he was already an Attaché from 1862. From his interest in malacology he became interested in 1866 in boring Bryozoa, and simultaneously in the biodiversity of the marine fauna of the southwest of France. So he participated in the Marquis de Folin dredgings in the Capbreton grave (Bay of Biscay, 1871), and then on the four oceanographic missions of the *Travailleur* and the *Talisman* (1880–1883). He wrote the first inventory of the Bryozoa from the French southwestern coasts (1870). He collected many specimens of Bryozoa for his friend Jules Jullien, and was regarded as d'Orbigny's successor. Associate professor in the Parisian Museum of Natural History, he became president of the French Zoological Society (Joussaud and Brygoo 2004, d'Hondt 1989b).

***Jean-Paul GAIMARD (1796–1858)***

Successively a marine surgeon during some scientific campaigns at the beginning of the 19th century, peculiarly those directed by Freycinet and Dumont-d'Urville, he became the assistant of Quoy and made many collections of Bryozoa, including those from Arctic regions.

François GASSER (born in 1938)

At the beginning of his scientific career, he familiarized himself with the histological and cytological techniques, studying under the direction of Prenant and Bobin the structure of the epidermis and the statoblasts in *Plumatella*. Next, he became a geneticist and molecular biologist in the enzymology of amphibians when employed as an assistant-professor in the Toulouse Institut National de la Recherche Agronomique (d'Hondt 1989b).

Etienne GEOFFROY SAINT-HILAIRE (1772–1844)

Son of a lawyer, Etienne was interested in natural sciences from a young age. At 18 he was introduced to the Parisian scientific community in the Muséum National d'Histoire Naturelle where he impressed the naturalists of the time. He was recruited at the age of 21 years by the Muséum National d'Histoire Naturelle to replace Lacepède, exiled for political reasons. Etienne was appointed Naturalist in charge of the collections of Vertebrates on the Napoléon Bonaparte Egypt campaign when nearly 26 (he give then proof of an exceptional courage), he came back to France hailed and highly praised. He was not a bryozoologist himself, but convinced by the plurality of the Zoology, he recruited many famous naturalists of the next generation (such as Blainville, d'Orbigny and Valenciennes) to become specialists of the various groups of invertebrates and in particular the Zoophytes. His son, Isidore, was the founder of the study of teratology (Joussaud and Brygoo 2004).

Paul GERVAIS (1817–1879)

A student and successor of Blainville and Cuvier, Gervais was interested by all aspects of natural history. He became successively professor in the Sorbonne and in the Muséum of Paris, and president of the French Academy of Sciences. He was essentially an entomologist but also the author of two publications on the phylactolaemates. On his death at the age of 62 years, he was reputed to have published about 600 scientific papers during his career.

Alfred GIARD (1846–1908)

Born in Paris, Giard was passionately fond since very young of the study of nature, the fauna and the flora of the forests, ponds and the countryside. Grounded in animal nomenclature when only 15 years old, he is remembered as an affable, smiling and timid man. He loved to write and sent each day numerous letters to his multiple correspondents. Student, evolutionist (and by the way contradictor of his mentor Lacaze-Duthiers), he was the pioneer of the Darwinian theories in France. Firstly assistant to Lacaze-Duthiers in the Sorbonne in 1871, he founded in 1874 the marine biological laboratory of Wimereux from his own resources. He became professor of zoology at Lille University in 1876, then in 1888 of Evolution in the Faculty of Sciences of Paris. He considered that the development of the Bryozoa was insufficiently known at this time in France, and he purposed to his student Jules Barrois the subject of his historical



and famous thesis on these topics. He was also the supervisor/mentor of Charles Barrois (Jules' brother and geologist) and Paul Hallez.

Pierre GRATIOLET (1815–1865)

Professor in the Faculty of Sciences of Paris, he died when at the height of his career. He was not himself a particular specialist of the Bryozoa, but a general specialist of the comparative anatomy of vertebrate and invertebrate animals (publishing, for example, on the brachiopods and the leeches), subjects that he taught in the Sorbonne. He was in fact a link in the transmission of information on aquatic invertebrates in France, and he was replaced after his death by Lacaze-Duthiers. A former student of Blainville, he was not elected as his successor on account of his political positions (Joussaud and Brygoo 2004, d'Hondt 2010).

Pierre GRELLET

He started studies in histology during a brief research on *Alcyonidium* spermatogenesis, during a period in the Sorbonne when under the direction of Bobin.

Claude GRUYS-FAULCHER

A student of Bobin, Claude familiarized herself with histology while undertaking a short study on the entoprocts.

Jean-Etienne GUETTARD (1715–1786)

Bernard de Jussieu's fellow-worker and a former pupil of Réaumur, Guettard was a field-naturalist under the supervision of Bignon. A collector rather than a researcher, he obtained freshwater Bryozoa in the country, and gave his specimens to Réaumur for his research (d'Hondt 2002, 2005a).



Paul HALLEZ (1846–1938)

A senior student of Lacaze-Duthiers and Giard, of whom he was the successor in Lille University, Hallez (pictured left) founded according to the principles of his master, a marine biology station on the northern coast of France (at Wimereux). There he undertook in the manner of Lacaze-Duthiers, some systematic surveys of the local marine fauna in which he highlighted the Bryozoa.

Sidney HARMER (1862–1950)

A British scientist, one-time director of the British Museum (Natural History), he was the son of a manufacturer, who encouraged his interests in natural sciences. Harmer first became interested in the development of these organisms at the outset of his career and decided to dedicate it almost exclusively to the systematics of the Bryozoa (on his own initiative) (Wyse Jackson and Spencer Jones 2002). Because of this he came to work in Roscoff, a locality whose faunistic richness had been reported some years earlier by Joliet, and where he was welcomed by Lacaze-Duthiers. Harmer published his results in 1887 in French.

Jean-Loup d'HONDT (born in 1943)

Field naturalist by inclination, at a young age acquired a solid grounding in zoology (entomology, marine biology, meiobenthos (Ph.D. when 24 years old on the marine and freshwater gastrotrichs) and in botany. He was recruited by Lévi to become the next French institutional specialist of the Bryozoa to work in a diversity of fields (general biology, development, biosystematics, evolutionary systematics, faunistic inventories, and history of bryozoology). He completed a second doctoral thesis in the Muséum National d'Histoire Naturelle Paris, on metamorphosis and the evolutionary significance on various larval structures in the Bryozoa. He worked later on other subjects: classification of the bryozoans at the higher levels, identification of collections of bryozoans particularly originated from bathyal and abyssal areas and arising from Atlantic and Indo-Pacific regions, intraspecific variability. The ctenostomes constitutes his favourite material. Director of Research in the French National Center of Scientific Research, he was president of the Société Zoologique de France, deputy-president of the 20th International Congress of Zoology: president of the franco-moghrabin congress of Zoology (2010) and the author of some university manuals and of more than 520 scientific papers (including 230 on Bryozoa and bryozoology) (d'Hondt 2005b).

Frédéric HOUSSAY (1852–1920)

Professor at the Sorbonne, embryologist and pioneer of medical histology in France, Houssay was one of Prenant's professors and interested him in histological and biochemical techniques. Essentially a vertebratist, he published few papers on the histology of the Bryozoa which may well have helped determine the future research direction of his pupil.

Laurent HOUZELOT

For part of his university courses, Houzelot prepared under d'Hondt's direction a study on the functional significance and the boundaries of the chemosystematics using the enzymatic systems, tested on the Bryozoa. Laurent also revealed some genetic isolates on the European coasts. Later, he became an antiquarian in a seaside and touristic city in Normandy.

Audrey JAGUIN (now Mrs DARTEIL)

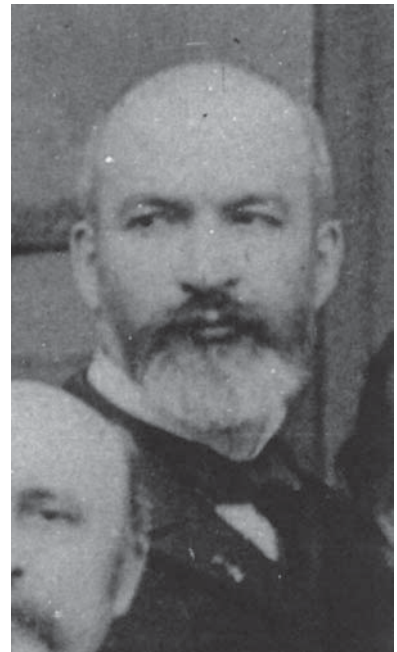
A very gifted student, Audrey had had a vocation at a young age to become a school teacher, but she also wished to gain an understanding of scientific research before she went to train as a teacher. When she was 18 years old, Audrey requested J.-L. d'Hondt to suggest to her a subject area to work on the bryozoans. She was therefore included in a program of study on the clinal variability of some species on the European coasts, following the evolution of the enzymatic phenogrammes according to the distance.

Lucien JOLIET (1844–1878)

Assistant of Lacaze-Duthiers at the marine station of Roscoff, he founded and listed the first collection of reference specimens of the bryozoans from the Roscoff area. He died prematurely, the victim of health problems, resulting from his alimentary privations during the war of 1870.

Jules JULLIEN (1842–1897)

A naval medical man and amateur naturalist, Jullien developed a passion for the Bryozoa, particularly the freshwater species, during the period that he was temporarily the private physician of the Cambodian king (Norodom). He used the opportunity to collect a large diversity of organisms in the Mekong (peculiarly some new Hislopiidae, under the generic name *Norodomia*). After his return to France, he felt a general interest for the fossil and Recent Bryozoa. Jullien was the only French specialist of the Bryozoa at this time, and he collected specimens at every possible opportunity, and assembled a rich collection of material, from many different places. Some specimens in his collection were given to him by many collectors. He participated in some oceanographic cruises (i.e. some of the ones organized by Prince Albert I of Monaco). He was president of the French Zoological Society. After his death, the main part of his Recent material which he kept at home was put up for sale by his family, and it was fortunately purchased by some of his friends for the Museum in Paris (d'Hondt 1987, 1989, 2005b).

***Bernard de JUSSIEU (1699–1777)***

Belonging to a family of prestigious botanists of many generations, Bernard was a field-naturalist and friend of Réaumur who studied his zoological material. He was with Guettard the first French scientist to collect phylactolaemates in France, but was only a

collector. His teaching was influenced by the ideas of Buffon, his younger colleague and friend in the Museum in Paris. Jussieu was, in the King's Garden, substitute to the botanist Sebastien Vaillant (the older specimens of Bryozoa preserved in the national French collections are his and were considered for a long time to be algae (Joussaud and Brygoo 2004, d'Hondt 2002, 2005a).

Henri de LACAZE-DUTHIERS (1821–1901)



A provincial aristocrat firstly dedicated to a medical career, but due to his political ideas had to renounce it and so he moved to the natural sciences. In Paris, Henri attended in Paris the lectures of Blainville, Duméril, Valenciennes and particularly Henri Milne Edwards. His thoughts were also influenced by the methods of another of his teachers, Quatrefages. Moderately fixist, he was recruited to a position of zoologist by Milne Edwards, and became professor in the Muséum National d'Histoire Naturelle (1865). Four years later (1869), he obtained a quick promotion and moved to the Sorbonne as successor of Gratiolet who had died suddenly. Lacaze-Duthiers was a professor in the Faculty of Sciences of Paris for about 40 years; he founded the marine biological stations of Roscoff and Banyuls-sur-Mer and became directly or indirectly the “ancestral” teacher of all the

generations of Parisian zoologists since the end of the 19th century. A dozen of his direct students have been bryozoologists (to some degree or another). Henri encouraged some of them to work on these animals, but he was not himself the author of papers on this biological material. He founded a new scientific approach, the “Zoologie expérimentale” (d'Hondt 2001, Joussaud and Brygoo 2004).

Bernard de la Ville de LACEPEDE (1756–1825)

He did not work himself on the Bryozoa, but his long banishment to the country on political grounds allowed for the promotion of two of his former students, Duméril and de Blainville, themselves bryozoologists, and it is for this reason that Lapepele is mentioned here (Joussaud and Brygoo 2004).

Jean-Baptiste Monet de LAMARCK (1744–1829)

Giving up to his short military career for health reasons, Lamarck intended to study medicine alongside parallel botanical lectures in the King's Garden. His *Flore Française* was commented on by Buffon. Under some pressure, Lamarck moved to other activities and accepted then the chair of Zoology of Insects, Worms and Microscopic Animals in the Muséum National d'Histoire Naturelle. Becoming progressively blind, he found a substitute in the young carcinologist Audouin. Lamarck was one of the first French zoologists to use Linnean nomenclature and was active when French naturalists first developed interests in the non-arthropodian invertebrates. He proposed a new classification of the bryozoans and founded the study of invertebrate palaeontology in the Parisian Museum with the publication of his famous book *Histoire naturelle des animaux sans vertèbres*. In his fundamental work, *Philosophie Zoologique* (1809), he was the founder of the first theory on evolution (d'Hondt 1997, Joussaud and Brygoo 2004).

***Jean-François Félix LAMOUREUX (1779–1825)***

Passionately fond of natural history and peculiarly interested in the Zoophytes, Lamouroux was an admirer of Lamarck, and at first exchanged with him scientific information and specimens, and followed his teachings in the Paris Museum. But quickly Lamarck considered this young and gifted colleague to be a rival; so he undertook to slow down the publication of his papers, and attempted to limit (with the support of H. Milne Edwards) the impact of Lamouroux's classification of the Zoophytes (which was in fact better than his own). Professor in Caen University, Lamouroux died prematurely at a time when he was scientifically most active (d'Hondt 2005b).

Renée LE BROZEC

Bobin suggested to her, as a first topic to initiate herself in research, a study on the distinctive specific characters of the genus *Alcyonidium*. This work was carried out in the Sorbonne.

Charles-Alexandre LESUEUR (1778–1846)

Naval officer and artist, he became by accident the collaborator of the official naturalist Péron during the scientific expedition of Captain Nicolas Baudin. In about 1804 he produced fourteen, now famous, engraved plates of Zoophytes that were essentially devoted to the Bryozoa (d'Hondt 2002).

Claude LEVI (born in 1922)

A student of Prenant and recruited as an assistant by Teissier, who was at that time the director of the Station Biologique de Roscoff, Lévi rapidly became an international authority as a systematist and as a specialist on the development of sponges. Later he was appointed professor in the Faculty of Sciences of Strasbourg, then in the Muséum National d'Histoire Naturelle in Paris, Deputy Director of the CNRS (Centre National de la Recherche Scientifique), president of the Société Zoologique de France. He was not himself a specialist on the Bryozoa, but was responsible for seeing continuity of bryozoological research in France. On the retirement of both Prenant and Bobin, Lévi recruited d'Hondt in 1967 to continue in France the tradition of morphogenetical and systematical studies on the bryozoans (Joussaud and Brygoo 2004).

Geneviève LUTAUD (1926–2008)

The daughter of a professor in the University of Paris, Lutaud prepared successively a Diplôme d'Etudes Supérieures and a thesis in the Biological Station of Roscoff and in the Faculty of Sciences of Paris, under the direction of Prenant. Geneviève continued the studies of Bronstein on the nervous system and the coloniality of the Bryozoa, particularly by the means of specific and temporary stains. She studied also the edification of the exoskeleton of the bryozoans peculiarly during the younger stages of a zoarium. She produced with the filmmaker Jean Painlevé an educational film on the biology of the bryozoans and autozoocidal budding. A fervent field-naturalist, Geneviève was very familiar with species and their ecology *in situ*, as she knew the individual needs of each species (Bigey and d'Hondt 2009).



Sabine MARCUS

As an introduction to research Sabine asked J.-L. d'Hondt to recommend a subject for study during the year when she was waiting for a job. In his laboratory her research investigated the reliability of the expression of the enzymatic systems under the influence of various environmental factors on a bryozoological model.

Isabelle MATRICON

A student of Bobin, who gave her the topics of her first research, on the comparative anatomy, the origin and the degeneration of the *Alcyonidium* polypides. Matricon showed the necessity to study a highly reliable character, the polypidial anatomy, to allow for

identification and for interspecific discrimination between *Alcyonidium* species. Next she became an associate-professor in the University Pierre and Marie Curie (Paris VI). She wrote pedagogic works and undertakes histological research on the worms.

Jean-Claude MERTRUD (1728–1802)

A medical man in the making, Jean-Claude was firstly demonstrator in the Royal Garden in 1767. Then he became the first holder of the chair of Anatomy of the Animals in the Museum of Paris. Mertrud was a colleague of Buffon and friend and near collaborator of Daubenton. He chose to provide assistance to a young promising scientist, Georges Cuvier, to whom he delegated a part of his teaching. It is for this reason that he is mentioned here, because he was not himself a bryozoan-worker (Joussaud and Brygoo 2004).



Alphonse MILNE-EDWARDS (1835–1900)

Son of Henri, he adopted the familial patronym that had been deliberately modified by his father. Initiated by him in the Bryozoa, he was himself a collector of specimens for the enrichment of the Museum collections. Director of the Paris Museum, he encouraged the Société Zoologique de France (of which he was the first “Président d’Honneur”) to organize the First International Congress of Zoology in 1889. In the same year he arranged for the transportation and the scientific arrangement of the

national collection of Recent Bryozoa in the Gallery of Zoology (Joussaud and Brygoo 2004).

M. NYÈVRE

An early student of Lacaze-Duthiers, specifically interested in bryozoans, Nyèvre requested assistance of his former professor to help complete an inventory of the national collections of Recent Bryozoa preserved by his laboratory in the Museum of Paris. So, shortly before the war of 1870, he wrote the first catalogue (manuscript) of the bryozoans present in the collections. Nyèvre disappeared after the war and there is no sign of him after 1871, so it is suspected that he was unfortunately one of its victims.

Alcide Dessalines d'ORBIGNY (1802–1857)

A provincial man, d'Orbigny travelled to Paris to study natural sciences and attended the teachings of Cuvier, Blainville and Etienne Geoffroy Saint-Hilaire. He was appointed by the Muséum National d'Histoire Naturelle to undertake a naturalist expedition in South America, collecting numerous Recent and fossil Bryozoa. D'Orbigny also described many fossil species of Bryozoa during his research on French palaeontology (Taylor and Gordon 2002, Joussaud and Brygoo 2004).

François PERON (1775–1810)

An anthropologist by training, Peron voluntarily enlisted to become naturalist-chemist during the oceanographic voyages of the *Geographe* and the *Naturaliste*. His candidature, supported by Jussieu and Lacepède, was accepted. He collected also some of the older exotic specimens contained in the bryozoological collections of the Museum of Paris. Peron profited from the help of a naval officer, Alexandre Lesueur, who became his artist.

Edmond PERRIER (1844–1921)

A student of Lacaze-Duthiers, who recruited him as assistant in the Museum of Paris, he succeeded him and became full professor in the chair of Natural History of the Worms, Molluscs and Zoophytes from 1876 to 1902. This was after a short interim period that was filled by the malacologist Paul Deshayes when Lacaze-Duthiers left the Museum and moved to the Sorbonne. He participated to the scientific voyages of the *Travailleur* and the *Talisman* (1880–1883) and in the collection of Bryozoa from the Bay of Biscay. He wrote a famous treatise of zoology that included a remarkable chapter on the Bryozoa, and was president of the Société Zoologique de France (Joussaud and Brygoo 2004).

Anne-Marie POURCHER

Recruited by EDF (Electricité de France) to train as an engineer, Pourcher worked under the direction of J.-L. d'Hondt (being his first student) on the means of preventing the development of phylactolaemata zoaria in the water-cooling circuits of a power station, and also on an ultrastructural study on the statoblasts.

Marcel PRENANT (1893–1983)

Having already been brought to the attention of his professors during his university studies, this gifted and brilliant student was recruited when 29 years old as “Chef de Travaux Pratiques” in the Biological Station of Roscoff, by Charles Pérez, director of this marine laboratory, professor in the Sorbonne and successor of Yves Delage. Prenant then became associate-professor in the Sorbonne as replacement to Herouard. He acquired an understanding of coastal ecology, systematics and



oceanography there, making numerous collecting trips into the field with de Beauchamp. Appointed professor of Comparative Anatomy in the Faculty of Sciences of Paris and President of the French Zoological Society, he conceived before the Second World War the project of a Fauna of the French Bryozoa, but this work was only partially realized after the end of the war, in collaboration with his pupil, Geneviève Bobin (a formerly histologist of the Annelids, who became an histologist and biochemist of the Bryozoa). He was active at the commencement of research on the histology and cytology of the marine invertebrates in France. He died during the IBA Conference of Vienna in 1983 (d'Hondt 2005b).

Henri PROUHO (1854–1921)

Henri Prouho was one of Lacaze-Duthiers' more able students. His supervisor asked him to carry on and continue the studies undertaken by Jules Barrois on the morphology and the anatomy of the larvae and the successive stages of the morphogenesis in the marine Bryozoa. Barrois had carried out his research in a rival laboratory under the direction of Giard (a former pupil of Lacaze-Duthiers). Prouho was directed him to embark on a thesis on the same subject using the same biological material examined by Barrois. Prouho utilized the most modern techniques at this time, namely the histology and the cytological stains. Prouho described also by the method some new Mediterranean species. Appointed as professor at Lille University for some years, he ceased his research somewhat prematurely and left his position for health reasons (d'Hondt 1979, 2004).

Georges PRUVOT (1852–1924)

Pruvot was a student of Lacaze-Duthiers, whom he succeeded as professor in the Sorbonne and director of the biological station of Banyuls-sur-Mer. He managed numerous dredgings that provided the reference collection on which the inventory of the Banyuls and Roscoff bryozoological fauna was based.

Jean-Louis Armand QUATREFAGES de BREAU (1810–1892)

A medical doctor and zoology enthusiast, he was appointed as professor of Zoology at the Toulouse University, and was elected as a member of the French Academy of Sciences with the support Alphonse Milne-Edwards and the professor of Anthropology in the Museum. He started Lacaze-Duthiers on the study of organisms, particularly the marine bryozoans, in the field (Joussaud and Brygoo 2004).

Jean-René QUOY (1790–1869)

He was a navy surgeon, and became interested by the natural history during the time of his first voyages. Supported by Cuvier and Blainville, Quoy became the resident naturalist of further oceanographic missions, where he was assisted by Gaimard. Both enriched the collections of the Museum with bryozoan specimens.

René-Antoine Ferchault de REAUMUR (1683–1757)

Réaumur had an original and universal mind, he was firstly a physicist but was open to all the cultural fields, including natural history and curiosities of nature. These interests he first developed while a young boy during time spent each year at La Rochelle. Reaumur was encouraged, and particularly drawn to entomology by Bignon to whom he gave his collection of spiders. In 1712 he was the first French author to publish observations on phylactolaemates (made by Guettard and Jussieu). He asserted the animal nature of these organisms, where previous naturalists had long considered them to be plants. From a distance he encouraged his Swiss disciples, Abraham Trembley and Charles Bonnet, to publish their results and theories (d'Hondt 2002, 2005b).



Louis REDIER (1892–1975)

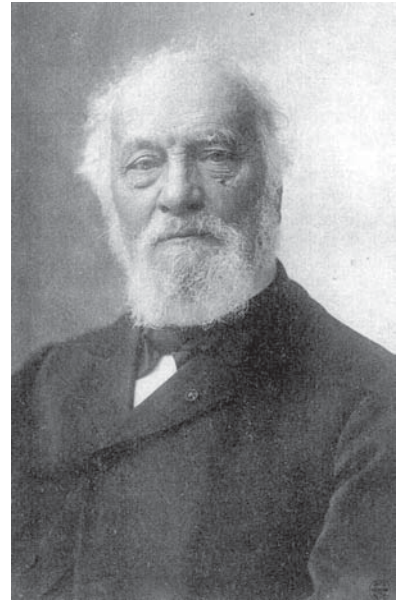
A self-taught and dilettante “naturalist”, after an administrative career, Redier dedicated his years of retirement in the Muséum National d’Histoire Naturelle in Paris to the identification of collections of hydroids. On finding frequently arbustive bryozoans in this material, he undertook also to identify these specimens. During his last years, when in bad health, he collaborated with d’Hondt, who completed after Redier’s death the writing of their collective papers (d’Hondt 1976).

Pierre REY (1904–1990)

Professor of zoology in the Ecole Normale Supérieure, Pierre was a specialist on amphibian reproduction. Rey worked briefly at the beginning of his scientific career on the brown bodies of the bryozoans under Prenant's supervision.

Paul-Dieudonné-Armand SABATIER (1834–1910)

Professor in the University of Montpellier, director of a marine biological station (Sète) and in competition with Lacaze-Duthiers (director of the stations of Roscoff and Banyuls), Sabatier wished to develop in his own laboratory some concurrent research. Excited by the incipient histology, he asked Louis Calvet his former student to become his assistant, and that he continue by most modern approaches studies on the development of the Bryozoa. There had been a hiatus for many years in such studies following the work of Prouho (ex-student of Lacaze-Duthiers) and Barrois (ex-student of Giard, himself a pupil of Lacaze-Duthiers). Sabatier also compiled with his various students and collaborators a listing of the littoral fauna (including the bryozoans) of the Sète area. "Président d'Honneur" of the French Zoological Society, he is mentioned here on account of the rivalry between his laboratory and the Parisian laboratories of Lacaze-Duthiers (d'Hondt 2007).

***Marie-Jules César Delorgne de SAVIGNY (1771–1841)***

Originally a botanist becoming a complete naturalist from the age of 16 years old, he followed in the Museum of Paris the teachings of Cuvier, Daubenton and Duméril. The latter recommended him to Lamarck. Supported by Etienne Geoffroy Saint-Hilaire, Savigny was chosen to collect and study the terrestrial and aquatic invertebrates assembled during the French expedition in Egypt organized by Napoleon Bonaparte, including a rich collection of Bryozoa. Unfortunately, his health problems (migraine and the inability to tolerate light) prevented him from studying his own material and he never agreed for his collection to be given to other naturalists to describe. Consequently, Cuvier requested Audouin to work on this material, but only through examination of Savigny's images (d'Hondt 2002, Joussaud and Brygoo 2004).

Georges TEISSIER (1900–1972)

A Professor in the Sorbonne, president of the Société Zoologique de France, he was a friend of Prenant. This geneticist was very sensitive to the need to increase the study of marine biology in France, which he promoted when he became director of the Station Biologique de Roscoff. Convinced of its essential importance, Teissier encouraged, promoted and published the contributions of various researchers on the faunal inventory of the Roscoff district. This fauna was particularly rich in invertebrates, and included numerous species of lower Metazoa (the Bryozoa being listed by Echalié and Prenant). He transmitted to his nephew, Claude Lévi, his motivations for his promotion of systematical studies, and for the development of ecological and morphogenetical studies on marine organisms. He became himself a specialist of the hydroids.

Abraham TREMBLEY (1710–1784)

Swiss, non-bryozoologist, but Trembley's cousin who was a correspondent and pupil of Réaumur, submitted to him Trembley's observations on the regeneration of freshwater hydroids. Acknowledging the originality of his deductions, Réaumur prompted Trembley to publish them, which opened the way for future programs of study on asexual reproduction (d'Hondt 2005).

Agustina ULY

From Indonesia Agustina Uly moved to France to complete her university courses. She was the second student of J.-L. d'Hondt, who provided her with a research topic on comparing the enzymatic equipment of species presenting respectively, larvae with reduced longevity, or those with a long larval life. She correlated the longevity and the capacities of dispersion of the larvae with the homogeneity of their genetic patrimonium along a wide coastline.

Achille VALENCIENNES (1794–1865)

Son of a demonstrator at the Muséum National d'Histoire Naturelle in Paris, he was a student of almost all the prestigious naturalists at the beginning of the 19th century: Etienne Geoffroy Saint-Hilaire, Lamarck, Cuvier, Blainville (whom he succeeded), and supported by Lacepède. He did not publish himself on the Bryozoa, but managed, in the Museum, the laboratory where this material was kept, and assumed responsibility as the curator of the collection. Valenciennes was essentially a malacologist and cnidariologist. A curator by inclination, Achille gathered the biological materiel placed under his care so that it would benefit the next generations of researchers (Joussaud and Brygoo 2004). After his death, Lacaze-Duthiers, his successor, continued the general inventory of the collections, helped for the Bryozoa by Nyèvre.



3. Annex: The isolated (mainly non-Parisian) French Bryozoologists

Henri GADEAU de KERVILLE (1858–1940)

A self-taught naturalist who hailed from a rich Normandy landed family, Henri was attracted to natural history while still a child. Later he willingly became a patron (or *mecenas*) to others studying natural history. During his travels in foreign countries he collected many specimens, including some bryozoans. He passed on material for study to various colleagues that belonged to scientific associations of which he was also a member (d'Hondt 1989b).

Hélène GUERIN-GANIVET



The first female French bryozoologist, Hélène was appointed with her husband Joseph, who is noted for his work on the barnacle *Sacculina*, as naturalist by the Service scientifique des pêches (Marine Minister), working particularly in the laboratory of the Collège de France in Concarneau. She published some papers between 1911 and 1913 on the Bryozoa collected during littoral oceanographic missions along the French coast and in the Arctic. Unfortunately, little biographical information is known about her.

Louis-Félix HENNEGUY (1850–1928)

Professor of biology in the Collège de France, he was interested in histological studies on the more diversified biological material. Henneguy demonstrated the presence of myo-epithelial cells in the Bryozoa.

Antoine RISSO (1777–1845)

A chemist in Nice, he collected for his own collection numerous specimens of many marine organisms from the Mediterranean, including various species of Bryozoa.

Guillaume RONDELET (1507–1556)

Professor in the faculty of medicine in Montpellier and founder of marine biology in France. In 1555 Rondelet described in his *Histoire Naturelle des Poissons* the first known bryozoan, “Giroflade de mer” which corresponds to *Sertella septentrionalis* Harmer, 1933 = *Reteporella grimaldii* (Jullien, in Jullien and Calvet, 1903) (d'Hondt 2002, 2005a).

Sébastien VAILLANT (1669–1722)

Surgeon and professor of botany in the King's Garden, he was Tournefort's pupil, and recruited Jussieu as a collaborator. He collected the first specimens of Bryozoa preserved

in the French national collections, although he considered them to be algae. He was also the first author to demonstrate sexual reproduction in plants (d'Hondt 2002, 2005a).

4. In conclusion: now and the future?

The past director of the French National Center of Scientific Research (CNRS), Claude Lévi, decided in 1967 to establish for the first time a bryozoology service in the Muséum National d'Histoire Naturelle. It was to concern itself with all the fields of research on these organisms (general anatomy, development, biosystematics, inventories, history) and I was thus recruited to become the keeper of the bryozoological tradition and heritage for nearly forty-five years. Now, the scientific heritage of Prenant and Bobin and earlier researchers in Paris will probably die out in the near future, because no-one has been recruited by the trustees of the National Museum following my retirement. Most of my former students are no longer working on bryozoans; only my Tunisian student, Mrs Ben Ismail, will perhaps continue to work on these animals, not in France, but in Tunisia. This paper marks the end of a long, rich, glorious and prestigious history that has lasted for more than three hundred years.

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Sources of figures

Author's collection: Yves-Victor Gautier; Pierre Balavoine; Geneviève Bobin; Louis Calvet (with permission of Marthe Calvet and Lydie Rouvet); Henri Milne Edwards; Paul Hallez; Henri de Lacaze-Duthiers; Geneviève Lutaud; Alphonse Milne-Edwards; Marcel Prenant; Louis Redier; Pierre Rey; Armand Sabatier.

Dorothy Soule collection ex. Geneviève Bobin collection (in the care of Patrick Wyse Jackson, Dublin): Ferdinand Canu; H el ene Guerin-Ganivet.
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Appendix

Known burial places of the French bryozoologists

Audouin: cemetery of P ere-Lachaise (Paris)
 Balavoine: unknown
 Barrois: cemetery of Villefranche-sur-Mer
 De Beauchamp: cemetery Montparnasse (Paris)
 Bignon: unknown (Catacombs?)
 Blainville: cemetery of P ere-Lachaise (Paris)
 Bobin: unknown
 Bosc: cemetery of Sainte-Radegonde (Montmorency forest, in Paris area)
 Bronstein: unknown
 Buffon: garden of the National Museum of Natural History (Paris)
 Buge: unknown
 Calvet: cemetery of Rodome (near Quillan)
 Canu: cemetery of Versailles?
 Cuvier: cemetery of P ere-Lachaise (Paris)
 Daubenton: labyrinthe of the Jardin des Plantes (Museum, Paris)
 Delage: unknown
 Duchassaing: cemetery of Coulounieix-Chamiers (near P erigueux); not identified
 Dum eril: cemetery of P ere-Lachaise (Paris)
 Duvergier: unknown, near Bordeaux
 Fischer: Paris?
 Gadeau de Kerville: unknown (probably in a thermal city of the Pyr en es)
 Gaimard: cemetery Montparnasse (Paris)
 Geoffroy Saint-Hilaire: cemetery of P ere-Lachaise (Paris)
 Gervais: cemetery Montparnasse (Paris)
 Giard: unknown
 Gratiolet: Paris?
 Gu erin-Ganivet: unknown
 Guettard: Paris?
 Hallez: Lille?
 Henneguy: unknown
 Houssay: Lyon?
 Joliet: Paris?
 Jullien: unknown

Jussieu: church Saint-Nicolas du Chardonnet (Paris)
Lacaze-Duthiers: marine laboratory of Banyuls-sur-Mer
Lacepède: Epinay
Lamarck: now, dispersed in the Catacombs of Paris
Lamouroux: cemetery of Caen (destroyed during the war 1939–1945)
Lesueur: cemetery of Sainte-Adresse (near Le Havre)
Lutaud: cemetery Montparnasse (Paris)
Milne-Edwards (Alphonse): Paris?
Milne Edwards (Henri): Paris?
Nyèvre: unknown
D'Orbigny (Pierrefitte, near Saint-Denis, Parisian area)
Péron: cemetery of Laon
Perrier: Paris?
Prenant: Parisian cemetery of Bagneux (Paris area)
Prouho: cemetery of Rabastens-sur-Tarn (near Albi)
Quatrefages: cemetery Montparnasse (Paris)
Quoy: cemetery of Saint-Jean de Liversey (Charente-Maritime)
Réaumur: cemetery of Saint-Julien-du-Terroux
Redier: Paris?
Rey: unknown
Risso: cemetery of Nice
Rondelet: unknown
Sabatier: cemetery of Montpellier?
Savigny: cemetery of Provins
Teissier: old cemetery of Roscoff
Vaillant: Paris?
Valenciennes: Paris?

