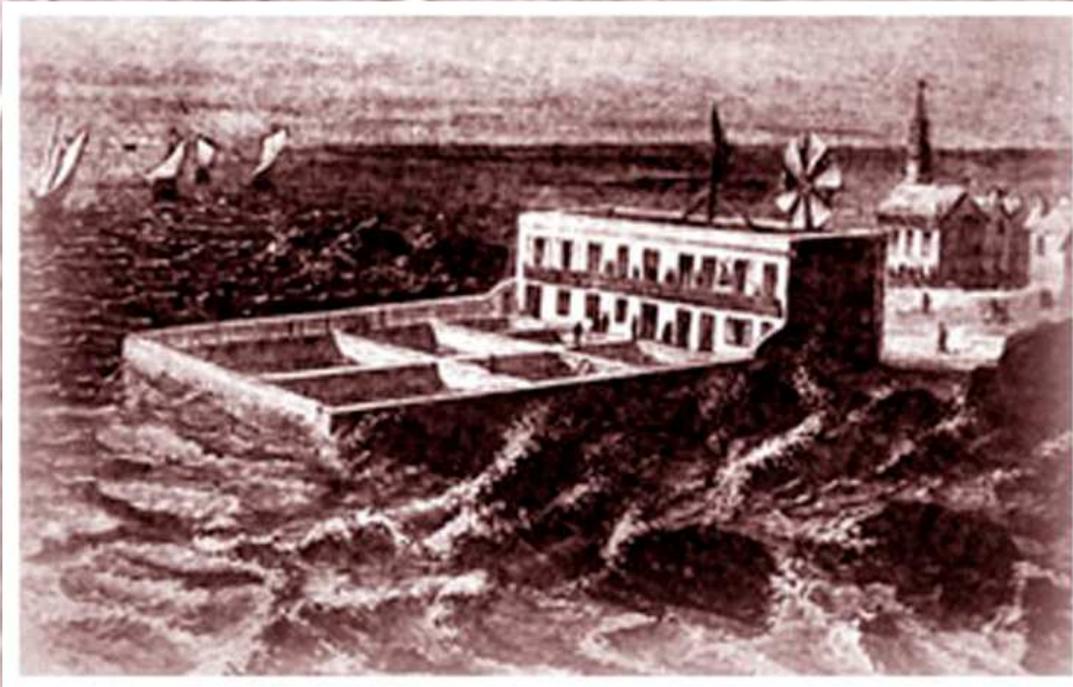


*Rendez vous de Concarneau - October 3rd-4th 2013*

*The marine biological laboratory  
of Concarneau :  
150 years of history*

*Nadia Améziane  
with the collaboration of Yves Le Gal*





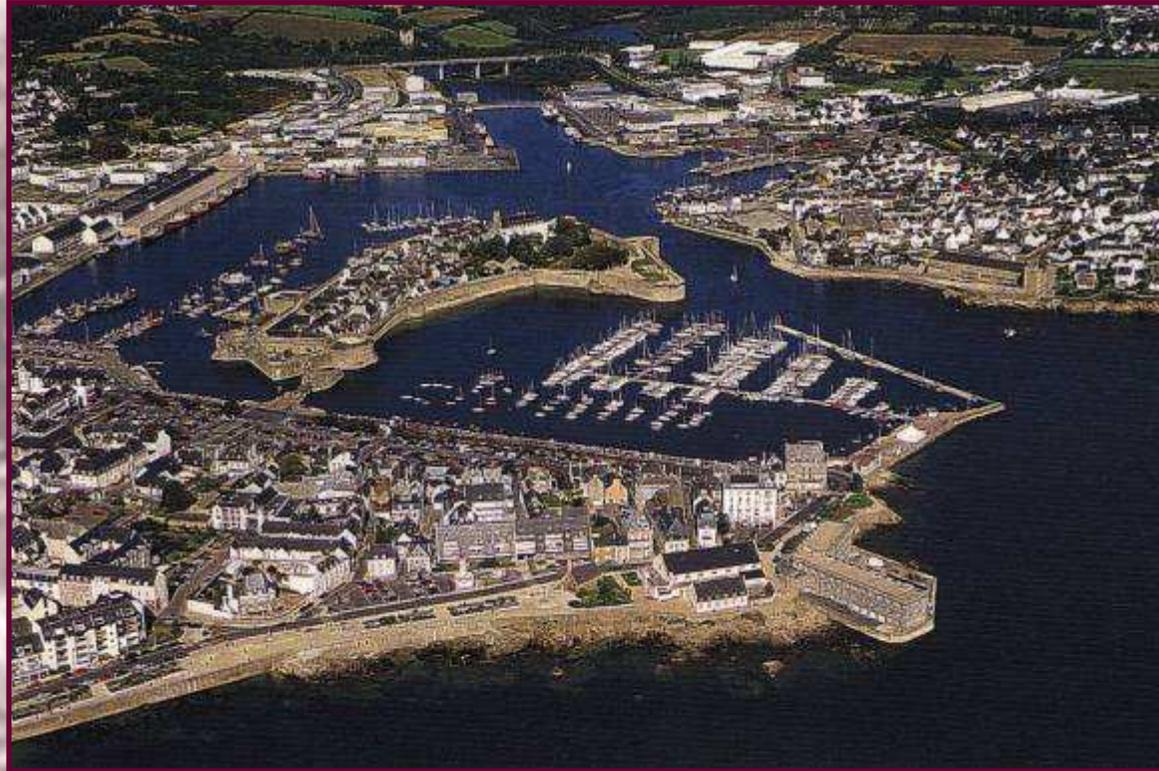
Founded in 1859  
by Victor Coste  
Professor at Collège de France

*The oldest marine station*

*(154 years)*

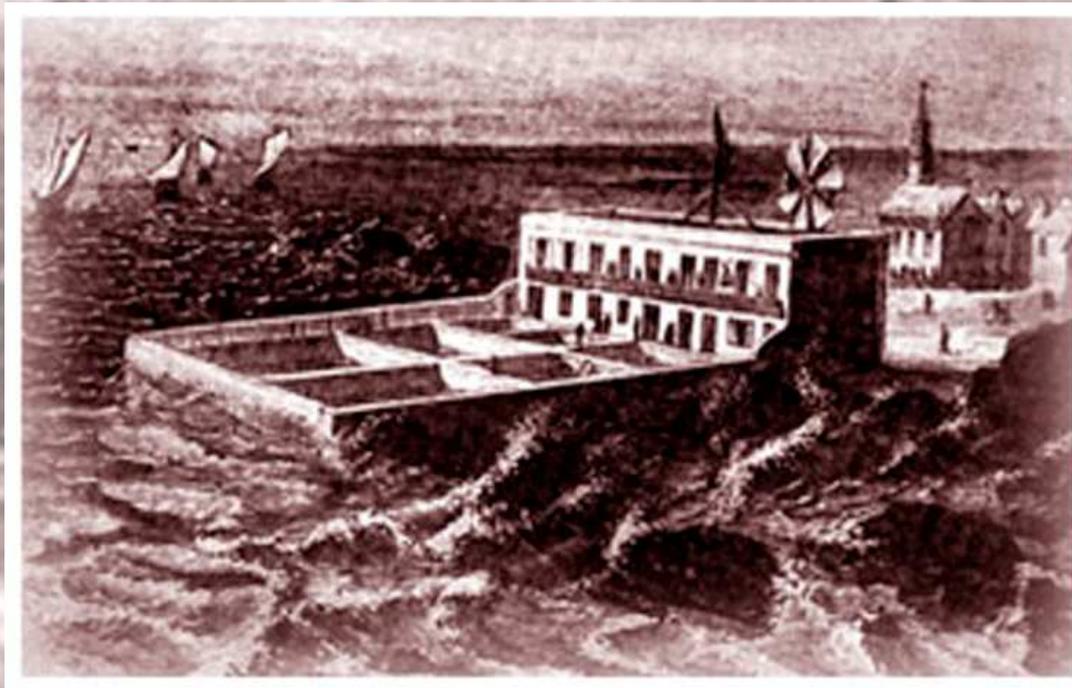


1807-1873



- ✓ in the middle of a region of maritime estuaries with high productivity;
- ✓ close to the *Glénan* archipelago;
- ✓ bay of *La Forêt* is unique and diverse sea grass;
- ✓ alternation of rocks and sediments substrates;
- ✓ fishing port with high diversity of species.

*Why the choice of Concarneau ?*



Major aim is cultivation and farming of marine animals

Early establishment and concept of fundamental research associated with breeding of animals have made the marine station of Concarneau a model

*A model for other stations*

# Past



Roscoff (1871)



Banyuls (1880)



Naples (1872)

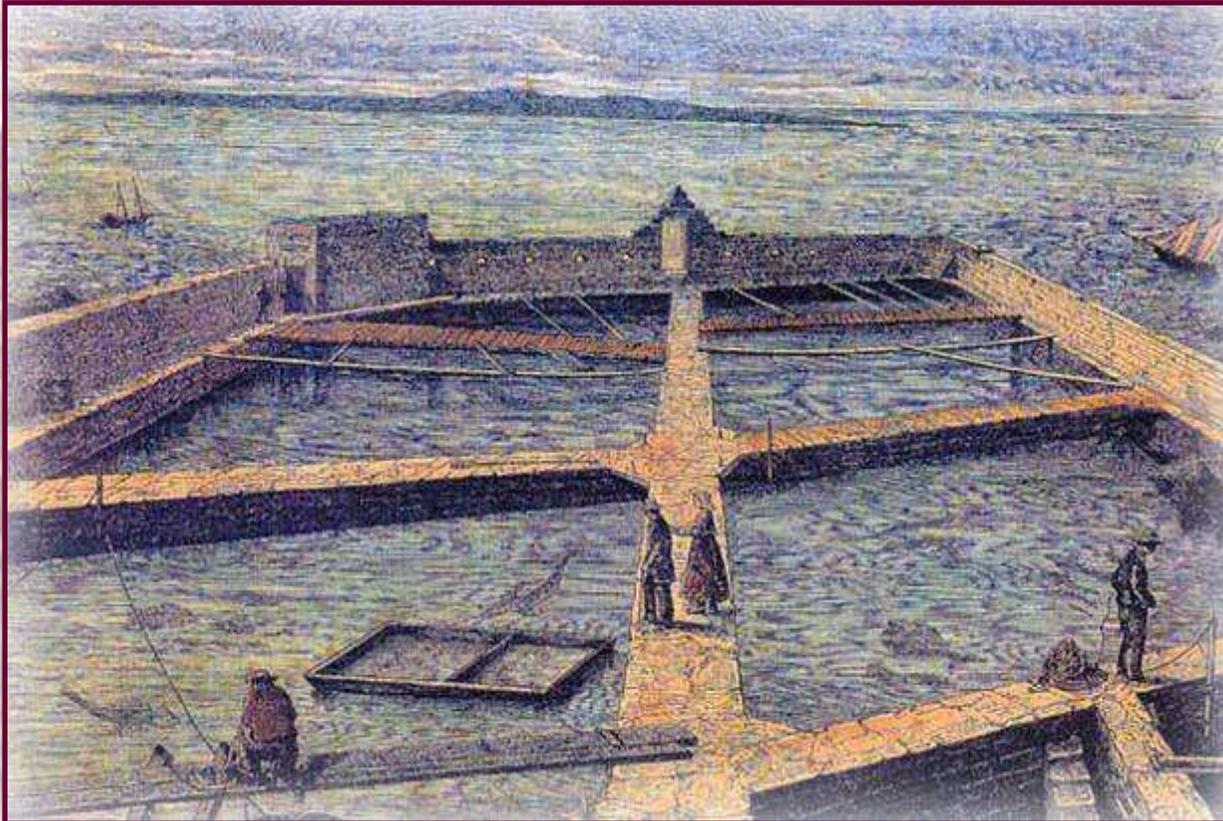


Endoume (1869)



Plymouth (1871)

*A model for other stations*

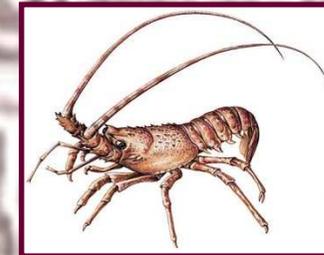


Vivier- Laboratoire

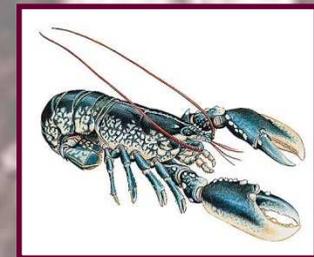
Fishpool built for studying and breeding animals such as turbot, lobster, spiny lobster and oyster.



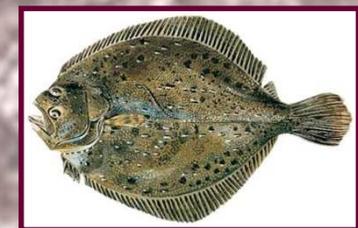
oyster



spiny lobster



lobster



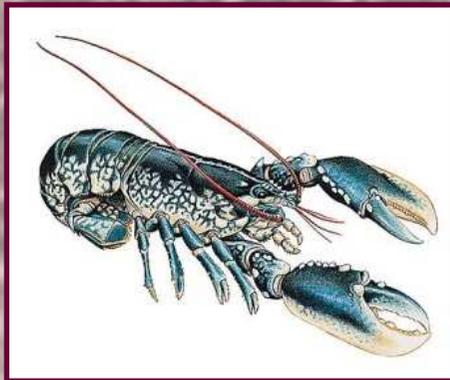
turbot

*Pioneer in aquaculture*

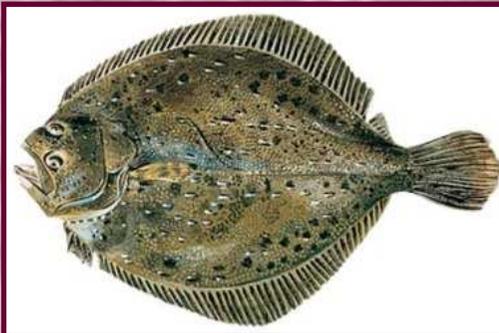
# Past



- ✓ successful with oysters;
- ✓ development of the techniques of the **modern** oyster farming;

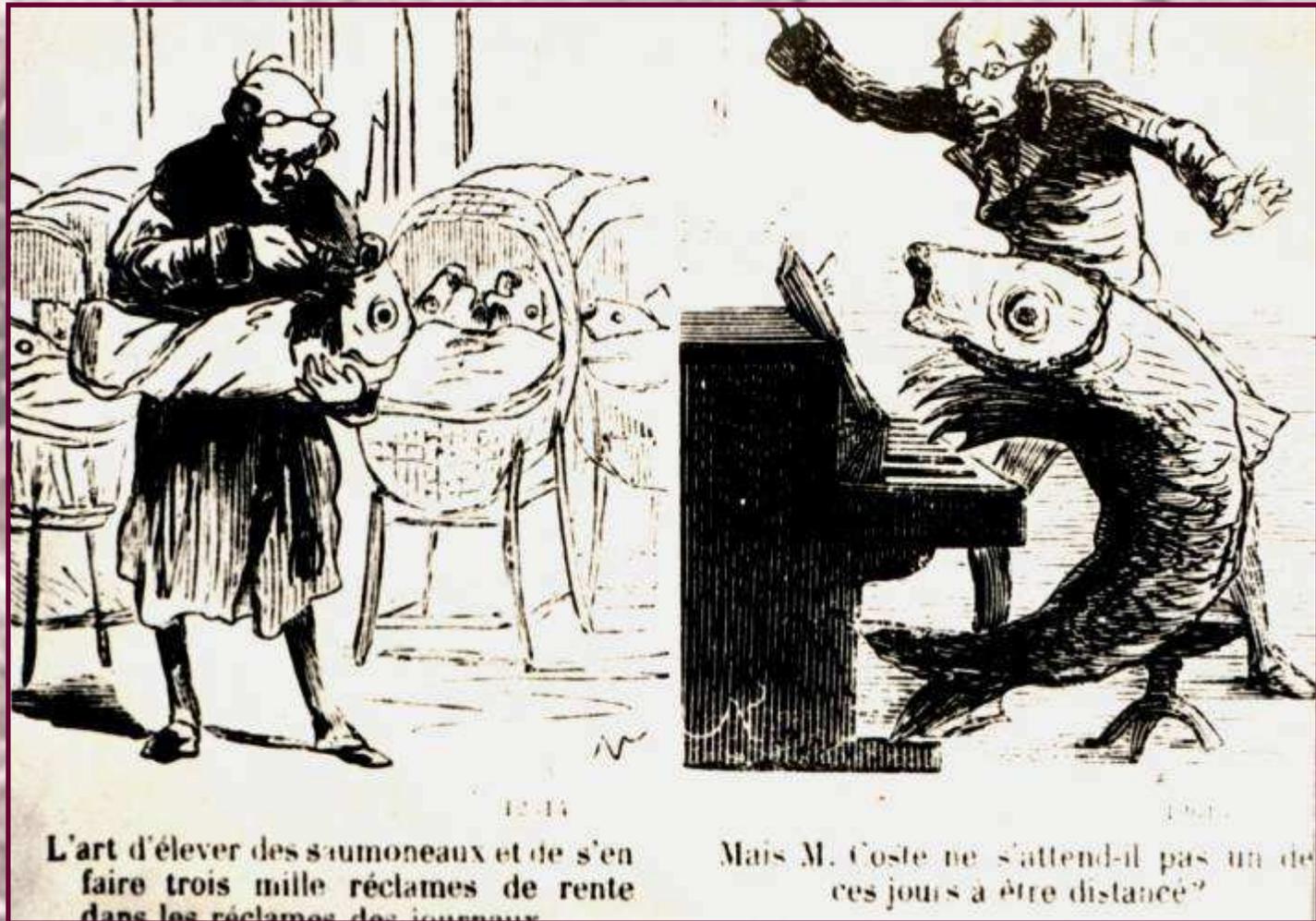
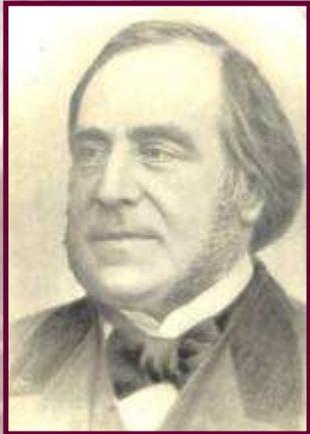


- ✓ less convincing with crustaceans and fishes (different history of life);
- ✓ thus laboratory is going to be interested in biology and physiology of organisms.



*Pioneer in aquaculture*

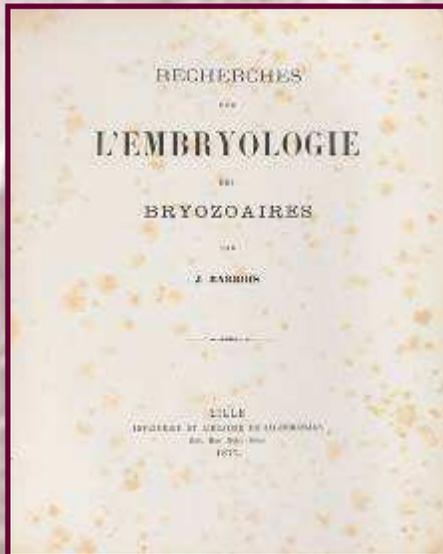
# Past



Satirical cartoon from "Charivari" journal :  
Professor Coste and his performing fishes

*Pioneer in aquaculture*

# Past



Barrois: embryology of bryozoans



Pouchet: first description of dinoflagellates responsible for the production of toxins

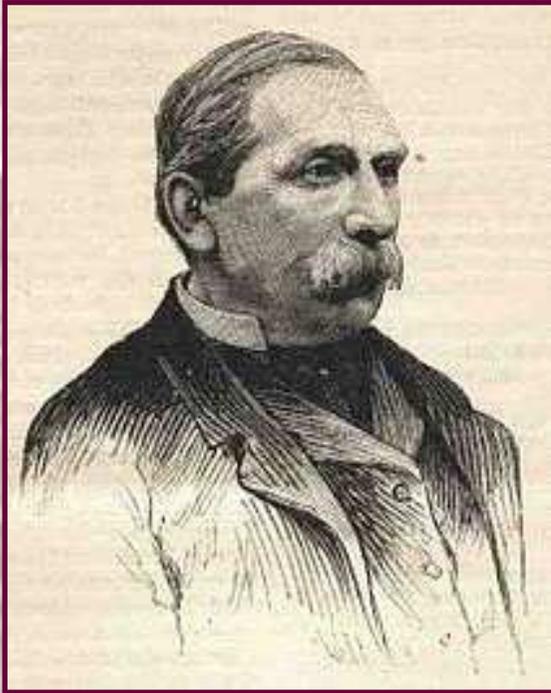


Marey: swimming of marbled electric ray

*1873-1881: period without director*



Georges Pouchet



1833-1894



1890: construction of the steam rowboat *La Perle*



European pilchard



amphioxus



cuttlefish



cirriped

- ✓ numerous and various publications on vision of cirriped, mimicry of the cuttlefish, histology of amphioxus, biology of European pilchard, plankton...
- ✓ first attempt to monitor pelagic flora and fauna;

*Pioneer in physiology of organisms*



**Giard**  
famous marine biologist



**Laguesse**  
scientific basis of insulin

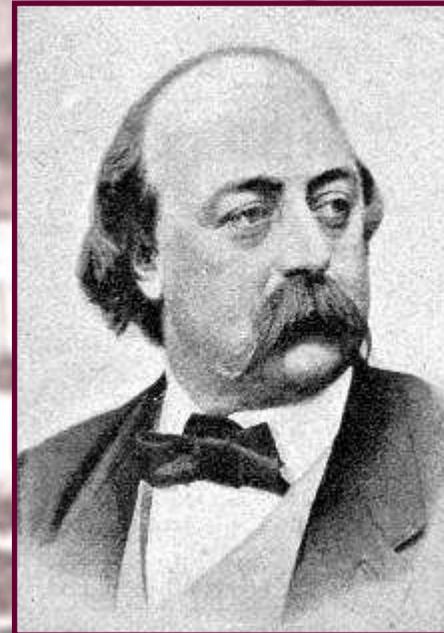
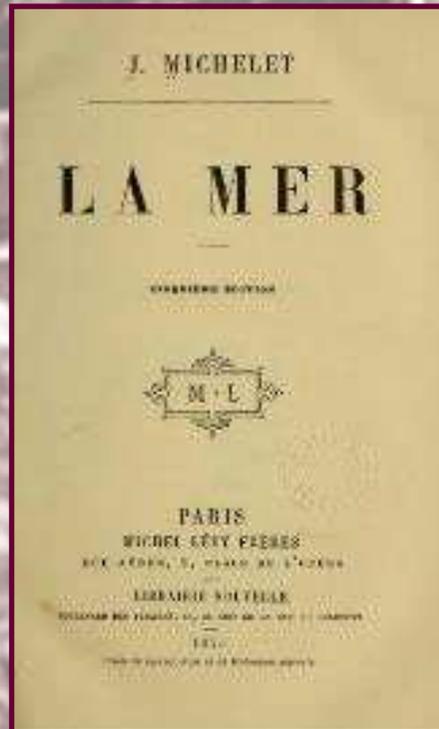


**Bataillon**  
conditions of breath in  
aquatic environment

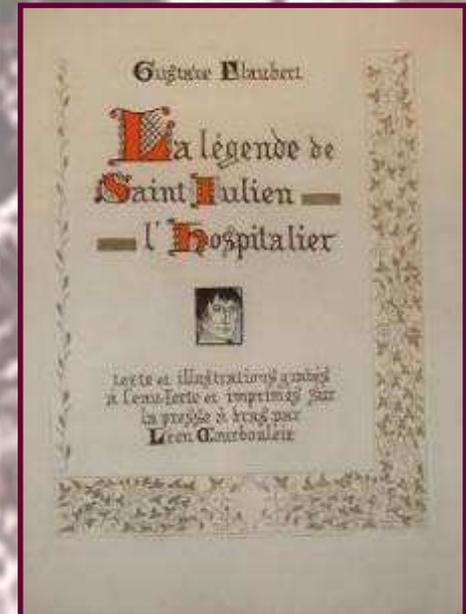
*Pioneer in physiology of organisms*



*Michelet*



*Flaubert*

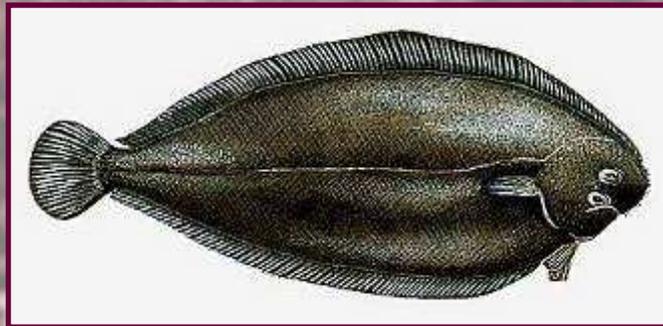


*French convinced positivist*



1861-1940

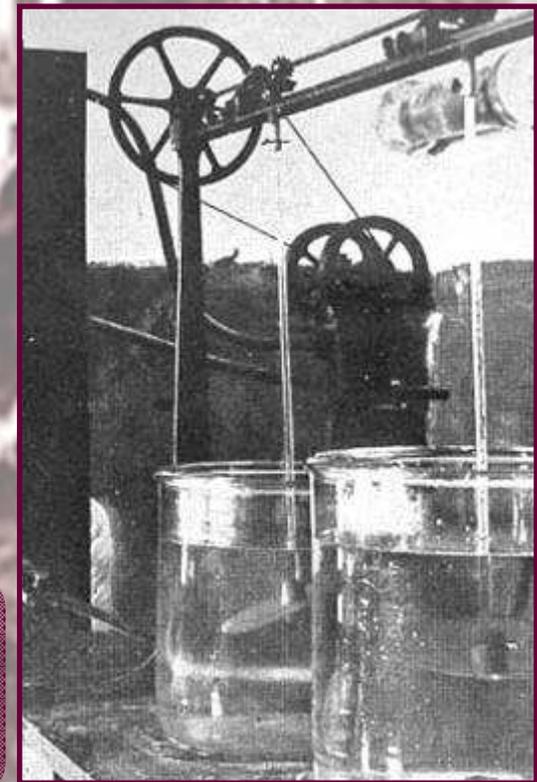
Paul Fabre-Domergue



Common sole

- ✓ breeding in controlled conditions since the eggs up to adults;
- ✓ technical developments constitutes the basis for the production of turbot larvae today.

*Pioneer in fish farming*

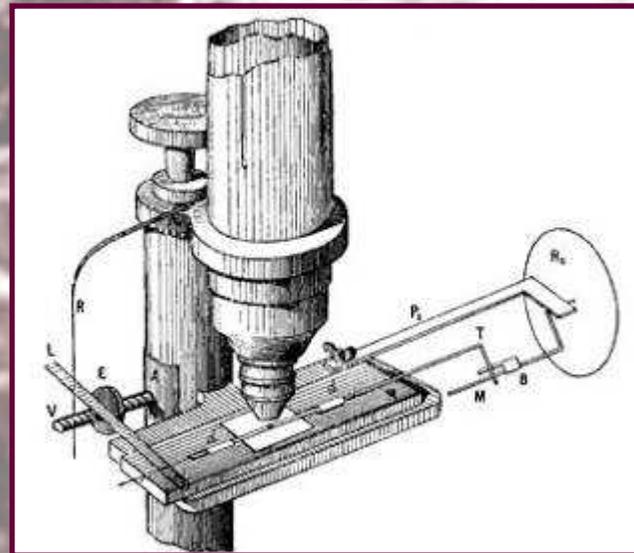


Aquarium for breeding  
hot-air engine



1855-1893

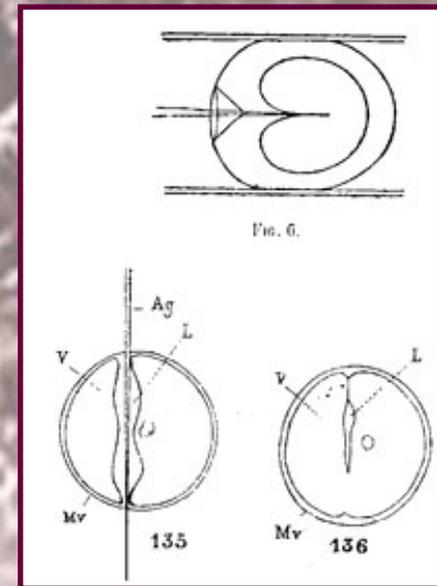
Laurent Chabry



Chabry's tool



Ascidians  
*Ciona intestinalis*



Eggs experimentation

- ✓ building and improving micromanipulation devices;
- ✓ his thesis is considered as a founding element of experimental embryology.

Pioneer in developmental biology

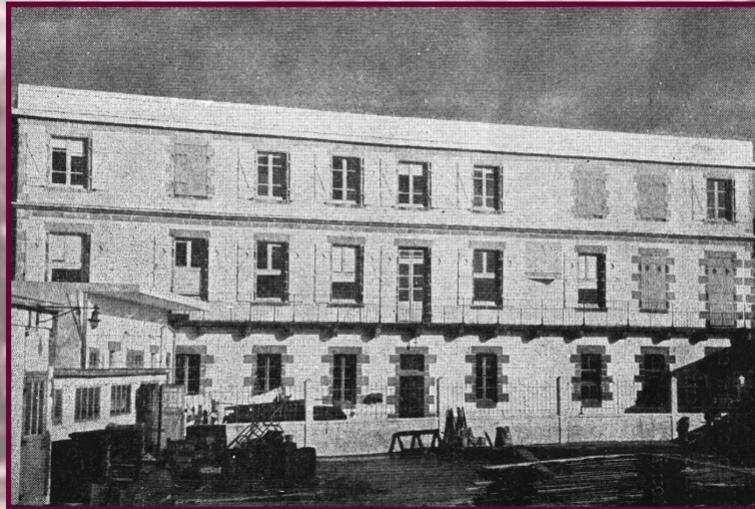


- ✓ after the death of Pouchet (1894), the laboratory of Concarneau is attributed to the *Collège de France*;
- ✓ laboratory became *Laboratoire de Zoologie et Physiologies Maritimes du Collège de France*
- ✓ the first director was Professor Henneguy and his assistant director was professor Fabre-Dommergue.

# Past



1880-1954



restored building

René Legendre

active, learned and prolific  
scientist

- ✓ resolved the complicated administrative situation;
- ✓ restored the station;
- ✓ built "La Néreis".

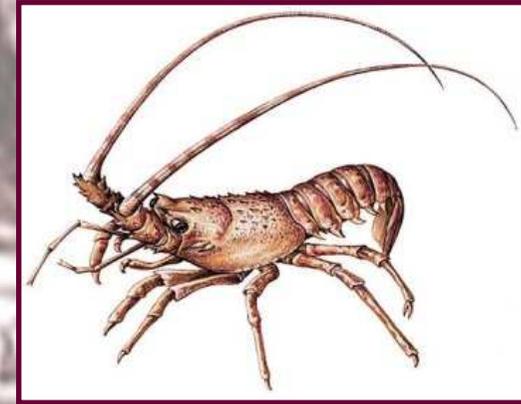


cutter «La Néreis»

*Pioneer in marine biochemistry*



Lamparo fishing



crustacean



polychaete

- ✓ gave information on reproduction cycles of Polychaetes and crustaceans due to lamparo fishing cruises;
- ✓ made the notion of pH on the map to French people;
- ✓ developed techniques of European pilchard drying.

*Pioneer in marine biochemistry*

# Past



**Fauré-Fremiet**  
scleroprotein of fishes



**Nicloux**  
gas assays in  
biological fluids



**Florkin**  
identify haemoglobin and phosphagens



**Roche**  
active thyroid hormone  
identify haemoglobin and  
phosphagens

*Pioneer in marine biochemistry*

*Past*



**1925: Commandant Charcot at *Mouton* Island**

*Pioneer in marine biochemistry*

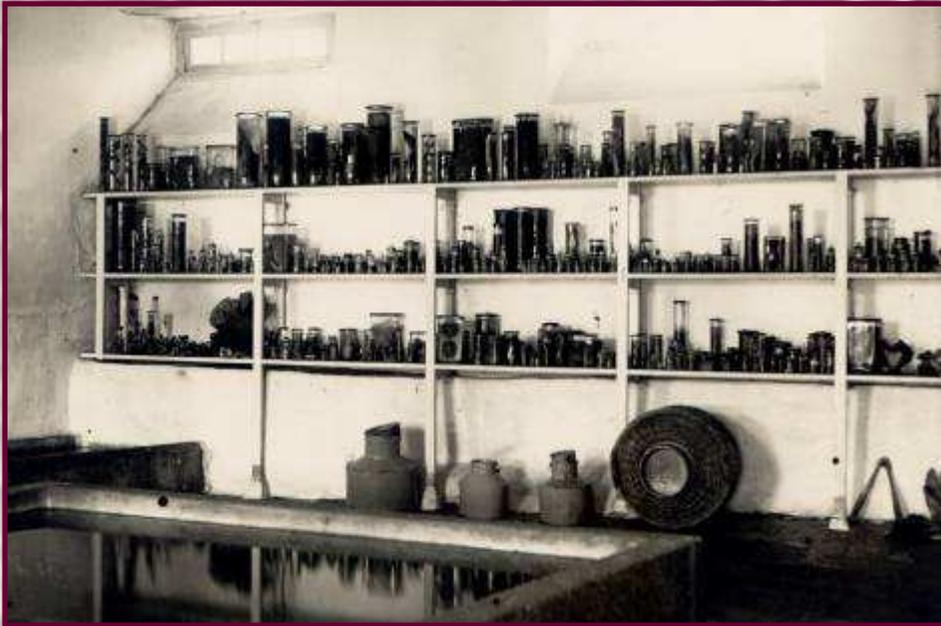
*Past*



*Collection*



**leatherback catch**



**basking shark catch**

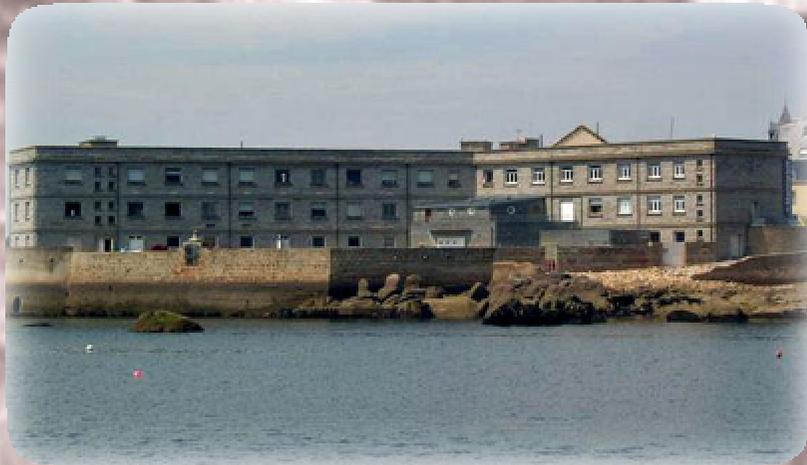
*Pioneer in participative sciences ?*

# Past



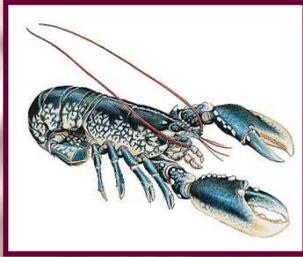
**Le Gal**

- ✓ 1968: Y. Le Gal named as assistant director;
- ✓ 1969: new building is built on the place of the former;
- ✓ 1972: opening of the marinarium;
- ✓ 1996: joint administration *Collège de France* and *Muséum national d'Histoire naturelle*.



*Pioneer in biotechnology*

# Past



**crustaceans  
hormones**

- ✓ scientist have analysed the biochemical composition and genetic material of organism in order to understand the mechanisms of biological evolution and the relationships between species;
- ✓ these researches on the biochemical diversity opened the door to the development of marine biotechnology

*Pioneer in biotechnology*

# Now



**Muséum  
national  
d'Histoire  
naturelle**

- ✓ 2000: rehabilitated and administrated by the *Muséum national d'Histoire naturelle* (MNHN);
- ✓ 2011: renovation of laboratories, hosting of Ifremer laboratory.

**Ifremer**

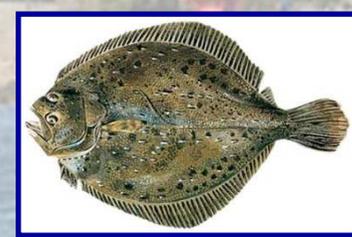
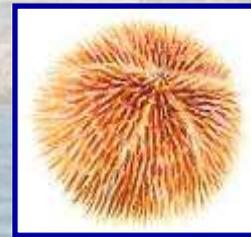
50 permanent lecturer-researchers, researchers, engineers and technicians : MNHN (36) et IFREMER (14).

PhD students, French and foreign under-graduate students participate annually and actively in its activity.

*Now*



biological models:  
microalgae, polychaetes, molluscs, echinoderms, fishes



Unit BOREA : biomineralisation, integrative taxonomy,  
cellular physiology, phylogeography.

Unit 401: benthic ecology, biotechnology.

Unit LER: littoral environment, aquatic resources.

*Research*

# Now

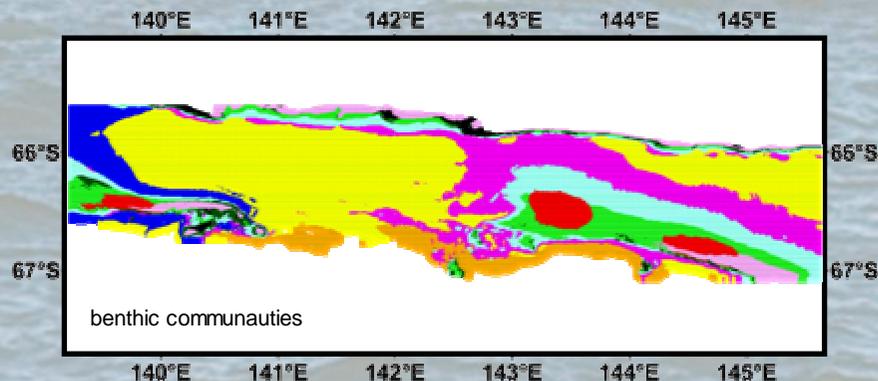


Our research is original.....

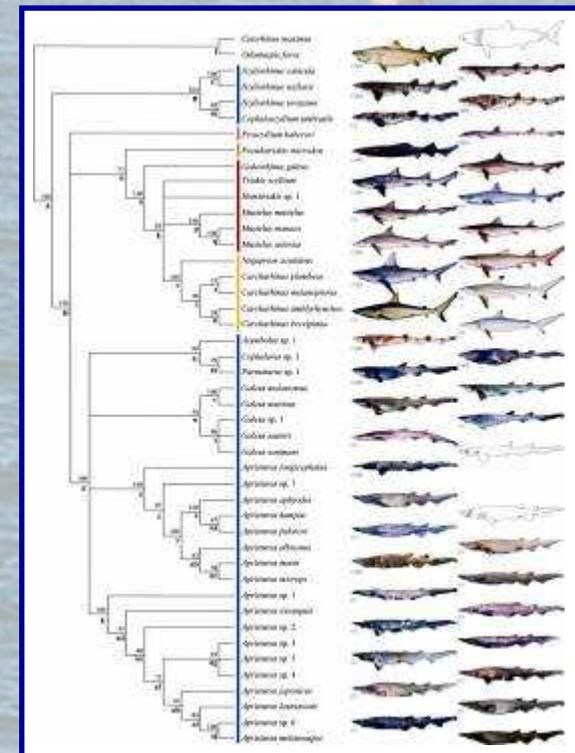
Our studies concern organisms from the cell (cellular culture, genetic) to the ecosystem (ecoregionalisation) including the individual ontogeny (models molluscs, echinoderms, and fishes), populations (phylogeography), and species (phylogeny)



Mollusc ontogeny



Ecoregionalisation



Phylogeny of Carcharhinidae (shark)

Research

# Now



Development of effective methods of monitoring the marine environment.

This includes: production of inventory of marine species, study of impact of pollution on living organisms, study and protection of endangered species, better use of fish resources.

2 ecosystems are regularly monitored the rocky littoral (for the last 40 years) and estuaries.



Laïta estuary



rocky substrate

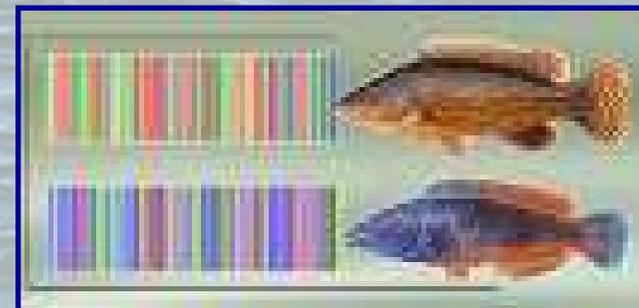
*Research*



- ✓ all these activities have been increasingly relevant to economic activity: fishing, aquaculture, and biotechnologies;



- ✓ the barcoding of fishes and the traceability of sea products are both major axes of our research on biotechnology.



*Now*



**Sequencing:**

quantitative PCR, automated extraction, electrophoresis

**Cellular culture**



inverted microscope



laminar air flow hood

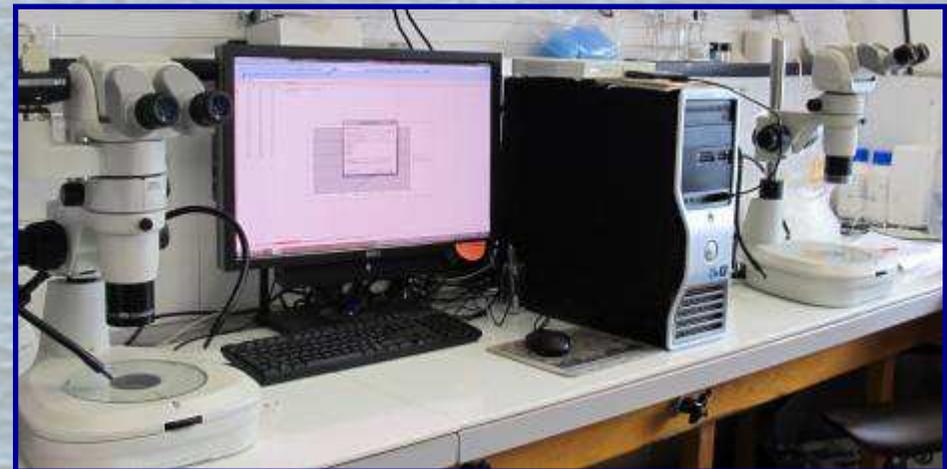


sander machine



micrometric saw

**Sclerology**



station of image analysis

*Technical platforms*

*Now*



**scuba diving**



**trawl**



**Le Garvel  
boat of station**

*Technical platforms*

*Now*



At national and international level: Natura 2000, Protected Marine Area, European directives (DCE), UICN, CITES.....

*Expertise*

*Now*



increase museum collections

exceptional catch of bumpytail ragged-tooth (19 September 2013)



*Collections*

*Now*



the last taxidermist of fishes naturalizes specimens



*Collections*

# Now



courses to :

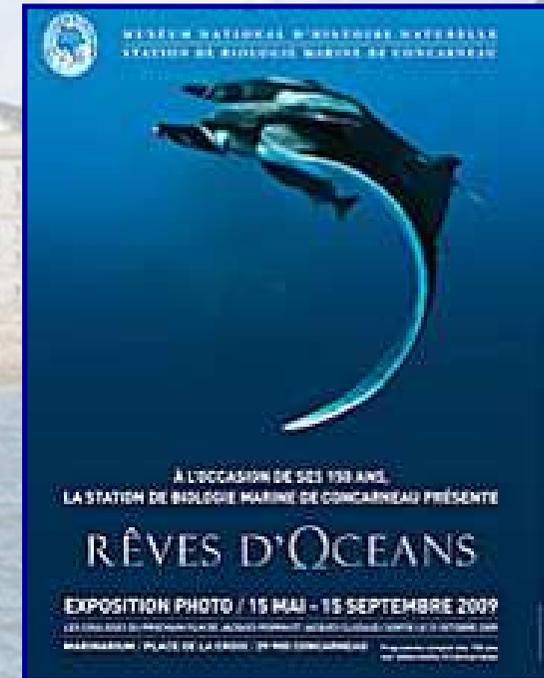
- ✓ students from Bachelor's to Master's degree;
- ✓ teachers;
- ✓ fisheries observers.

reception of International masters  
in marine biology

# Teaching



# Now



## Marinarium: a showcase of a part our research

- ✓ 16000 visitors per year;
- ✓ 1 exhibition per year;
- ✓ conferences in connection with exhibition;
- ✓ workshops.



# Outreach

*Now*

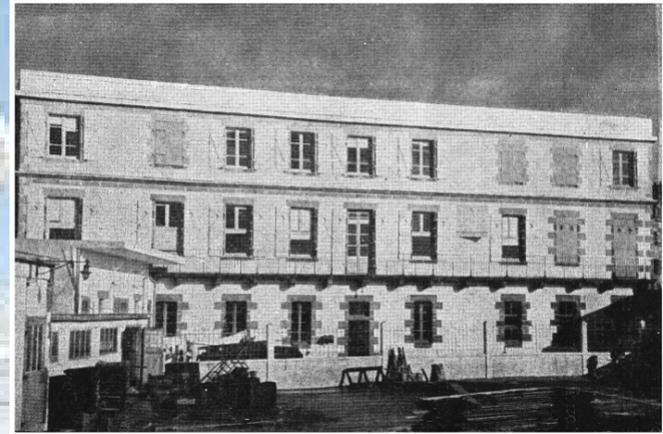
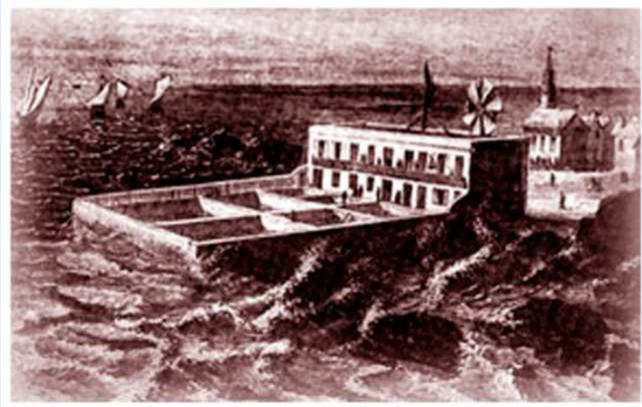


special workshop for week of biotechnology

*Outreach*



- ✓ pursuit of the current themes such as development biology, dynamics of marine species, evolution of species, monitoring the ecosystems.
- ✓ development of integrative ecology to become pioneer;
- ✓ development of new approach of embryology to the ontophylogeny to become pioneer.
- ✓ the modest size of our station is essentially assets which facilitates the creativity and scientific production of works in dynamics specialized networks.



*Thank you for your attention*

