French nautical manuscript (ca. 1740)
which describes types and sections of various ships, lists functions and movements of officers, and establishes forms for inventorying all types of goods and supplies on board

[Manuscript in French, by a single hand of an unknown author, on nautical subjects, pp. 250. A small quarto volume (144 x 115 x 20 mm), bound in contemporary red morocco. Ink proofs on the inside and back endpaper. Optimum state of preservation. The volume would have been written between the 1740 and 1749, since in two incomplete forms (pp. 209 and 243) the decade has been recorded through the numbers "174...", leaving space for the final digit to be added manually.]

Though posing various interpretation challenges, this extraordinary French manuscript on a variety of nautical topics is an extremely valuable piece for research in several fields: the history of a) sailing, b) naval industry, c) logistics, d) daily life, e) human nutrition, etc., around mid-18th century.

The volume lacks an initial cover, which would have given it unity as a whole, but it does have several clearly titled sections. The first one deals with "Construction and proportions of the ships", although the content of the volume exceeds that matter. Due to its very particular characteristics, it clearly is a document intended for the heads and officers of the French Navy in charge of royal or private shipyards and arsenals, and would have been conceived for use in France, its colonies and/or the high seas. It is eminently practical in nature, aimed at assisting officers, craftsmen and naval operators in their control tasks, repairs and supply of artillery ships.

In more general terms, considering its production context, the document is a typical expression of the era characterized by a fascination with what the French called "*arts et métiers*", that is, the world of "techniques", typical of the engineers, inventors and corporations of artisans, a process that took place immediately prior to the Industrial Revolution, and from which industrialism derives (**Image I**). Interest in recording, understanding, and promoting the development of these proto-industrial forms of work gained momentum in France under the government of Jean-Baptiste Colbert, Louis XIV's celebrated minister and finance secretary between 1665 and 1683. It was further consolidated by the publication of the *Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métiers* (1751-1772), with its notable volumes of *Planches*, capable of illustrating any craft or construction process (**Image II**). The document is revealing of the success of these policies in achieving the extraordinary meticulousness of their inventories, the prolixity of their tables and charts, and the inexhaustible desire to measure, weigh and catalog each element under consideration.

On the other hand, the decades that precede and follow the document were of great development for the navy of the European powers. Historians speak, first of all, of a "Naval

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Revolution" which, since the 17th century, thanks to remarkable technical improvements, made it possible for old galleons to be replaced with the new ships of the line (**Image III**). However, it was not simply a question of larger and more powerful ships, but of an intricate, gigantic and very expensive global logistics network, dedicated to servicing them and keeping them in use with full capacity for maneuver and fire. Along these developments, European powers also worked up what some historians call a "Fiscal Naval State", that is, a State dedicated mainly to procuring the enormous resources necessary to sustain its increasingly numerous and powerful navies. However, the magnitude of the efforts required was so great that the States had to rely on private operators capable of financing and managing the construction and operation of the ships. Thus arose what other historians call the "Contractor State", that is, a State that entrusted a large part of the construction of its ships and arsenals to private companies, or that resorted directly, as in the case of England especially, to the contracting of privateers, some of whom had obtained their fleets, in turn, from piracy and plunder. All these processes played a decisive role, both in the development of modern logistic bureaucracies and in the shaping of political absolutism and globalization.

In this maritime race between European powers, France started out late and at a disadvantage. However, since the reign of Louis XIV, the French crown made maritime development one of its priorities, managing to curb growing British dominance: thus, France eventually put together an extraordinary navy from mid-18th century onwards, supported on a complex system of ports-arsenals prepared to supply it.

However, by the 1730s the situation was not yet so rosy. The better quality of British ships was evident, which led the government to send a young shipbuilder, Blaise-Joseph Ollivier (1701-1746), on a spy mission to the ports of the United Provinces of the Netherlands and England (**Image IV**). On his return, under Ollivier's leadership, a systematic plan was initiated to upgrade practices at French shipyards and ports in order to match the level of their competitors (**Image V**). Young French builders from each shipyard visited Ollivier in Brest so that he could instruct them personally. It would not be unreasonable to think that our document is compiled from the notes taken by one of them, or that it would have been made for them by notaries of the navy, since just at that time Ollivier's pedagogical activity was at its peak. In any case, in the long run, these efforts led to the French fleet playing a very important role during the American Revolutionary War.

Regarding its internal characteristics, the document lacks the expected title page, preface or index typical of similar works. Except for a few pages of prose explanations and definitions, most of the volume is made up of lists, tables, and charts.

The document begins with a chapter dedicated to the construction of vessels based on their sizes and proportions, which includes a table of dimensions for each range of ships, from first to fifth rate, the international measurements at that time. There is also a section with the mathematical operations required to calculate the cargo capacity of each vessel, where various methods and examples are provided. It concludes with a method to calculate the number of barrels that can be stored, depending on the vessel size.

The volume continues with similar sections, all very detailed, intended to classify the different masts, sails, pulleys, cordage, cables and anchors required, including itemized tables that record the length, diameter and weight of each element. There is also a section for heavy weapons, with

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a neat form that records the diameter of the cannons and bullets that are appropriate for each ship. Then it goes on to describe very thoroughly the measurements of the various cannons, the carriages and their reinforcements, etc. It also includes tables that specify the types and quantities of gunpowder for each kind of cannon, both for salute and combat situations. Next, the text provides a section dedicated to the crew's light weapons, with explanatory notes on the length, weight and caliber of muskets, rifles and pistols. There follows a table that shows the measurements of the different types of barrels and casks, and other ones that itemize the fittings, nails, and various materials required onboard.

Furthermore, a long section on the provisions that must be supplied to the vessels deserves special interest, since it features very important information regarding the diet, health and eating habits of the naval infantry during the period. Here, as with the rest of the lists throughout the book, the author is very meticulous in calculating rations of biscuits, wine, bacon and other items, keeping in mind the crew's daily needs.

At the end of the document is where the reader can find the primary historical indicators for making conjectures about its use and date: two fill-in "forms", namely, one to be completed by the *Inventory* Officer (p. 209) (**Image VI**), and the other, by the ship's captain, for expressing consent (p. 243) (**Image VII**). By means of the *Inventory* form, the Inventory Officer would certify the state of weapons and goods onboard, including all stored elements and materials and the degree of supply on the ship; whereas the captain would eventually give his consent to said survey before the moorings were released. Considering the high rate of shipwrecks faced by vessels during the 18th century, it is expected that a document of this type would remain on land and another copy would be on board; hence, this document might have been produced in a semi-serial manner, devised universally for a large fleet, though for some reason it was not formally signed. In any case, the possibility that it was an "archive volume" would explain its impeccable state of preservation.

The volume is also rich in data for historical research: just by way of example, three major ships of the French fleet are mentioned in p. 40: the Royal Louis (**Image VIII**), the Merveilleux and the Achille, about all of which abundant documentation is available (**Image IX**).

In conclusion, this excellent French marine manuscript is an original, unique, rare piece, which, subjected to rigorous research, will also be eloquent in unexpected fields and aspects. So, any Naval History, Social History or War History Library will want to keep it in their stacks. The volume will also be useful for study-groups or theses dedicated to modern European history in general, and to the history of industry, daily life, human diet, etc., in particular. Finally, its beauty, order and coherence, make it attractive to bibliophiles and collectors, who will derive learning and pleasure while turning its pages.

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Bibliographical Context

Various works, currently housed by the *Bibliothèque Nationale* of France, deal with a number issues that are closely-related to our volume. Below is a short list:

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Duhamel du Monceau, Henri-Louis (1700-1782*), Élémens de l'architecture navale, ou Traité pratique de la construction des vaisseaux*, Paris, chez Charles-Antoine Jombert, 1758

Gay, Pierre de (1758-1819), *Mémoire sur la forme de la carène des vaisseaux, ou Exposition très succincte d'un nouveau système de construction, suivie de quelques mots sur la force matérielle de l'armée navale*, par M. de Gay, Paris : Desenne, 1792

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Euler, Leonhard (1707-1783), *Théorie complète de la construction et de la manoeuvre des vaisseaux, mise à la portée de ceux qui s'appliquent à la navigation*, par M. Léonard Euler. Nouvelle édition corrigée & augmentée, Paris : C.-A. Jombert, 1776.

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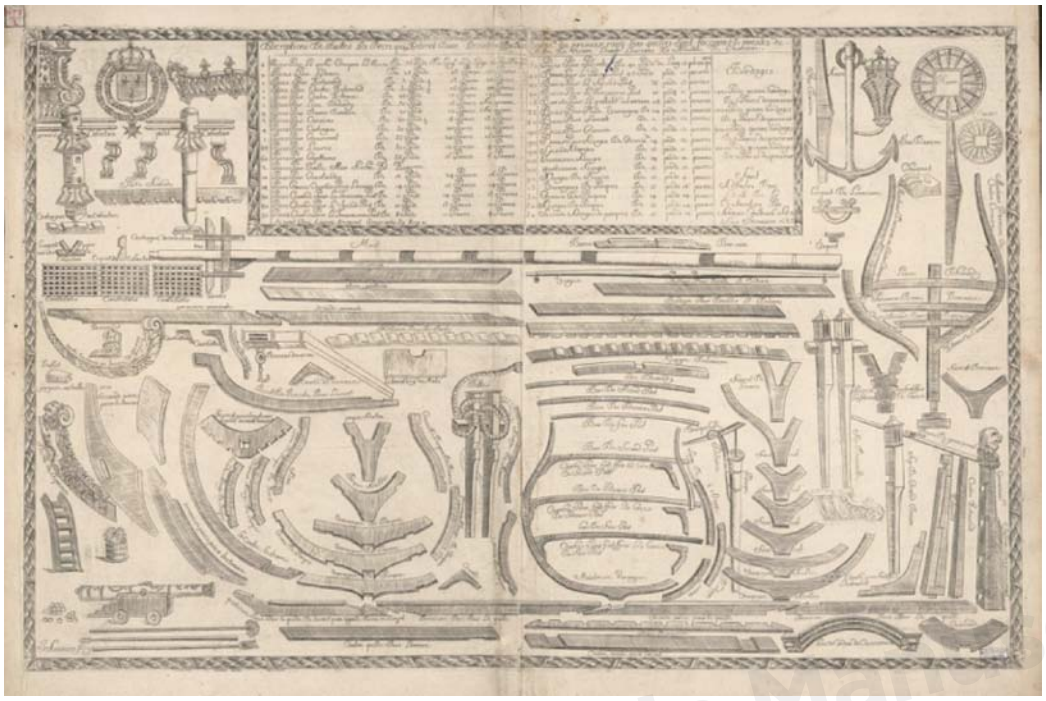

Image I
Discriptions (sic) de touttes les pieces qui entrent dans la construction d´un vaisseau du premier rang
Engraved by François Coullomb filz (47.5 x 71 cm), Toulon : Dans l'escolle de la Construction, 1683

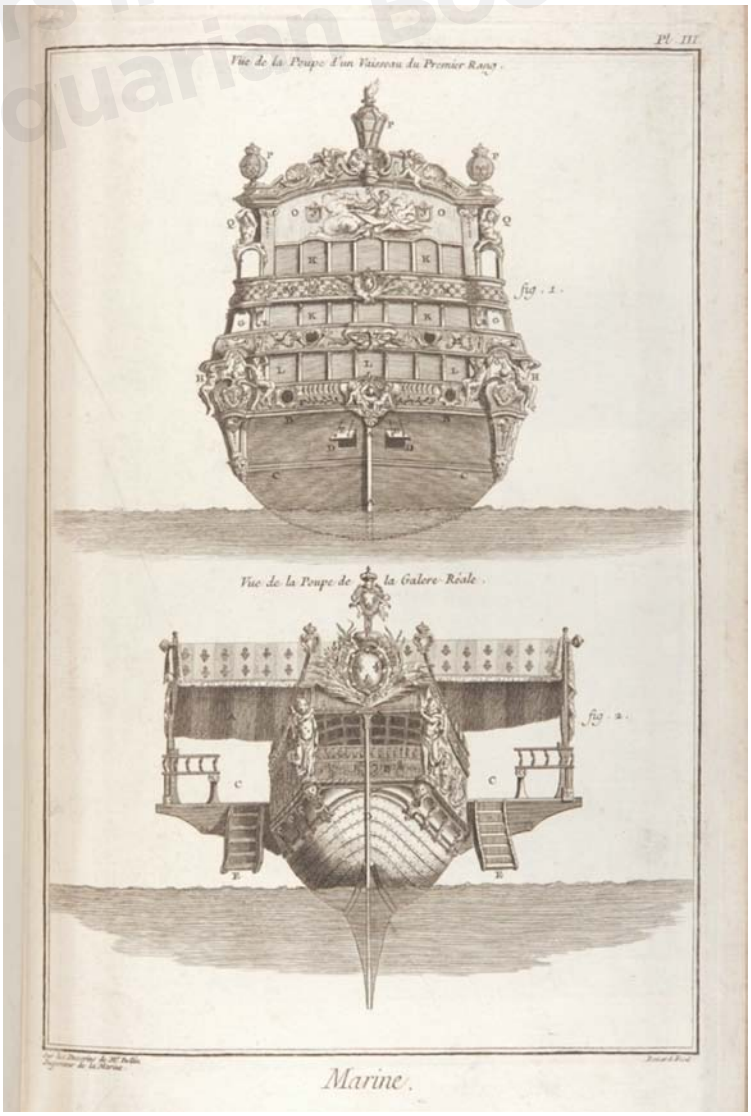

Image II
Views, from the stern, of a 1st-rate ship and of a royal galley, as depicted in Diderot & d'Alembert's *Encyclopédie* (1751-1772)

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Image III
View of the British vessel "Mediator", furnished with 44 guns, launched in 1782, who served for the Royal Army during the American War of Independence, being effective against the Franco-American fleet on various occasions.
Engraving by Francis Juke (1747-1812), published in London in 1783 by J. Walker Carver

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Image IV
30e Vue d'Optique représentant Chantier pour la Construction des Vaisseaux
Etching (30 x 43 cm) by A. Fonbonne, published in Paris by Daumont, around 1760

Image V
Wooden bust of Blaise-Joseph Ollivier (1701-1746), by Yves-Étienne Collet, currently at the Musée de la Marine of Brest. Ollivier was an engineer, builder and general manager at the port of Brest.

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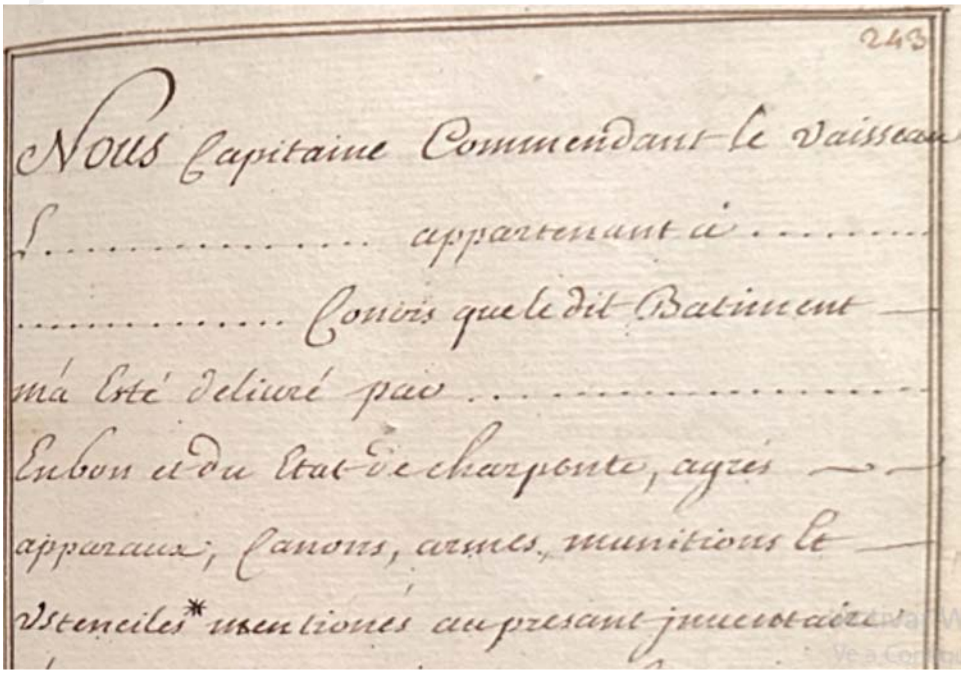
INVENTAIRE

Pour servir a l'armement
Consomation et desarmement du
V.au le ...... appartenant a ....
Commandé par .... armé et
Expedié a .... le 174

Armement	Desarmement

Image VI
Inventory Certification
Form, p. 209


243

Nous Capitaine Commendant le vaisseau
L............ appartenant a ....
.... Convis que le dit Batiment
m'a été delivré par ....
En bon et du Etat de charpente, agrès
apparaux; Canons, armes, munitions et
ustenciles* mentionés au presant inventaire

Image VII
Vessel Captain's
Conformance
Form, p. 243

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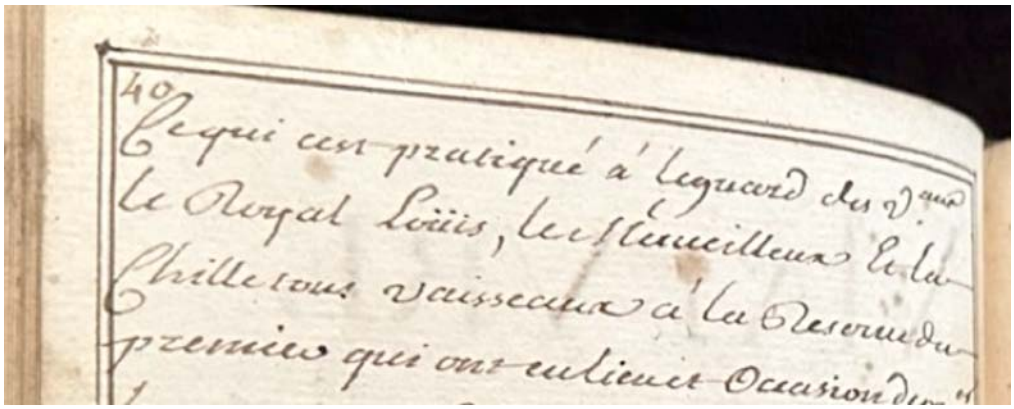

Image VIII
The Royal Louis, the Merveilleux and the Achille, vessels mentioned on p. 40 of the document

Image IX
Model of a Royal Louis ship on sale today. Note that the succession of the Royal Louis ships spanned several decades. Here, the one launched in 1668, successor to the one mentioned in the manuscript.

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