

TRAVELS  
IN THE  
FRENCH REPUBLIC:

CONTAINING  
A CIRCUMSTANTIAL VIEW  
OF THE  
PRESENT STATE OF LEARNING,  
THE  
ARTS, MANUFACTURES, LEARNED SOCIETIES,  
MANNERS, &c.  
IN THAT COUNTRY.

---

BY THOMAS BÿGGÉ,  
PROFESSOR OF MATHEMATICAL ASTRONOMY IN THE  
UNIVERSITY OF COPENHAGEN, LATE COMMIS-  
SIONER FROM DENMARK TO THE NATIONAL  
INSTITUTE, AND MEMBER OF SEVERAL  
LEARNED SOCIETIES AND ACADE-  
MIES OF SCIENCES.

---

TRANSLATED FROM THE DANISH  
BY  
JOHN JONES, LL.D.

---

London:

Printed by T. Giller, Salisbury-Square,

R. R. PHILLIPS, NO. 71, ST. PAUL'S CHURCH-YARD;  
SOLD BY T. HURST, PATERNOSTER-ROW; BY  
CARPENTER AND CO. OLD BOND-STREET;  
AND BY ALL BOOKSELLERS.

1801.

---

[Price Six Shillings in Boards.]

THE

TRANSLATOR'S PREFACE.

*By the Author, Royal, &c.*

---

THE internal state of France is so little known in this country, that any work which offers candid information on that subject, cannot fail to be acceptable to the public. In this view, it is presumed, that a translation of PROFESSOR BYGGÉ'S late performance will meet with that favourable reception, which the translator will venture to say it deserves, from the generality of English readers. The situation of the author as a public commissioner



from a neutral state, afforded him ample opportunities of information, and his ability to improve those opportunities will, it is believed, be apparent to every ordinary reader of the following pages; while the fidelity, or at least the consistency of his descriptions, and the candour of his remarks, will be abundantly evident to the more attentive and intelligent. His reflections appear to be dictated by penetration, impartiality, and rational discrimination. He approves, censures, or suspends his judgment, like an honest, enlightened, and cautious man, who is a stranger to ostentation, and accustomed to profound views of science and of human nature; and his work, though written in a popular style, and for general perusal, exhibits evident traces of the hand of a master.

The manner in which the translation has been executed, must be left to the decision of those who are acquainted with the subjects of the work, and with the language in which it was written. The translator can only say, that he has done his utmost to convey the sense of the original in a pure English idiom.

As his distance from town rendered the Correction of the work extremely inconvenient to him, that task has been performed, with obvious ability, by Dr. WILLIAM DICKSON\*, to whom the work is also indebted for the notes, marked *Translator*,

\* Author of Letters on Slavery, and other performances, and well known for his early and persevering exertions in favour of the abolition of the Slave Trade.

which, it is believed, will be found valuable additions to the text.

The curiosity which most persons feel to know something of the lives and characters of the authors whose works they peruse, has induced him to lay before the reader of the present volume the following accurate memoirs.

THOMAS BYÆGÉ, professor of mathematics and astronomy in the university of Copenhagen, and for the Royal Navy, and member of several learned societies and academies of sciences, is, since the death of Tycho Brahe, and the restoration of astronomy in Denmark, the *eighth* astronomer in succession, of the royal observatory at Copenhagen. After the destruction of Tycho's observatory, on the island

of

of Huen, Christian IV. in the year 1632, erected in his capital a new and stately *Uranienburg*. It is a tower one hundred and twenty Rhineland feet in height,\* constructed with great strength and solidity, and with much architectural skill. From the summit of the building there is a very fine prospect. The winding staircase which leads to it, forms with the horizon an angle of only  $5\frac{1}{2}$  degrees, and makes an ascent so commodious and easy, that, in the year 1716, the Czar *Peter* the Great several times rode up it, and his consort, the Empress Catharine, drove up and down in a coach and six.

*Christian Severin Longomontanus*, the pupil of Tycho Brahe, was the first astronomer appointed to superintend this new

\* Nearly 124 feet English.

royal observatory: he died in 1647, and was succeeded in his office by *George Fromm*, who did not long enjoy it; as in 1651 he made room for *William Lange*. After his decease, the celebrated *Olaus Römer*, whose merit foreign nations, and especially the French, well knew how to appreciate, was recalled from Paris. He held the post of astronomer for thirty years: but unfortunately a great part of his valuable observations and manuscripts were lost in the great fire, in the year 1728, which laid in ashes the observatory, and almost the whole city of Copenhagen.

Römer died on the 19th of September, 1710, and his place was supplied for a short time by *Lawrence Shive*, one of his astronomical assistants, who did not survive him longer than the year 1714.—To him succeeded



ceeded *Peter Horrebow*, a pupil of *Römer's*: through his endeavours, the observatory, which had been burnt down, was rebuilt, and new instruments procured. When far advanced in years, he resigned his place in 1753, to his son *Christian Horrebow*, who in 1777, was succeeded by *Thomas Byggé*, the subject of the present memoirs.

Through the zeal and activity of Professor *Byggé*, the observatory again underwent a thorough repair in 1780, and was enriched with new instruments, such as the present state of the sciences required. A circumstantial account of these may be seen in a work published at Copenhagen, entitled "*Observationes Astronomicæ, annis 1781, 1782, 1783, institutæ, in Observatorio Regio Hauniensi,*" &c.

Thomas Byggé holds a distinguished rank, not only among the most useful astronomers of Europe, but likewise among the most active promoters of the science of geography. He took an active essential part in compiling the excellent and beautiful maps, published by the royal academy of sciences at Copenhagen.—When the design of preparing these maps was formed, Professor Byggé was appointed the first trigonometrical and astronomical observer. But these are not the only services he has rendered to geography, in a more extensive degree has he contributed to the advancement of that science, by forming under his care a number of young men. Soeberg, the brothers Wibe, D'Aubert, Rich, Pihl, Fievog, Ginge, Engelhart, &c. names eminent in the annals of astronomy, emerged from the school of Byggé.

Byggé. A number of young officers in the Danish navy and army enjoyed Byggé's instructions in practical astronomy, and under him acquired that knowledge which enabled them to furnish many useful and valuable observations from Norway, Iceland, Greenland, and the East and West Indies and thereby improved the defective geography of those regions.

None of Byggé's predecessors, so immediately and directly as he, applied astronomy to the benefit of his country, and to the advancement of navigation. By his very accurate mensurations, a fairer basis of contribution, new calculations, and juster fiscal regulations were established, which, being more accurately proportioned to the possessions of the different contributors, many errors and defects in political economy

A 6

nomny, and innumerable litigations concerning landed property were thereby prevented. He also determined and laid down with the greatest care, the true position of all the coasts, harbours, islands, rocks, and sand-banks in the Belts, and the Categate, which are very dangerous to ships, and were before partly unknown; and thus he rendered the navigation of the Danish seas more secure.

YARMOUTH,  
January 1801.

JOHN JONES.

## CONTENTS.

---

### LETTER I.

*JOURNEY from Copenhagen to Altona.—The Author's Object to confer with the French Commissaries at Paris, on the Uniformity of Weights and Measures—Excellent Roads and Bridges—Colony of Moravians—Excellent Regulations—Altona thrives by the War—Villas, Pleasure Grounds, &c.—Pointed and blunt electric Conductors compared—Curious Tide-Machine—Surprising Chemical Discovery—Agricultural Improvements—Philosophical Apparatus*

Page 1

### LETTER II.

*Journey from Altona, through Osnaburg and Munster, to Wesel.—Sluices—Roads—Cottages of the Boors—Soil—Disagreeable Travelling in the Hanoverian Territory—Interrogations of the Prussian Guard—Plantations of Wood in Hanover—Prussian Soldier very severely punished for begging—Peasants uncomfortably situated*



*situated—Osnaburg a dirty Place—Hanover little improved for the last Twenty-two Years—Denmark very much, owing to the excellent Measures of its Government—The Bonds of Servitude relaxed—Yet agricultural Improvements not complete—Recapitulation of them—Manufacture of Linen and Tobacco—Coal-Pits worked by the Crown—Fine Valley from Lengerick to Munster—Munster a neat Town—Superstition of the Inhabitants—Feudal System still oppresses Osnaburg and Munster—Boors miserable Slaves—Feeble Manufactures at Dorstein—Conversation with Emigrants of Rank*

LETTER III.

*Journey from Wesel across the Rhine, and through Part of Belgium to Brussels.—Wesel, a neat Town—Pass demanded—Fly Boat on the Rhine described—French Officers reported to be rude, but found civil—Gueldern, a small genteel Town, oppressed by the French—Priests forbidden to keep the useful register of Births, &c.—Fine Plantations of wood, and other Improvements—Curious Sluice uniting the Maes with two other Rivers—Cloisters at Maasfijk sold or converted into Barracks—*  
*Crucifix*

*Crucifixes, &c. carried off—Fine Chimes, especially at Tirlemont—Country still exhibits remains of Prosperity, and why—Louvain University, &c. dissolved—Bitter Complaints there of French Imposts, which are not attended to—Causeways, or paved Roads, described.*

Page 36

#### LETTER IV.

*Stay in Brussels, and Journey thence to Paris.—Brussels described—The Conseil Souverain plundered—The Viceroy's Palace converted into a Central School—Its Classes—Public Library—Churches despoiled—Manufactures—Traveling Carriages drawn by Dogs—Belgians dislike the New Government, and why—At Mons an Altar exposed to Sale—Coal Pits—Jemappe—Good Cultivation—Roads neglected—Valenciennes not repaired since the Siege—Host of Beggars there, and why—A Shoemaker the Chief of the Municipality at Valenciennes—French Villages mean and poor—Boys and Girls reaping the Harvest, and why—Three and four wheeled Carts compared—Horses cruelly treated in France—Roads neglected, though Tolls high—Bouchain a strong but mean Place—Cambray neat and clean—French Posts properly*

*properly regulated—Chantilly plundered—Ap-  
proach to Paris charming* - 51

## LETTER V.

*Course of Instruction in the Primary, Central,  
and Polytechnic Schools.—Primary Schools well  
conducted in Paris, but not in the Country—  
The Revolution subverted the best old Institu-  
tions—Normal Schools—Fault in conducting  
them—Sciences taught in them—Journal of the  
Lectures and Debates in them—Dissolution of  
them—Regulations of the Central Schools—  
School of the Four Nations—Scientific Courses  
in it—Second and third Central Schools—List  
of Departments with and without Central  
Schools—Defects in those already established—  
The French shew no Wish to learn foreign Lan-  
guages—Morality and Geography not taught in  
the Central Schools—Ancient Literature little  
attended to in them—The Pupils in them, but  
superficially instructed—Some of the Teachers  
ill qualified—Polytechnic School—Course of  
Study in it—Philosophical Apparatus, Library,  
and Collection of Models belonging to it—Pub-  
lic Examination of the Students* Page 70

## LETTER VI.

*Schools for Public Services, viz. for the Construction of Roads and Bridges, for Mineralogy, Geography, Ship Building, Artillery, Fortification, Navigation, &c.—School House formerly a Palace—Collection of Models—Library—Course of Study and Salary of the Students—Mineralogical School and Collection—Professors—Laboratory—Learned Ladies, not always pretty and neat—Gravimeter, not equal to a good Hydrostatic Balance—Instrument for measuring the Angles of Crystals—Instrument for ascertaining small Degrees of Magnetism and Electricity—Geographical School—School for Naval Architecture—Marine Depository—Artillery Schools—Fortification School—Marine School.* - - Page 112

## LETTER VII.

*Schools for Medicine, Pharmacy, and the Fine Arts—The French College—Medical School—Collections of anatomical Preparations, &c.—Philosophical Apparatus—Library—Amphitheatre—Lectures—Students from one Thousand to one Thousand two Hundred—Free School for*

*for Pharmacy—Military Hospital—Lectures there—Free School for Painting—National School for Architecture—French College—Lectures there—Public Assembly of it, and Proceedings on the Occasion—Hint to Ladies to make themselves useful, by visiting and attending the Sick* - - Page 132

## LETTER VIII.

*The National Museum of Natural History.—Library, Menagerie, &c. of this Museum—Its Botanic Garden—English said to have seized Baudouin's Collection, which their Government had promised to protect—Gallery for Natural History—Vaillant's frugal Present to the Museum—Diamond stolen from it—Collection of Quadrupedes, Zebra, Elephant, &c.—Directorial Palace—Collection of Skeletons—Library of Botany, &c.—Paintings and Drawings of Animals and Plants—Menagerie for wild and tame Animals—Lecture Room, a real Amphitheatre—Lecturers and Officers—Statues of Linnæus and Buffon—Wanton Outrages of the Mob at the Revolution—Dead dug up—Body of Turenne, still undecayed, shamefully exposed—Chests still unpacked, filled with Curiosities from the conquered Countries.* 147



## LETTER IX.

*The Central Museum for Arts at Paris, and the Museum for the French School at Versailles.—The Central Museum, a general Collection of Statues, Paintings, &c.—Entrance—Gallery of Apollo—Picture Gallery five hundred Feet long—Pictures and Statues from Italy, greatly injured on the Journey—Catalogues of Paintings brought from Italy, &c. which greatly exceeded the Author's Expectations—Saloon of Lacoön to be prepared—Exhibition of the Works of French Painters, Statuaries, Draughtsmen, and Engravers now living—General Museum for French Painting.* Page 161

## LETTER X.

*Of the National Observatory at Paris—The Danes first erected an Observatory—The Parisian Observatory, as a Building—Was decaying before the Revolution—Injured during the Reign of Terrorism—M. Jeaurat, an old and able Astronomer, now thrust down into a Cellar, and ill provided for—The Observatory under Repair—Astronomical Instruments, by Dollond, &c.—The French have but lately used*

*used transit Instruments—Large Telescope, a mean Instrument, and almost useless.—Telescope with Specula of Platina—An Achromatic, by Rockette, far inferior to one of the same Dimensions, by Nairne and Blunt—The Paris Observatory inferior to those of Greenwich, Edinburgh, Copenhagen, &c.* — Page 231

## LETTER XI.

*Account of the National Observatory continued.—A Time Piece, by Berthoud, goes well, as do twelve or fourteen by Arnould—Platina well purified, makes excellent Specula—Story of a Reflector of sixty Feet, with Platina Specula, a mere Rhodomontade—Instruments of De la Hire, &c. disused, but preserved—Observations interrupted by the Revolution—Cassini's large Lunar Chart and Drawings of Lunar Maculæ, recovered after being long lost—His reduced Lunar Chart—The best is in Keill's Lectures, as improved by Lemonnier—Improvements in the Observatory—Le Noir's Transit Instrument described—Mural Quadrants by Bird and Sisson—Astronomical Sector, by Graham.* —

## LETTER XII.

*National Observatory continued—Observatories of the Military School, or the French College, and of Private Persons—Instruments for ascertaining the magnetical Variation—Caves of the Observatory described—Magnetical Variation and Temperature in them—Searched for Arms and Aristocrats—Observatory advertised for Sale—Cassini driven from it, and now in poor Circumstances—Platina Specula, by Carroché—His excellent Achromatic—Pillars for the transit Instrument too low—Wall of the Mural Quadrant spoiled by the capricious Builder—Mochain's Astronomical Labours—Bouvard's Comparison of Arabian Observations with later ones—Defective Organization of the National Observatory—Telegraphs in Paris—Observatories at the Military School, and the French College—Lalande's Merits not sufficiently acknowledged—Observatories of Messier and Delambre.*

231

## LETTER XIII.

*The Board of Longitude, the Board of Geography, the National Library, and the Libraries of the Arsenal and the Pantheon.—The Bureau des Longitudes*

*gitudes, instituted in Imitation of the British Board of Longitude, but with ampler Powers—Of whom composed—Fleurieu's large Marine Atlas—Business of the Board of Geography—Excellent mathematical Tables—The War deprives France of Men and Money—Large Maps of France and Denmark—Cassini suspected, and his Maps, &c. locked up—National Library and its Regulations—Pair of Globes thirty Feet in Diameter, an useless astronomical Luxury—MS. Letters of Colbert, &c.—Prints—Antiques—Egyptian Curiosities—Shields of Scipio and Hannibal—Intaglios—Antiquities despised in France—Schools for oriental Languages—Libraries of the Arsenal and Pantheon—Libraries, Paintings, &c. of those banished, &c. partly destroyed, partly formed into new Collections. Page 258*

#### LETTER XIV.

*The National Institute, with an Account of its Meetings.—Academy of Sciences, &c. founded by Louis XIV. and Colbert—Respectable at the Revolution—National Institute, founded on their Ruins, more comprehensive—Its Members, Classes, Sections, and Times of Meeting—Proposes Prize Questions—Its Members and Pupils to travel for*

*for Information, at the Public Expence—Is the first learned Body in Europe—National Palace of the Arts and Sciences described—Fire Escapes, which did not answer the End—Meetings of the Institute, and Memoirs read—Ministerial Impertinence and Partiality, in the Case of Bralle—Numerical Telegraph proposed—Maskelyn's Name partially omitted in a Report concerning the Longitude—Excellent Pun—Mercury frozen—Severe Frosts at Paris—Reviews of the Institute, impartial and well written—Ministers often ask the Opinion of the Institute—Its solemn Meetings—Artists rewarded and crowned.—Arts and Manufactures—New Animal—Bougainville's Eulogy of Cook, &c.—Memoirs, Publications, and Pursuits of the Members of the National Institute—The Author falsely accused of calumniating that learned Body*

285

## LETTER XV.

*The Aerostatic School in Meudon—French Monuments—Establishment, Officers, Pupils—Design of this Institution—Conté, his Invention—Aerostatic Soldiers—Materials of which those Air Balloons are composed—Mode of filling them—French Monuments—Such as escaped the Fury of the Populace, ordered to be collected and deposited*



*sited in the small Augustine Monastery---Saloons set apart for that Purpose---Classification, Taste, and Industry of Le Noir—Monuments of Kings, Queens, Statesmen, Warriors, Men of Letters, &c.---Statues in Marble, Bronze, &c.---Names of the Artists who designed and executed them---Some of them the boldest and happiest Efforts of Genius---Inscriptions---Annealed Glass--Painting on Glass—Churches, &c. whence they were taken—Several mutilated Pieces of Art restored—Reflections on the Whole* 350

## LETTER XVI.

*Present State of the Manufactures of France—Exhibition of various French Manufactures, Arts, &c.—Watchwork—Artificial Black Lead Pencils—Files—Economic Stoves—Locks—Chemical Productions—Woven and Printed Tapestry—Earthenware—Steel-work—Silk, Cotton, Linen, Leather, Sealing-wax, Chrystal Glass—Weights and Measures—Stereotypic Printing—Porcelain—Spinning Machines—Mechanical Engravings &c.* 382

# TRAVELS TO PARIS.



## LETTER I.

JOURNEY FROM COPENHAGEN TO ALTONA.

*The Author's Object to confer with the French Commissaries at Paris, on the Uniformity of Weights and Measures—Excellent Roads and Bridges—Colony of Moravians—Excellent Regulations—Altona thrives by the War—Villas, Pleasure-Grounds, &c.—Pointed and blunt electric Conductors compared—Curious Tide-Machine—Surprising chemical Discovery—Agricultural Improvements—Philosophical Apparatus.*

I Take up my pen to fulfil my promise, that I would occasionally communicate such particulars as arrested my attention in the course of my travels. You know the object was, in pursuance of the invitation

B

held

held out by the French government to the allied and neutral powers, to confer with the commissaries of the Parisian National Institute, and the foreign commissaries assembled, with a view to establish a standard for the uniformity of weights and measures. I do not recollect that I shewed my pass, which I received from the French legation on the occasion, through *Desaugers* the *Chargé d'affaires*, in the absence of the minister Grouvelle. It was drawn up in the new French manner, and differed in two things from the usual Danish passes; for my whole person was minutely described, and I was obliged to subscribe it. These precautions were necessary, in order to prevent the transfer of it, which is frequently the case with the usual passes. The objects of my journey were also set forth in a manner honourable to myself, the benefit of which I experienced in France, where I was not considered as an ordinary traveller, but as one invested with a respectable mission.

The

The French Embassy sent several notes to Count Bernstorff, the Secretary of State, to hasten my departure; as it was supposed that the course of experiments had already commenced: I soon found, however, that this was not the case.

On the 21st of July, 1798, I received the royal mandate relative to my journey, and on the 29th, I set out from Copenhagen: I took my way through Fühnen to Middelfart. A great part of the new road is already completed, and the causeway is excellent. Such is the skill and experience of the engineers and overseers, the abundance of good materials which offer themselves on all hands in Fühnen and the natural disposition of the soil, that the roads may be rendered very durable, and easily repaired. Where the *substratum* is gravel or sand, or sand lightly mixed with clay or mould, the road is in general good, but when the foundation is pure and strong clay, the frost or bad weather injure it, and when it thaws, the pavements suffer very much. We have

an instance of this on the road between Copenhagen and Roeskilde Inn which is the worst part; but the road from Copenhagen to Rorsöer is very good: yet it might be made better by being raised a little higher, and somewhat rounded. The bridges in Fühnen over the Bekke and the Aær, (of which some are worthy of notice) are excellently designed and well built. Our new roads in Denmark are sandy, and causeways properly so called, that is, the foundation is composed of square stones, each in the form of a chest, from one to two feet thick, placed at a proper distance; the interstices are filled up with stones, gradually diminishing in size as they advance; upwards; so that the uppermost does not exceed two inches in thickness. When all these have sunk with their own weight, they are covered with gravel, to the depth of from six to eight inches. These roads are as even as a parlour floor, and may be passed with the greatest ease and convenience. Most of the roads which I have travelled through



through Germany, Belgium and France, cannot be properly called causeways. In most places, however, bridges are very judiciously erected, the want of which was formerly very much felt. The burgomaster Dickman Kolding, in my opinion, deserves the preference in works of this kind. I should not have dwelt so long on this subject, were it not that our roads in Denmark are generally good, and under proper regulations: Snoghoy is the only exception in the whole route to Hamburgh. At the former place, the traveller is obliged to take boat to cross the little belt to Kolding.

I flattered myself that I should have an opportunity of seeing the colony of the Herrenhuters, or Moravians, in Christiansfeldt, which is become considerable, through their industry and manufactures, and above all, by their morality and prudent conduct; but I travelled through it by night, so that I was deprived of that pleasure.

I did not proceed entirely by the common post through Apenrade, Flensborg,  
B 3 Sleswick,

Sleswick, Rensborg, Remmels, Itzeboe, Elmshorn, and Pinneberg. There are many good regulations in Holstein; and the traveller is called on at every post-house, to tell in what manner he was treated by the post-boy. I arrived in Altona in the afternoon of the 3d of August. I had a letter of introduction to Mr. Lawæts, one of the Senators, who, with his worthy lady, received me with the utmost politeness. I formed an acquaintance in his house with many of the professors of the Gymnasium.

Altona has profited very much by the present war, particularly during the last year, insomuch that the buildings are rapidly extending to the village of Ottensee, which, in respect to police, is subject to the magistrature of Altona, the rest being under the magistracy of Penneberg. The harbour has been rendered so capacious, that it can now contain double the number of vessels which it formerly did; the expence of the improvements having been defrayed by the town

town itself. It is well situated for trade, and I hope will at all times be crowded with shipping, and one day cope with its rich neighbour and powerful rival. The free exercise of public worship is permitted in Altona: the Lutherans, Catholics, Memnonists, Jews, &c. build churches wherever they please, and some of them are neat enough. Luxury, however, has pervaded almost every rank in Hamburg, and Altona begins to be infected with the example. The Altonish ladies, generally speaking, dress with great elegance and taste, and at the same time with such prudence and œconomy, as not to be very chargeable to their parents.

It is not surprizing that the rich Hamburg merchant, whose mind is wholly occupied six days in the week with mercantile speculations, should be glad on the seventh to escape from his counting-house to breathe the free air, and enjoy the beauties of nature. The charming situation of the Danish bank of the Elbe, has in-

duced many of those opulent persons to prefer it to any other part of the country; and accordingly the plain from Altona to Blaukenese is sprinkled with villas, pleasure-grounds, handsome buildings, plantations, and English Gardens. That part of the ground which is not thus occupied by rich individuals, is left open for the amusement of the middling class.

On most of those country-houses and pleasure-grounds, electrical conductors have been erected. You know that Reimarus, in his last publication on this subject, has expressly written against the pointed conductor, affirming that it was only necessary to encompass the building with metallic particles suspended or connected together, and that he did not see the use of inserting the conductor into the ground, it being sufficient, according to him, if it touched the surface. It is certain that a house, inclosed in a cage of metal wire, plates, or bars, would be entirely secure from all the effects of lightning.

According

According to this theory, the conductor would then be rendered defensive, and not offensive: but I am not yet quite certain that the new system should be preferred to the old one. It seems that some are alarmed lest the sharp pointed one should invite the electric current, which otherwise might pass over the house without injury. Should the electric cloud, however, be charged with such a mass, that the passive one cannot convey it off, the consequence will be an explosion; but in such a case, the sharp pointed one would not be attended with an explosion more strong or dangerous; so that if it did not diminish, it would not increase, the danger. As to the rest, long and certain experience can alone determine, which of the two ought to obtain the preference. All the conductors, which I have seen in and near Hamburgh and Altona, are sharp pointed, and are inserted a few inches into the earth. In Hamburgh, the lightning struck the



bottom of a house, which was furnished with a conductor; but from the account, I cannot ascertain whether or not it was local. It appears to me, that there must have been some defect in the erection of the conductor, or that the house must have been very large; for the security arising from the pointed one, does not extend beyond a circle of 60 or 80 feet at farthest.

I next went to see the Senator Voght's extensive farm in Flotbek, which is laid out with the greatest rural taste. The proprietor received me with the utmost politeness, and I was accompanied through the grounds by a young German, who resides under his hospitable roof. The house is built and furnished with great elegance. There I found many choice specimens in natural history, and several mathematical instruments; among which was a machine, the only one of the kind I ever saw, calculated to illustrate experimentally the phenomena of the tide in any place, when the  
moon

moon is in the opposite meridian of that place. So far it may be useful, as there are many things which may be rendered more clear and certain by an appeal to the senses, than to the understanding; and perhaps the theory of the flux and reflux of the sea is one of them.

M. Voght has erected a large chemical laboratory, which has been well arranged by M. Schmeisser, already known to the world by his experiments. This young chemist has travelled in many countries, and has even soared into the airy regions in a balloon, from the aerostatic school at Meudon. I was sorry that I had not the pleasure of meeting him, as he had been from home some days. I found, however, many traces of his industry and ingenuity in the laboratory; where things were distinguished by the new scientific terms and signatures, according to the antiphlogistic system. I was told that he had discovered a new chemical preparation, which kindled

into a flame the instant it was thrown into water.

Mr. Voght has annexed a large quantity of land to his country house, which is placed under the superintendence of a Scotch farmer; he has also a large collection of agricultural implements, with stables, stalls, &c. all in the English manner. He has a fine breed of cattle: their dung and urine are collected in a large hole or pit in the ground, and afterwards spread upon the meadows and fields. Drains are formed on the sides of the fields, which are cut very deep, filled with stones and covered with earth. As the water runs off between the stones, the surface can be ploughed and sowed without any loss of soil. This practice appeared entirely new to some; but when the good effects of it were perceived, it began to be universally followed. Where the quantity of water, which ought to be conveyed away in this mode, is great, or where it runs with remarkable rapidity, an  
open

open cut ought to be made, of a width and declivity proportioned to the body of water to be discharged.

Amongst many other improvements in Flotbék, may be reckoned the introduction of a threshing machine; but I cannot say that it is the best I have seen: a winnowing machine was placed under the threshing one. In the course of the last five or six years, threshing machines have been introduced into many places in Zeeland, with a much better effect than those in Flotbek. Among others which I have seen, I need only mention Senator Brink Seidelins' machine in Criksholm, which threshes from six to eight tons of corn in an hour, and the grain is separated from the chaff, at the same time, without the least injury to the straw. Wheat, rye, barley, and oats, are threshed with equal perfection and dispatch. The large threshing machines are very good of their kind; but they take great force (commonly four horses) to work them, occupy much room, and require



require a large and strong house, cost from five to seven hundred rix-dollars, and in short, are calculated only for large farms. To render them useful to small farmers should be the great object; so that they take up less room, cost less money, and be worked with less force. Some smaller machines have been already introduced with success; and the society of rural œconomy has held out a handsome premium for the best invention of this latter kind.

Mr. Vaght has also laid out an excellent nursery, of such kind of trees, &c. as may be useful to the country people, and of such foreign ones as he thought would bear our climate. This plantation is found to be extremely useful; as it furnishes the farmers with plants. There are many other extensive farms and plantations throughout the country, besides several plantations and copses, with agreeable walks in the English taste.

I was not lucky enough to meet with  
Senator



Senator Kirckhoff in Hamburgh; he has an excellent collection of philosophical instruments, executed by the best English artists, and which were formerly used in courses of lectures in experimental philosophy, the diffusion of which he is anxious to promote. I also found that Doctor Reimarus and Professor Busch, during my stay in Altona, had set out on a visit to their friends in Holstein.

## LETTER II.

JOURNEY FROM ALTONA, THROUGH OSNABURG AND MUNSTER, TO WESEL.

*Shuices—Roads—Cottages of the Boors—Soil—Disagreeable travelling in the Hanoverian territory—Interrogations of the Prussian Guard—Plantations of Wood in Hanover—Prussian Soldier very severely punished for begging—Peasants uncomfortably situated—Osnaburg a dirty Place—Hanover little improved for the last Twenty-two Years—Denmark very much, owing to the excellent Measures of its Government—The Bonds of Servitude relaxed—Yet agricultural Improvements not complete—Recapitulation of them—Manufacture of Linen and Tobacco—Coal-Pits worked by the Crown—Fine Valley from Lengerick*

*Lengerick to Munster—Munster a neat Town—Superstition of the Inhabitants—Feudal System still oppresses Osnaburgh and Munster—Boors miserable Slaves—Feeble Manufactures at Dorsten—Conversation with Emigrants of Rank.*

ON the 6th of August, I left Altona, and crossed the Elbe to Harbourg. This short passage is very pleasant; as it affords a prospect of many fruitful, highly cultivated and populous islands, lying in this majestic river, which flows from the Elbe to Harbourg, (a well fortified town) through several stone sluices, placed in very proper situations, and well constructed. A sluice forms before the town an excellent basin, which would make a very convenient harbour; but Hamburg, Bremen, and Altona are its superiors in point of shipping, and are likely to continue so; as this great river glides away in a number of collateral cuts or canals.

I intended to take the shortest road to  
Paris,

Paris, through Osnaburg, Munster, and Brussels. From Harbourg the usual route is through Welle, Wiffelhöven, Rehde, and Nienburg. The great roads run through sand and heath, and are worse than any of the highways in Jutland.

The cottages of the boors are built like those in Holstein; the doors being in the gable-end, the barn is in the middle, and the sides are partitioned off for the cattle; and one of the ends is set apart for the use of the family. Very few of those cottages are furnished with a funnel or chimney, so that the smoke diffuses itself over the whole house.

Most of the farm houses are encircled with neat plantations of oaks, which thrive very well in sandy ground, a circumstance which induces me to think that there is good earth a little deeper, or that at least that it is not such a stony mass as is found beneath the surface of such grounds in Jutland.—Those little oak plantations extend almost over all the plains to the Rhine, and



and add very much to the rural charms of the peasant's habitations.

A postmaster resides at every stage, and is always prepared to forward you in your journey. But, although the expence is moderate, the way seems very tedious;—so that to travel a Danish or a German mile requires at least two hours. The post-boys are so surly and avaricious, that if you were to give them three or four marks for drink-money, as it is called, at the end of every stage, which seldom exceeds three miles, yet they would scarcely think worth while to thank you. It is of no use to complain to the postmaster;—so that I would advise every traveller, who is condemned to pass through the Hanoverian dominions, to lay in a large quantity of patience and *sang froid*.

I rejoiced when I was told that we had passed through the worst part of the road, and that we should soon come to a causeway, which was neither more nor less than a road cut through sand, and covered at intervals



tervals with stone and gravel, which of course rendered it more heavy.—The only advantage it could boast over the heath, which we had passed, was, that there was less danger of breaking a leg or an arm. Notwithstanding all this, the expence of the carriage is very high. Sometimes the unruly post-boy will quit the cause-way to drive over the heath, and is only to be brought back by good words or money, and sometimes both fail of the desired effect.

At Rehde, we passed over the river Aller, in a very convenient ferry-boat, which conveyed horses and waggons at the same time, like those at Jægersprüs and Frederick's-sund. The line of demarcation now commenced; and here for the first time we met the Prussian centinels or guard, to whom we were obliged to give up our names, to tell whence we came, and whither we intended to go. I passed through a long line of demarcation, which was alternately guarded by Prussian and Hanoverian troopers. The officers treat travellers with great politeness,

politeness, and scarcely detain them a moment.

Nienburgh is an inland town, which carries on some trade in provisions and gin. Here I saw large herds of young swine, the flesh of which is transported to Lower Bremen, by the Weser. The sandy soil is fruitful, and very well cultivated for about a mile round the town. Then the heath again makes its appearance. Both roads, for about a mile, are planted on each side with young fir, birch, beech, and some oak. These plantations are very well out, and the trees are all of a promising growth, so that we see the regulations for this purpose, in Hanover, have been planned with good effect.

The road to Solingen and Diepholtz is covered with stunted heath, and a kind of flying or drift sand. A battalion of Prussians is quartered in Solingen; and just as I entered the town a soldier was punished, on a charge of having begged in the neighbouring villages. The officer himself, who  
had

had all the appearance of a gentleman, seemed to think the punishment too severe ; but the articles of war would not permit him to mitigate it. Though this law may appear very hard, yet it is founded in necessity ; as begging is often found to be a mere pretext for desertion.

In those parts, the houses of the boors are very indifferently built, and worse furnished ; whence it is easy to conclude, that the situation of this useful class of men is far from being comfortable. The flying sand to Diepholtz, where some Hanoverian troops lay, as well as on the side of Diepholtz, on the road to Boomte. About a mile from Osnaburg there is a stone causeway, which is far from being good, though it is undoubtedly preferable to the sandy road. This town has very little to invite the eye of a visitant, the streets being narrow, crooked, and dirty. There is only one house built in the modern taste. It contains a garrison, with two battalions of Prussians, and one of Hanoverians.

Doctor

Doctor Olbers of Osnaburg is in some measure known as an astronomer, having made different observations on comets, and written a large treatise on the subject, with a very useful abridgment of the whole work.

It is now two and twenty years since I travelled through Hanover and Osnaburg; and, as far as falls within the view of a traveller, it does not appear to me that the progress in agriculture has been great, at least not in those parts through which the road is carried. It is, however, possible, that in other parts, especially those which are more fertile, the plough has been more attended to. I only speak of what I have seen. I found very little improvement in the causeways or sand ways, as they are called, for the convenience of the traveller or the waggoner.

When a person compares the condition between Sealand, Fühnen, Falsters, Laaland, Langelands, and Jylland, 22 years ago, with the present state of these provinces, it  
must



must yield the highest pleasure to every benevolent mind, to mark the progress which Denmark has made in the intervening period. The roads were scarcely passable. Barren wastes presented themselves in every direction. The little spots of land which were cultivated, after lying fallow for a year, scarcely produced a moderate crop of corn; and meadows and pasture grounds were in the same state. At present, the roads intersect the country in almost every direction; the scattered cottages are collected into hamlets; and the face of the country is entirely changed for the better. In many places, it is true, bond service prevented the peasant from devoting the smallest time or labour to his own little field; and some acted on that false and miserable maxim, *That it was better to increase than to diminish the number of large farms.* The boors were localized, and confined to the very spot on which they first drew breath.

The government saw and lamented the  
impolicy



impolicy and inhumanity of such a system ; and, in 1768, the ministry began to remove these impediments, by the improvement of the commons, which the very law itself impeded. The government published an ordinance, in which the advantage of inclosures, and the cultivation of the soil were set forth ; but this had not the force of law. Proper land surveyors and land inspectors were appointed, to make allotments of the different parcels of the commons, some of which were scattered here and there. But prejudice and selfishness presented difficulties which gave rise to such discontents and ill-will, as threatened to frustrate the best digested plans, and to render every attempt of the kind abortive. It required the strongest arguments and examples, particularly on Bernstorff's manor and Kolding house, to convince the peasants of the utility of the measure, and that it was much better that each should have his lot to himself, than in common with others. As the advantages of the measure began to

be discovered, most of the peasants wished that their portions should be measured off; so that each might be put in possession of his own.

By an order on the 23d of April 1781, his majesty, through the exchequer, commanded an entire abrogation of the partnership in commons and waste lands; so that as soon as the allotment desired by any one should be made out, the rest should not be allowed to object to it, but that a general plan should be laid down, which should include the whole, a measure which became afterwards generally agreeable.— This difficult task was imposed in too great haste. It required the greatest consideration to form rules for the surveys and taxation, and for the arrangement of the whole scheme. Many land surveyors and land inspectors were employed, and each was previously obliged to give a specimen of his qualifications for his department. From the moment that this important measure was adopted, it was carried on with the  
greatest

greatest zeal, and with unabating industry; so that about two-thirds of the peasants of Denmark at this moment feel its beneficial effects. A number of these little farms are now in good heart, and many of the peasants enjoy them rent free.

Government itself, in Copenhagen, Fredericksbourg and Kronbourg, has set a laudable example. The bonds of servitude are now relaxed; and bond service is limited in every part of the kingdom. In several provinces, particularly in Jylland, many of the great landed proprietors have let their estates in small farms, to the peasants, at an easy rent. The pleasing result is visible in almost every place you see, and in every countenance you meet. Whatever road you take through Denmark, you see commodious and well built cottages, gardens, cultivated grounds, rich meadows, fine cattle grazing in clover fields, and, above all, a hale, healthy peasantry. Yet, after all, agriculture is far from being brought to that height of prosperity it is

capable of in Denmark ; of which, however, there is every prospect that it will one day arrive.

When we reflect that all this was begun in the auspicious reign of Christian the Seventh, who had the power and the will to promote such useful regulations, and when we also reflect on the prejudice and obstinacy of the peasants, who shut their eyes to their own interest, and seemed to hug their chains, it is surprizing that even the patience, prudence and wisdom of the government could surmount all these difficulties, the removal of which has produced the happiest effects over all Denmark. Such another instance is not to be met with in the œconomic history of any other state. That in the space of forty years, barren wastes should be divided and converted into fertile fields ; that every peasant should have his own farm, and build his own house ; that bond service should be limited, or altogether abolished ; that large farms should be divided into small ones ;  
that



that the chains of servitude should be relaxed ; and that some peasants are become the lords of that soil which they formerly cultivated as bondmen !—It is with pleasure that I look back to my youthful days, when, from 1765 to 1767, as head surveyor of the exchequer, I had some small share in the original execution of this important work.

After this digression, to which I was naturally led by a pleasing comparison, I beg leave to resume my journey. From Osnaburgh to Lengerick are two miles of the worst road I ever travelled, part of it being through a flat clay, and the rest rugged hills and hollows ; and the way itself so narrow, that it is with difficulty one carriage can pass another.

The first of these two miles belongs to Osnaburgh, and the other to Prussia. Most of the mountains are covered with fine plantations of birch, fir, and beech ; but it is only in some places that the beech finds a congenial soil. One of the mountains near



Lengerick commands a charming prospect. This neat little town belongs to Prussia, and is united to the province of Tecklenburg. There are different manufactures of linen and tobacco established in it, some of which employ sixty hands. In the vicinity, the fabrication of linen is carried on to some extent, the article being vended at Bremen; and the raw materials. Hemp and flax are growed in the surrounding country. There are besides some coal pits, which are worked by royal authority. A ton of good coals costs four good groschen (that is about sixteen pence Danish) at the pit. The carriage may amount to as much more for every half mile. Many strata of this valuable fossil have been discovered, but have not yet been examined or worked.

The road from Lengerick to Munster runs through one continued flat or valley, covered with rich verdure, enlivened with farms inclosed and well cultivated, and adorned with copses of oak, beech, fir and pine. The roads are bad from the nature  
of

of the materials ; and the mode of repairing them is still worse.

As soon as you enter Munster, you perceive a number of crucifixes, small chapels, and holy images on the road side. The town of Munster is tolerably neat and well built. The pavement is very good, and many of the buildings are in the modern taste ; but the churches are all Gothic. The cathedral is very fine, and decorated, in the catholic manner, with several little altars, and small chapels. In Saint Clara's church, I observed a printed paper stuck up, setting forth that, on Sunday the 12th of August, high mass would be celebrated, to implore Heaven to move the hearts of potentates, for the preservation and extension of the Catholic faith. There was also an assurance held out, that the pope would remit all the sins, which the hearers of this mass had committed, for the last two months ! I saw another of those papers posted up in the cathedral. Hence it is easy to perceive, that the spirit of the church of Rome is

the same now that it formerly was, and that it is held no sin to commit any crime which tends to enlarge the boundaries of its empire.

Munster, during the seven years' war, was well fortified ; but the works are nearly sinking into ruins ; the rampart is planted with several rows of trees. The glacis and the covered way, as well as the fossé, are now ornamented with gardens and summer houses, for the enjoyment and recreation of the inhabitants ; so that hereafter the fear of a siege need not be apprehended, or any of the fatal consequences which such an event never fails to produce. The broad shady walks, on the rampart and about the town, are so well laid out, that I know not of any place which can boast such a number of inviting promenades. The town belongs to the line of demarcation, and besides the troops which belong to Munster, some Prussian battalions are quartered in it. One of the generals of that nation gave a splendid ball to the ladies and gentlemen of

of Munster, in return for the kind and polite reception which the Prussian officers had experienced.

The feudal system continues, in all its oppressive rigour and extent, in Osnaburgh and Munster.—The boors are slaves, and toil from morn till night. They are obliged to give an unusually high rent for a little spot of ground. When one of them dies on the same, the lord of the manor, or the *beneficiarius*, seizes on the half of his little property; the same happens if he should not die on it, unless he has scraped as much together as will enable him to purchase his freedom. It is easy to see what a drawback this must be on the spirits and industry of those miserable beings, independent of the birth which it gives to perpetual vexations and heart-burnings.

I left Munster on the 10th of August, and found the roads very bad; stumps and trunks of trees or faggots are thrown across each other in the miry places, otherwise they would be impassable. This road leads



to Dulmen, a poor village. The soil is very sandy and hungry all the way to Dorsten; then the land begins to be somewhat more fertile, and produces a great deal of grass. Dorsten, like most trading towns of the kind, is peculiarly fortified in the old manner, with a wall, square, and round towers or bastions, and a fossé. In the seven years' war, the French took possession of it, and planted six or seven pieces of cannon on it. Prince Ferdinand attacked it with about a thousand men, and, after three attempts to storm it, was beat off. The town was set on fire in different places, the effects of which may be seen to this day: he took it, however, at last. There are some cotton and linen manufactories erected in the town, but they are still in a very feeble state. The post-house is the only inn in the place; and bad enough it is. I dined with eight emigrants from Liege, amongst whom was an ex-canon, nephew of the late bishop of Liege. He was dressed in a short green vest and striped pantaloons, and had a kind of leather



leather cap or casket on his head. The rest were better equipped; and it was easy to see that they had been persons of some rank. As it was a fast day, their dinner consisted of oil, fish, eggs and meal, the whole so bad, that I really thought the keenest appetite would reject such fare. After dinner we began to converse with greater ease and freedom. We touched on the fate of the French princes. They said that all states, kings, and princes ought to unite with weapons in their hands, to arrest the progress of the French revolution, to overturn the republic, and to reinstate the princes. It surprized me not a little, after what they had said of the splendour of their former days, that they could remain for a moment in so miserable a village.

## LETTER III.

JOURNEY FROM WESEL ACROSS THE RHINE,  
AND THROUGH PART OF BELGIUM TO  
BRUSSELS.

*Wesel, a neat Town—Pass demanded—Fly  
Boat on the Rhine described.—French Of-  
ficers reported to be rude, but found civil  
—Gueldern, a small genteel Town, op-  
pressed by the French—Priests forbidden  
to keep the useful register of births, &c.—  
Fine plantations of wood, and other improve-  
ments—Curious sluice uniting the Maes  
with two other Rivers—Cloisters at Maas-  
fijk sold or converted into Barracks—Cru-  
cifixes, &c. carried off—Fine Chimes, es-  
pecially at Tirlemont—Country still exhi-  
bits remains of Prosperity, and why—Lou-  
vain University, &c. dissolved—Bitter  
Complaints there of French imposts, which  
are*

*are not attended to—Causeways, or paved roads, described.*

I CAME to Wesel on the afternoon of the 11th of August. In this very neat and well fortified town, my pass, for the first time, was demanded by the officer on duty. Having cast his eye over it, he returned it to me immediately. I was told so many stories of the rude conduct of the French officers to foreigners, in particular districts, that I was almost afraid to set my foot on the territory of the republic, which now began on the other side of the Rhine. Though I am not fond of cockades, I was advised to wear one; as that badge was alledged to render travelling safer than it otherwise would be.

The next morning rather early, I crossed the Rhine, on what is called a flying bridge. Perhaps you may form some idea of the construction and operation of it from the following description. In fig. 1, A, is a projecting wharf, on the Wesel side, and B, a

B, a similar one, on the other side of the Rhine. F is a large boat, which rides by two anchors, in the middle of the Rhine; E, D, and G, are boats which do not lie at anchor, but are fastened together by cables which run through their masts; G is the large ferry-boat, of a peculiar structure, which describes a circular arch, of which F is the centre, and which terminates at the wharfs A and B. When you would cross from A to B, the direction of the water being from M to N, or from P to Q, the rudder must be kept in the direction of GH, which, according to theory, should form with the keel of the vessel an angle of  $54^{\circ}44'$ . The strength of the current represented by HI is resolvable into two forces. The first IK parallel to the plane of the rudder GH, and the other KH or IG perpendicular to it. The last alone will turn the vessel, and cause it to describe the circle Mno. In this manner I crossed the Rhine in little more than a quarter of an hour. But the rudder must be kept in  
an



an opposite direction, in order to pass from the French to the Prussian side.

I have already observed, that, on the Prussian side, they alarmed me very much with accounts of the insolence of the French Commissaries, who, it was said, not content with a long examination of one's pass, examined your trunks, and tossed every thing about; but, in justice I must declare, that I found their conduct quite the reverse; and that I never met with persons in their situation, who behaved with more politeness and attention. On the banks of the Rhine, on the road to Geldern, not one of the French officers even so much as desired to look at my pass, though I offered to shew it to them. When I came to Geldern, my trunks were examined. But I travelled through Belgium and France, without any visitation of the kind, even at the barriers of Paris; so that I have not the least cause of complaint on that score.

The next stage is Geldern, a small genteel



teel town; the inhabitants of which had little reason to be pleased with their new masters: for, independently of what they had suffered from the successive influx and billeting of soldiers, the French demanded 100,000 livres, which they promised to take in provisions, and contributions of an easy nature; but, contrary to all expectation, it was demanded and paid in ready money, in addition to all the aids which were paid to the Prussian Government. A new land tax was imposed, the pressure of which was very severely felt. In Geldern there are two Catholic churches, two monasteries, and two nunneries. The rectors, or parish priests, were forbidden by the municipality, to register births, deaths and marriages, which was considered as a prelude to the extinction of the sacerdotal office, and the shutting up of the churches.

Tontines, life-rents and annuities, &c. ought to be registered, and properly attested, and when this office was taken away from the clergy, it is to be lamented that other persons

sons were not appointed to fill it. In towns it would be easy to find such persons, but in the country it would be rather difficult. At an easy distance from Geldern there is a large grove, and a fine cloister called Zante.

On leaving Geldern, you meet with a large common covered with heath, about two miles in length and as much in breadth. There are many enclosures, however, on this heath, each from forty to sixty acres. They are planted with fir, oak and birch. Some of the plants are old, others younger, and some very young, but all of promising growth. It would be difficult, perhaps, to meet with such plantations and rising woods in any other place. They reflect a great deal of honour on the former Prussian Forest Board, and are so many proofs of its activity and penetration.

Besides these, there are many spots from ten to twelve acres in extent, enclosed for the purpose of building and forming settlements, and which promise to repay the toil and industry of the cultivators. They have  
already

already begun to grub up the heath, to collect it into small heaps, and to reduce it to ashes, with which they manure the ground. These little enclosures produce rye, buckwheat, and potatoes of an excellent quality. What delight must fill the heart of the traveller as he passes along, and to see that the Prussian administration has turned its attention to the amelioration of the condition of the people? This fine province, in a short time, will be so highly improved as to vie with any other whatever.

Those heaths just mentioned, are encircled with many fertile plains, handsome farm houses, and busy trading towns, among which Venlo deserves to be distinguished. The next stage to Geldern is Degelin, which is followed by Ruremond, a large well built town, to reach which you must pass the river Ruren, or Roer, and in a few minutes after, the river Maes. These rivers are united by a curious sluice, very finely executed. The road stretches along the banks of the Maes to Maesfijk, an ill  
built

built town, in which, however, there were two cloisters. One of those sanctimonious erections was converted into a barrack, and the other was sold for 100 louis-d'ors. The inhabitants are such good Catholics, that they solace themselves with the hopes of better days; that is, they expect the monks to return, and resume their former situations. The cloisters and churches in those conquered countries were generally sold for a mere trifle, and the republic has profited very little by the sales.

The roads, at a distance from the Rhine, are very good. No industry seems to have been spared by the former government to make them, and keep them in good repair. There are small chapels along the road, with holy images, but all the crucifixes are carried off. There is not a cross to be seen on the spires of the churches, either in town or country.

Reekom, Tongeren, St. Tron, and Tirliont, are the successive stages from Maesick. Tongeren and St. Tron are rather neat.

In



In almost all the towns of any note, there are chimes, which play at least every hour. The best that ever I heard are in Tirlemont; the bells have a very fine tone, and are always in good order. On this side of the Rhine, it is not a little surprising to see those lands, which were formerly parcelled out to Prussians and Austrians, still exhibit so many remains of opulence and prosperity, in handsome trading towns, and well-cultivated farms. The cause may be ascribed to the natural fertility of the soil, high cultivation, manufactures, the many rivers and canals which intersect it, the Dutch navigation, and the quantity of provisions which it consumes; all which have enabled the farmer to dispose of his produce to great advantage.

From Tirlemont I came to Louvain, formerly known by its university, and the part which it acted under the redoubtable displeasure of the Emperor Joseph. The university and the cloisters are now dissolved; and the churches, in which the Catholic



tholic service used to be celebrated, are almost all fold. They complain very bitterly in Louvain, of the high taxes which the French government has imposed. I bought a pamphlet the other day with this title, "*Exposé de la conduite, qu'ont tenu les membres du jury d'équité, pour la contribution personnelle du Canton de Louvain, dans la confection de la matrice des rôles.*" In this piece I found copies of all the letters which were interchanged on the subject of the personal impost. No. 1. is a paper of the 24th Ventose, 6th year of the Republic, or the 14th of March, 1798, from the *jury d'équité* to the municipal administration. It begins, by stating, that the Canton of Louvaine was set down for 90,437 livres, personal tax; but that they instantly saw the impossibility of raising that sum in the course of a year; in consequence of which they were going to partition it. They intended to lay a yearly duty of from 40 to 50 livres on ale, vellum, and lace; from 80 to 100 livres on brandies; from 100 to

150 livres on herb shops and apothecaries, and from 250 to 300 livres on other traders, and on the rest of the citizens, a proportionably larger tax. They acknowledged that, notwithstanding these new personal impositions would exceed the ability of the people, yet that there would be a great deficit on the whole. The inhabitants, in reply to this severe requisition, represented that the number of troops quartered on them, the stagnation of trade and the dissolution of the university, by which three-fourths of the town's people lived, would render it impossible for them to pay so high a tax.

No. 2 is a paper from the *jury d'équité*, dated 6th of Prairial, 6th year of the Republic, or the 25th of May, 1798, addressed to the municipal administration. Amongst many other grounds for the diminution of the personal tax, they state that there is no proportion between the taxes of Brussels and those of the Canton of Louvain; that the population in the Canton of Brussels was four

four times as great as that of the Canton of Louvain, and that the proportion of wealth was as twenty to one.

The municipal administration of the Canton of Louvain, finding this statement just and reasonable, wrote to the central administration of the department of Dyle, a letter No. 3, dated the 14th Prairial, 6th year of the Republic, or the 2d of June, 1798, containing the result of the estimate of the personal taxes on the citizens of the Canton of Louvain, founded on the foregoing principles. No. 4 is a paper, dated Brussels the 16th of Prairial, 6th year of the Republic, or June 4th, 1798, from the central administration, containing a total rejection of their request. No. 5 is a fresh memorial from the municipality of Louvain, requesting a reduction of the taxes. No. 6 is the answer of the central administration of Brussels, dated 14th of Messidor, 6th year, or 2d of July, 1798, in which the municipality of Louvain is threatened with  
special

special commissioners and military execution. No. 7 is another communication, from the central administration in Brussels to the municipality in Louvain, in which they warned them not to follow the *consolatory* example of the municipality of Merchten, which had likewise complained, and that this complaint was transmitted to the Directory in Paris, and thence to Ramel, the minister of finance, who disapproved of the conduct of the municipality, and commanded that the payment of the whole tax which was first imposed, should be immediately enforced. No. 8 is a copy of Ramel's original letter to the central administration in Brussels, dated Paris, the 12th Messidor, 6th year of the Republic, or 30th of July, 1798. The result of the whole was, that the citizens of the Canton of Louvain were obliged to assess the tax, and to pay the whole yearly sum of 90,937 livres; but the pressure of it was very sensibly felt by every individual.

There



There is only one post between Louvain and Brussels, and that is Curtenberg. The land is well cultivated, and still improves in that respect, as you approach Brussels. The paved way, which begins at Louvain, is planted on each side with trees, a very common practice throughout all Belgium, and which obtains a little in France. These stone ways, or causeways, which are continued to Paris, are commonly from 40 to 60 feet in breadth. The hollows are filled up, and bridges erected, where there is the least necessity, with drains to carry off the water. In the middle of the road, there is a row of stones, each of which is commonly a cube of six or eight inches. The whole is very well executed; though there may be here and there a little height or hollow, which is always unpleasant, especially as this inconvenience might be removed by a few stones or a little gravel. The breadth of these stone or paved ways is not always the same. On sandy ground it is so nar-



row, that two carriages can scarcely pass each other, and on the sides are paths for the pedestrians. Where the soil is tenacious or clayey, it is found necessary to extend the pavement to the banks, so that there are no foot-ways.

## LETTER IV.

STAY IN BRUSSELS, AND JOURNEY THENCE  
TO PARIS.

*Brussels described—The Conseil Souverain  
plundered—The Viceroy's Palace con-  
verted into a Central School—Its Classes  
—Public Library—Churches despoiled—  
Manufactures—— Travelling Carriages  
drawn by Dogs—Belgians dislike the new  
Government, and why—At Mons an Altar  
exposed to Sale—Coal Pits—Jemappe—  
Good Cultivation—Roads neglected—Va-  
lenciennes not repaired since the Siege—  
Host of Beggars there, and why—A Shoe-  
maker the Chief of the Municipality at  
Valenciennes—French Villages mean and  
poor—Boys and Girls reaping the Harvest,  
and why—Three and four wheeled Carts  
compared—Horses cruelly treated in France*

—Roads neglected, though Tolls high—  
Bouchain a strong, but mean Place—Cam-  
bray neat and clean—French Posts pro-  
perly regulated—Chantilly plundered—  
Approach to Paris charming.

ON the 13th of August, I reached Brus-  
sels, the largest city in the Nether-  
lands, and a very neat place. The older  
and lower streets are small and crooked,  
but the more modern ones are straight and  
wide, and the houses are lofty and well  
built. The public walks are in the English  
taste, and are adorned with alleys and some  
of them with statues: there is also a fine  
park. These, with the archducal court,  
comedies, concerts, balls, and elegant con-  
versations, rendered the place agreeable,  
and the environs are very inviting. Brus-  
sels heretofore attracted a great number of  
fashionable English families. Living having  
been at all times cheaper here than in  
their native country, many who had lived  
beyond their fortune, came hither to repair  
it.

it. In those days, an English gentleman could rent an elegant house, with six or seven rooms, for 690 or 700 rix-dollars a year; but such a house at present would scarcely bring 250.

During the last conquest of Belgium, the fine park was nearly destroyed by the French soldiers, and would have been totally laid waste by the Belgic fans-culottes and terrorists, had not the French General called in the military, to prevent its total destruction. The municipality of Brussels have restored it to its former beauty, at their own expence.

Among the many buildings in Brussels remarkable for magnitude or fine architecture, we are to reckon the former *Conseil Souverain de Brabant*. The palace of the Archduke, or Viceroy, is remarkably superb. The first mentioned edifice is now appropriated to different tribunals, and one of the wings is converted into a prison. During the last invasion of Belgium, all the splendid ornaments and furniture of this magnificent

pile were carried off by a set of plunderers, and the iron railing, the stairs, and other heavy articles, were sold. The Viceroy's former palace is now converted into a central school, for the department of Dyle, with a public library. This school is divided into three classes. In the first, Faucois teaches drawing, Wanderstegen natural history, and Lesbrouffart the Greek and Roman classics. In the second, Chiefbrecht gives lectures on mathematics, and Van Mons on physics and chemistry. In the third class, Hensching teaches universal grammar, Bouillé the fine arts, Guise history, and D'Outrepont jurisprudence. Van Mons was formerly a judge in the civil tribunal, and is well known by his experiments in the *Annales de Chemie*.

The public library occupies a large saloon, with two other apartments not quite so large. There is, besides, a room set apart for the palæotypa, or old printed books and manuscripts, with a reading room. The whole library was collected from the Belgic emigrants,



emigrants, and the libraries of the suppressed cloisters. Hence it may be concluded that this collection contains many books of little value. The historical division is the best arranged; but the physical and mathematical are mixed together. Among the old printed books and MSS. or palæotypa, there is a large collection of fine copies, which had been found in the libraries belonging to the cloisters. Many of the MSS. are finely illuminated. These manuscripts are very valuable, and contain many documents which would throw light on the history of the Netherlands. I was shewn two very beautiful copies of Cicero and Terence on vellum. Lafferno, the librarian, told me that the library consisted of 120,000 volumes; but I own it did not appear to me to contain quite so many.

Brussels could formerly boast of many fine paintings, with which the churches were chiefly adorned; but nearly one third of these edifices are now shut up, and despoiled of their plate and pictures. The

equestrian statue of Prince Charles of Lothringen was broken to pieces. It is said, that the Belgic patriots and terrorists contributed more to this destruction than the French, whose General prevented it as far as was in his power.

Brussels was formerly noted for its manufactures, particularly of camlets, galoon and blond laces, silks, clothes, playing cards, tapes, pipes, and earthen ware, of a fine quality: some of them are still carried on, but with less spirit and success than in past years.

In that city I saw, what I thought had been peculiar to Greenland and Kamtschatka, namely, that it was not uncommon for a person to travel in a small light carriage drawn by four, and sometimes by six, large dogs. This mode is also practised in several parts of France; but I do not find that it is yet fashionable in Paris.

It is no secret, that the Belgians, in general, do not appear to be very well pleased with the new government. That country,

it is well known, has been, for a series of years the theatre of bloody wars; though it was very little interested in the success of either friends or foes. Now the complaint is, that their manufactures are annihilated, and the sources of subsistence dried up. The complaint of the weight, and the number, of taxes is still more bitter, and some do not hesitate to say, that they are double to what they were under the former government, and that they are unequally imposed. I have already touched on the situation of the Cantons of Merchtem and Louvain, in this respect. In the mean time, it was the general opinion, that no change or commotion was to be apprehended, while the young men were not enrolled as conscripts. Experience has shewn, that this opinion was well founded; for the first disturbances arose in consequence of the conscriptions being put in execution; so that the French were not content with the measure of human woe unless it overflowed, or with the effusion

human blood, unless it was wantonly lavished.

I left Brussels on the 15th of August. The next stage is Halle, the road to which is a very good stone causeway, both sides of which are embellished with fine gardens, and highly cultivated fields. From Halle to Braine, the road is in general very good, and improves as you advance. In Braine le Comte, I met with an escort of six French soldiers, conducting as many Belgic priests towards the interior of France, whence they were to be removed to the coast, and transported. The priests had a very sickly look, and were pretty fast bound. On the other side of Casteau, a barren heath expands itself for several miles, where scarcely a shrub or tree relieves the eye, except on a very few spots laid out in little plantations. The cottages in Braine and Casteau were built with common field stones. The heath reaches to Mezaire, where the soil assumes a better appearance. This village is built on the road side, and extends almost to Mons,



Mons, which is a fortified town, but the works are falling into decay. Here I saw an altar exposed to sale in the market place, with some holy images, and seven pictures. One of the soldiers stepped up, wrote on them, and explained the subject of each to the spectators, who thronged around.

In the plains, there are several fine coal pits. The coals are conveyed by waggons, drawn by six or eight horses, to the neighbouring villages, even as far as Brussels, and thence conveyed by canals to Antwerp and Holland; as the present war has prevented the importation of this necessary article from England. The road runs to Gemappe, which will be long remembered for the bloody conflict, which took place betwixt the Austrians and the French, in which the latter charged with the bayonet, and took the numerous Austrian batteries raised on the heights.

Quivrain is the last Belgic stage. The land is fertile, and well cultivated; almost



all the fields were sown with clover; and rye-grass is cultivated with success in some places. The roads are quite neglected, and if not speedily repaired, will soon become impassable.—The villages round Valenciennes have suffered very much from the war: many of them, particularly the cottages, are quite deserted.

Valenciennes is the first stage in Old France. I came in on that side which was attacked by the Austrians. In the part near the rampart, whole streets and lanes have been demolished, some have been levelled to the ground, and others burnt. They have not made the least attempt, since the siege, to rebuild or repair them. Copenhagen has been more fortunate, in this respect. The third part of that city was consumed by fire, and in less than three years, the whole was rebuilt on an extensive and improved plan, far superior to the former. Fire engines are found to be of great use in Denmark, even in villages. I am not certain that fire engines are used in France,

France, or in what manner they are regulated and kept up since the revolution.

The French villages will lose, by comparison, in the eye of the traveller, who has just passed through the neat and handsome ones of the Netherlands. The first moment you set your foot in the environs of Valenciennes, you are encircled with a host of beggars, so importunate, that they rather demand than solicit charity. It seems that, shortly after the revolution, a number of the youth of both sexes, engaged in the manufactures, were thrown out of employment, and reduced to the necessity of living on the casual bounty of travellers.

In order to shew my pass, it was necessary that I should go to the municipality, and thence to the police-office (*bureau de police*). As these two did not sit at the same time of the day, I went to the house of one of the municipal officers, a shoemaker, whom I found at work in his shop. He did not detain me a moment, when I shewed him the pass I had from the French minister

ter

ter in Copenhagen. On shewing him the royal Danish pass, he shook his head; as much as to say, That is of no use. His dress was not very fine, and yet he was the chief of the municipality. In all the other towns, in which there were barriers, or turnpikes, I was only desired to shew my pass, which the officer never took out of my hands; but this was not the case in fortified or garrisoned places, where they examine them very attentively. Formerly they expected a small *douceur* on these occasions, which was strictly forbidden by the last French proclamation; *rien de votre générosité*. I am told they were very well satisfied with ten or twelve sous.

It is not very far from Valenciennes to Frejus, where the French gained a remarkable victory. Here I saw a small monument, erected to the memory of General Dampierre. Douay lies farther off: a severe battle was fought there in the reign of Louis the Fourteenth; and the French, in order to perpetuate the day, raised a monument,

ment on the road side, which consisted of a square pyramid, about thirty feet high, inserted in a square pedestal, ornamented with pyramids of marble, in *bas relief*, with inscriptions on each side. The pyramid is now stripped of all these ornaments, which were broken down or carried away. Some say that this was done by the Imperialists, who could not bear that the defeat of their ancestors should be thus held out to the view of every passenger. But others impute the dilapidation to jacobins and terrorists, who did not wish that even the splendid exploits of their fore-fathers, under a monarch, should be transmitted to posterity.

The French villages are inferior, in almost every respect, to those of Belgium. Most of the houses are built of common clay, and the little furniture betrays evident marks of poverty. Some of them, however, exhibit appearances of prosperity and ease. Besides common corn, clover, horse-beans, and walnuts are produced in abundance,



abundance, from the kernels of which last they express oil.

I saw a great number of boys and girls in the fields, gathering in the harvest, which led me to conclude, that those who ought to have been employed in that task, were called to the field of battle. I observed that three-wheeled cars, or carts, were used instead of four-wheeled ones, which in general are very large, and sometimes require from two to four, and even six, horses to draw them; whilst one or two horses will pull a greater load in the former. But I must declare, that in no country with which I am acquainted, are the poor working horses treated with greater cruelty than in France. There can be no doubt, that, where the ground is even, and the roads good, these three-wheeled waggons, or carts, ought to be preferred to those with four wheels.

The roads in this part of France are paved, like those in Belgium. Some, however, are better than the highways in that country ;



country ; though there are many hollows and rough parts in several places, and although the tolls are very high, all idea of repairing them seems to have been abandoned, since the revolution.

Bouchain is a very strong fortification ; for, by means of the well-placed and finely constructed sluices, the greatest part of the adjoining country can be inundated at pleasure ; so that it would be very difficult to besiege or take this fortress, if well supplied with provisions. As to the town itself, its mean buildings have fallen into ruins. The inhabitants seem to share the same fate, for you meet with poverty in every quarter of it. Along the whole tract from Valenciennes to Paris, there is a stratum of chalk-stone, which is used in decorating the cast frames of the windows, doors, and gates, and, as you approach the capital, you meet with some houses built entirely with this stone instead of bricks.

Cambray is well fortified, and is furnished with a citadel. The city is well built,  
neat,

neat, and clean. Throughout the whole, you see the remains of wealth and prosperity, for which, no doubt, it is indebted to its famous manufactories of cambric. From Cambray the road runs through Bonavis, Fins, Peronne, (which is fortified) Marche le Pot, Fonches, Roye, Conchy les pots, Carilly, Gournay, Bois le Liheu, and Pont St. Maxenze.

The French posts are under very proper regulations. The horses belong to the post-masters themselves, some of whom have near 120, a number of which are always in the stable; so that you are not detained a moment. The post-boy rides on one of the horses, and goes at a smart trot over heights and hollows, rough places and smooth, and it is in vain either to entreat him to quicken or slacken his pace. This road is a great thoroughfare for carriages of every kind, and at every post house there is a blacksmith's shop. As soon as you stop, those sons of Vulcan come out, and enquire if their assistance is wanted. The iron axle

of

of my carriage happened to be broken by a stone on my way to Pont Maxenze.—They were glad to hear of it, took it out, welded it together, and, in about two hours, I was enabled to resume my journey. They asked a louis-d'or, which was not unreasonable; and it was so well done, that it has not failed since.

From Pont Maxenze I preferred the road round Chantilly. Here I travelled through a fine grove of oak and beech, with much underwood of forward growth. This narrow way is bordered with lofty trees, whose spreading branches form the most agreeable and grateful shade, especially from the noon-tide sun.

Chantilly belonged to the Prince of Condé, and is well known for the beauty of its architecture, and the enchanting walks and plantations, parks, and pleasure grounds around it. The jacobins have nearly demolished the fine park walls, and cut down the trees which shaded the walks. All the internal decorations of the castle,  
the

the paintings, looking-glasses, tapestry, the valuable cabinet of natural history, library and all, were plundered; so that the empty shell is all that remains of its former splendor. The mob cut and carried off the heads and arms of the statues, which the Prince had been so many years in collecting. In many of the rooms are yet to be seen part of the small cells, in which those who were doomed to the guillotine were immured, during the bloody reign of the terrorists.

The roads begin to improve, as you approach Paris. The successive prospects on every side, seem to vie with each other in richness and variety.—They surpass whatever imagination can conceive. The mildness of the climate, groupes of vineyards, highly cultivated orchards and kitchen-gardens, all contribute to render the scene delightful; and peaches, apples, pears, plumbs, cherries and walnut trees flourish in the open fields, in the greatest abundance.

From

From Chantilly I travelled through Lufarche, Echöuen, and St. Denis, and arrived in Paris, in the afternoon of the 18th of August.



## LETTER V.

## COURSE OF INSTRUCTION IN THE PRIMARY, CENTRAL, AND POLYTECHNIC SCHOOLS.

*Primary Schools well conducted in Paris, but not in the Country—The Revolution subverted the best old Institutions—Normal Schools—Fault in conducting them—Sciences taught in them—Journal of the Lectures and Debates in them—Diffolution of them—Regulations of the Central Schools—School of the Four Nations—Scientific Courses in it—Second and third Central Schools—List of Departments with and without Central Schools—Defects in those already established—The French shew no wish to learn foreign Languages—Morality and Geography not taught in the Central Schools—Ancient Literature little attended*

*tended to in them—The Pupils in them but superficially instructed—Some of the Teachers ill qualified—Polytechnic School—Course of Study in it—Philosophical Apparatus, Library, and Collection of Models belonging to it—Public Examination of the Students.*

IN the account of Paris which I intend to give, you must not expect me to confine myself to chronological order ; but I shall arrange in my journal all that I intend to say on the different subjects, under their proper heads—a method which, in some measure, will prevent repetition and disorder.

I shall begin with public instruction. The first are called Primary Schools, which answer to our common ones, where reading, writing, and arithmetic are taught. There are many private institutions erected in Paris, the object of which is to prepare youth for the higher classes ; so that they may be transplanted from those nurseries to  
the

the central seminaries. These private institutions in Paris are in general conducted in a very proper manner ; but I cannot say so much of those in the provincial towns, and in the country. Formerly the clergy claimed the exclusive right of instructing youth. The parish priests were allowed lands and houses, but being now deprived of these benefices, they are obliged, as their only means of support, to teach small schools, where the country people pay for the education of their children ; but those schools are so little frequented, that the rising generation may be said to grow up without any instruction.

We may conclude, that the primary schools were very much neglected from the speech which Bitaubé, the president of the National Institute, delivered in the Council of Five Hundred, and the Council of Ancients, on the second complementary day in the 6th year of the Republic, (or the 18th of September, 1798) I cannot in this place omit a passage in it, which reflects so much

much honour on the National Institute, and the orator who pronounced it. (*Comte rendu et présenté au corps législatif, le 2d jour complémentaire de l'an 6, par l'Institut National des Sciences et Arts. Paris an 7, pag. 186 et 187.*) "But,—citizens representatives, when I laid before you the labours of the physical and mathematical classes, I should not have departed from the principal object, if I had, in addition to these classes, submitted to your consideration the wishes which impress the whole National Institute, and the whole nation, that the first schools for the instruction of youth should be thrown open, and that the Central Schools should not be deprived of their first and firmest foundation, the PRIMARY SCHOOLS. I have already acknowledged, that this measure is very dear to your hearts. The republic has cause to lament, that this important work has been suspended for a long time, from a series of unfortunate circumstances. We trust, therefore, to your wisdom, that you will fix their existence on a firm and immutable

E

basis.



basis. The members of the Institute feel it their duty to declare the lively interest, which they take in every part of your deliberations and labours. The members of your Institute are deeply interested in the fate of these seminaries, and they are anxious that such measures may be adopted as will tend to multiply and fix them on a ground that will shortly evince the wisdom and utility of the measure.—But, citizen representatives, you know how important a thing it is for public order, the maintenance of the laws, and the correction and purity of morals, that those, whose fathers you are, should be early instructed, and usefully employed. You are called on to watch over a race of young plants, which are now drooping—and, if not speedily revived, will fade away. The happy effects of the central schools are already experienced in different departments; the happy consequences of other public institutions are daily diffusing themselves. It is in your power to remove the misfortunes of which e



we complain ; so that an active, aspiring, and ingenious people will have the pleasure of seeing their youth return once more to instruction, when it is held out to them."

The presidents of both Councils in their answers, pronounced a panegyric on the Primary Schools. The president of the Assembly of Ancients said (*Compte rendu*, p. 202.) " The Council participates in the ardent wishes, which you express for the advancement and regulation of the primary schools. They are well worthy of the attention of the Legislature, and we receive them with additional pleasure, because they come recommended by the Council of Five Hundred, which will not fail to watch over these young plants, which you have recommended with so much solicitude."

Time will prove whether it would not redound more to the advantage of the French nation, that these patriotic views should be carried into execution, than the conquest of entire provinces. Without in-

struction, the rising generation will have to lament the fatal consequences of ignorance, immortality, and unbridled licentiousness.

In consequence of the Revolution, every thing was changed, and even the best institutions under the monarchy were subverted, or annulled, with the exception of the French College in Paris, which has undergone no change. It was found necessary, that other institutions should be substituted in the room of those that were abolished, and to which they gave the name of NORMAL SCHOOLS. In pursuance of the decree of the 24th Nivose, 3d year of the Republic, or the 15th of January, 1795, the National Convention ordained, that professors and teachers should be established, over all the Republic, and they gave the general name of Normal Schools to those nurseries, to which men of clear understanding only were to be appointed, to prepare youth for the higher schools. There was one fault however in them, the same which was complained of in those in which

which lectures were read, and that was, that the learner should write a quick hand to take down the lectures; so that it was necessary he should learn stenography, or shorthand, as these lectures were to be immediately printed in a journal. In the First Sitting, or Assembly, the professors only spoke; in the subsequent ones, the subject was reserved, and all the pupils in succession were at liberty to deliver their opinions on it. They could put questions to the professors, and the professors, in their turn, could question them; so that the subject of enquiry was generally sifted to the bottom; as there was no restraint on the freedom of discussion, except what good manners and politeness imposed.

The teachers were chosen from among men of the first talents, known either by their discoveries or writings. On the first and sixth day of each decade, Lagrange and Laplace taught mathematics, Haüy physics, and Monge geometry. On the second and seventh days, Daubenton lectured

on natural history, Berthollet on chemistry, and Thouin on agriculture. On the third and eight days, Buache and Montelle read geography; history as written by Volney, and the morality of Bernard Saint Pierre. The fourth and ninth days in each decade, were devoted to the principles of universal grammar by Sicard, logic by Garat, and general literature by Laharpe.

The journal, which I have now before me, the National Convention ordered to be published. It consists of two grand divisions, lectures and debates, or conferences. Six octavo volumes of the lectures have already appeared (*Seances des Ecoles Normales, recueillies par stenographie, et revues par le professeur. Leçons, tom. I—VI. à Paris, l'an 3.*) These six volumes contain sixty-one collections and lectures of the professors just mentioned, in the head classes, from the 20th of January to the 15th of May, 1795. In truth, whatever fell from the lips, or flowed from the pens of such enlightened men as Lagrange, Laplace, Haüy, Monge, Dauben-



Daubenton, Berthollet, Thouin, Buache, Volney, Sicard, and Labarpe, had a claim on the public attention ; but they did not extend beyond the first principles of the sciences, which was as much as could be expected in four months, or twenty-four lectures of an hour each. In my opinion, Haüy has been very successful in his physical lectures. There is only one volume of the debates or conferences published (*Seances des Ecoles Normales. Debats, tom. I. à Paris, l'an 3.*) it contains twenty-five collections ; but it seems far from being interesting (perhaps it could not be otherwise,) and it was very judiciously compressed into one volume.

The object which the Convention had in view, in erecting the Normal Schools, was to introduce and explain the *methodistic* mode of instruction, as it is now called by some. On re-perusing the 6th volume of the works of the Normal Schools, I found nothing to complain of. It must strike the reader, however, that the Normal Schools

can have produced nothing remarkable. They were raised upon a hasty and unstable foundation, and hence, in less than a year, they were dissolved.

The schools, which exist at present, are the Central Schools, the Polytechnic School, and the Schools for the Public Service (*Ecoles de Service Publique.*)

The law for the central school was enacted on the 3d Brumaire, fourth year of the Republic. The regulations are as follow : There shall be a central school in each department. The whole of the instructions shall be divided into three parts or sections ; drawing, natural history, the ancient and modern languages, shall be taught in the first ; mathematics, physics, and chemistry, in the second ; and universal grammar, the fine arts, history, and legislation in the third. The pupils to be received into the first at the age of twelve, into the second at fourteen, and into the third at sixteen. There shall be a public library in each central school, with a botanic

tanic garden, and apparatus of chymical and philosophical instruments. The professors to be examined and chosen by a Jury of Instruction (*Jury d'Instruction*) and the choice to be confirmed by the departmental administration. A professor cannot be dismissed by the aforesaid administration, unless there be a complaint preferred against him by the Jury of Instruction, which must be well grounded; as he is at liberty to defend himself, and there is a final appeal to the Directory. The salary of the professor is from 2400 to 3600 franks also to be paid by the departmental administration. They have besides, such a yearly gratuity from each pupil, as the department thinks fit, which seldom exceeds twenty-five franks. The fourth part of the pupils are in general too poor to spare any thing.

It is easy to remark, that the general rules or laws are very well digested; but the manner in which they are to be obeyed or maintained, should have been laid down at the same time. It is to be lamented also,

E 5

that.

that morality is passed over ; especially as the public exercise of religion is abolished. In the second section, the learner from fourteen to sixteen, is instructed in the abstract sciences, which tend very much to sharpen the understanding, and to call forth the latent powers of the mind ; and from sixteen to eighteen, he is taught to read the best historians, a study peculiarly improving to the minds of youth at that period.

From the Central Schools I shall now proceed to that of the Four Nations (*Ecole centrale des Quatre Nations, établie dans le ci-devant College des Quatre Nations*). I shall give you an account of the teachers and the hours of lecture.

#### FIRST SECTION.

Lectures every day, except the 5th and 10th days in the decade.

#### *Ancient Languages.*

Gueroult, the elder, reads from nine to half past ten in the forenoon.

*Natural*



*Natural History.*

Brongnard the younger, from half past ten till twelve at noon. He is a lively young man, has a pleasing delivery, and I have listened to him with a great deal of pleasure.

All the pupils in this class have the afternoon to themselves; and it is entirely at their own option, to repeat or not, what they heard in the forenoon.

*Drawing.*

Moreau, the younger, teaches drawing from twelve till half past one.

## SECOND SECTION.

*Mathematics.*

Lacroix teaches arithmetic, algebra, geometry and trigonometry, from nine to eleven in the forenoon, on all the complementary days, which are one, three, seven, nine. Lacroix has a fine delivery, and is a very good mathematician, as is well

known by the following performances : *Traité élémentaire de Trigonométrie rectiligne et sphérique, et d'application de l'algèbre à la Géométrie*, Paris, an 7, 8. *Elémens de Géométrie descriptive*, Paris, 1795. *Traité du Calcul différentiel et intégral*, 2 tom. 4to. Paris, an 7 ; and he has in the press, *Traité des différences et des series*.

*Experimental Philosophy and Chemistry.*

Briffon reads all the non-complementary days, from half past ten to eleven. He is an impressive reader, and all his reasonings are well grounded. He is known by a work on the specific gravity of bodies. He has besides, written three volumes on physics, two of which are already published, and the third is impatiently looked for. I do not hesitate to say, that this work contains the best system of physics in the French language. In this section there are only two hours each day set apart for reading lectures ; so that the pupils have time enough to learn mathematics and physics in the  
second

second year, if they chuse to occupy their time in such studies.

### THIRD SECTION.

#### *General Grammar and Logic.*

Domergue reads all the complementary days, from nine to eleven.

#### *History.*

Montille, all the even days, from nine to eleven.

#### *Legislation.*

Grivel, all the non-complementary days, from nine to eleven.

#### *Fine Arts.*

Fontanes, all the non-complementary days, from eleven to one.

This school has besides an agent and secretary, C. Lepine.

This school has a handsome library, which formerly belonged to the *College des Quatres Nations*; a collection of philosophical instruments, which are rather old, but kept

kept in good order by Briffon, on which he makes experiments very successfully. There is likewise a small botanic garden annexed to it. This school, when a college, was mouldering fast into ruins ; but it is now undergoing a thorough repair, and, when finished, will be found to be very neat and convenient.

The second central school in Paris is in the Pantheon, formerly the church of Saint Geneviévés. The regulations are entirely the same. Among the teachers in natural history are Cuvier, and Deparcieux, who is still better known. The third central school is in the suburb of Saint Anthony, in the former Jesuits' College. Among the teachers in those seminaries some are known by their literary productions, and those who are not, may yet be very well qualified to fill their respective situations. These two seminaries have good libraries, a collection of at least the most  
useful



useful philosophical instruments, and each a small botanic garden.

In those departments where universities, colleges, large cloisters, palaces of emigrants, and libraries were already established, it was easy to organize central schools; but where such universities, &c. were wanting, they are not even at this day furnished with central schools. I shall now give you a list of those seminaries, and the places in which they are established. Those marked with an asterism are not yet organized, or at least their organization has not been publicly announced.

Departement de l'aifne - in Soiffons.

Dep. d'Allier . . . . - Moulins.

Dep. des hautes Alpes . - Gap.\*

Dep. de l'Ardeche . . . - Tournon.\*

Dep. de l'Arriége . . . - St. Giron.

Dep. de l'Aude . . . . - Carcaffonne.

Dep. des Bouches du Rhone - Aix.\*

Dep. du Cantal . . . . - St. Flour.

Depart-

Departement de la Cha-

rente inférieure . . . in Saintes.\*

Dep. de la Correze . . . - Tulle.

Dep. de Côtés du Nord . . - Guincamp.\*

Dep. de la Dordogne . . - Périgueux.

Dep. de l'ain . . . - Bourg.

Dep. des basses Alpes . . - Digne.\*

Dep. des Alpes maritimes - Nice\*.

Dep. des Ardennes . . - Charleville.

Dep. de l'Aube . . . - Troyes.

Dep. de l'Aveyron . . - Rhodéz.

Dep. de Calvados . . . - Caen.

Dep. de la Charente . . - Angoulême.\*

Dep. du Cher . . . - Bourges.

Dep. de la Côté d'or . . - Dijon.

Dep. de la Creuse . . . - Aubuffon.\*

Dep. du Doubs . . . - Besançon.

Dep. de la Drome . . - Montelimart.

Dep. d'Escaut . . . - Gand.\*

Dep. de L'eure et Loire - Chartes.

Dep. de la haute Garonne - Toulouse.

Dep. du Gers . . . - Auch.

Dep. du Golo . . . - \*

Dep. de Lille et Vilaie . - Rennes.

Dep.

Department de l'Indre et

Loire . . . . . in Tours.

Dep. de Jura . . . . . - Dole.\*

Dep. de Liasmone . . . . . \*

Dep. de Finistere . . . . . - Quimpes.\*

Dep. de haute Loire . . . . . - Puy.

Dep. du Loiret . . . . . - Orleans.

Dep. de la Lozere . . . . . - Mende.

Dep. de la Manche . . . . . - Avranches.

Dep. de la haute Marne . . . . . - Chaumont.

Dep. de Lot et Garonne . . . . . - Agen.\*

Dep. de la Mayenne . . . . . - Laval.\*

Dep. de la Meuse inféri-

eure . . . . . - Maestricht.\*

Dep. du Mont blanc . . . . . - Chamberry.

Dep. de Morbitian . . . . . - Vanner.

Dep. de deux Nethes . . . . . - Anvers.

Dep. du Nord . . . . . - Lille.\*

Dep. de l'Orne . . . . . - Seez.\*

Dep. du Pas de Calais . . . . . - Arras.\*

Dep. de basses Pyrenées . . . . . - Pau.

Dep. des Pyrennées orien-

tales . . . . . - Perpignan.

Dep. de haut Rhin . . . . . - Colmar.

Depart-

Departement de Dyle . . .	in Bruxelles.
Dep. de l'Eure . . .	- Evreux.
Dep. de Gard . . .	- Nimes.
Dep. de Gemmape . . .	- Mons.*
Dep. de la Gironde . . .	- Bourdeaux.
Dep. de l'Herault . . .	- Montpellier.
Dep. de l'Indre . . .	- Chateauroux.
Dep. de l'Isere . . .	- Grenoble.
Dep. des Landes . . .	- Saint Sever.
Dep. de la Loire . . .	- Rouanne.
Dep. des Forets . . .	- Luxembourg*
Dep. de la Loire inférieure	- Nantes.
Dep. du Lot . . .	- Cahors.
Dep. de Maine et Loire .	- Angers.
Dep. de la Marne . . .	- Chalons.
Dep. de la Meuse . . .	- Verdun.
Dep. de la Lys . . .	- Bruges.*
Dep. de la Meurthe . . .	- Nancy.*
Dep. de Loire et Cher . .	- Vendome.
Dep. du Mont terrible . .	- Porentruy.
Dep. de la Moselle . . .	- Metz.*
Dep. de la Nieve . . .	- Nevers.
Dep. de l'Oise . . .	- Bauvais.*
Dep. de l'Aurthe . . .	- Liege.*

Depart-



## Departement du Puy de

Dorne . . . . .	in Clermont.
Dep. des Pyrennées . .	- Tarbes.
Dep. de bas Rhin . . .	- Strasbourg.
Dep. du Rhôn . . . .	- Lyon.*
Dep. de Sambre et Meuse	- Namur.*
Dep. de Seine et Loire	- Autun.
Dep. de la Seine et Marne	- Melun.
Dep. de la Seine inférieure	- Rouen.
Dep. de la Somme . . .	- Amiens.
Dep. du Vas . . . . .	- Toulon.
Dep. de la Vendée . . .	- Luçon.*
Dep. de la haute Vienne	- Limoges.*
Dep. de l'Yonne . . . .	- Auxerres.*
Dep. de la haute Saone	- Vesoul.*
Dep. de la Sarthe . . . .	- Mans.*
Dep. Seine et Oise . . .	- Versailles.
Dep. de deux Sevres . .	- Niort.*
Dep. du Tarn . . . . .	- Alby.*
Dep. de Vaucluse . . . .	- Carpentras.
Dep. la Vienne . . . . .	- Poitiers.
Dep. de Vosges . . . . .	- Epinal.*

Besides the three central schools in Paris,  
 ninety

ninety seven are intended for the departments, of which fifty-one are organized, and forty are yet unorganized. Different teachers are still wanting in some of the organized schools; for example, at St. Giron's, in mathematics and physics. In Tulli, all the teachers are wanting, except those of drawing and grammar. In Montelimart, there are only two, one in natural history, and the other in mathematics. In Chateauroux, there are none in physics, or in the whole third section. In Puy, there are none at all in the first class. In Porentruy, Anvers, Nevers, Pau, Antun, physics and chemistry are quite neglected, for want of professors. Collections of instruments and libraries are wanting in many. There are no teachers of the foreign languages to be found in any. Lalande, since his journey to Gotha, last summer, confesses that the knowledge of German literature would amply repay the trouble of acquiring the language of that country, even to be able to read the books which appear in it. He has

has written to the Minister of the Interior on that subject, and entreated that persons skilled in the German language, may be appointed to teach it in the central schools. Yet we do not observe the least inclination to learn the foreign languages. In the narrow circle of my acquaintance, however, I know some who speak German with fluency. Among this number are Mr. Bourgoing, well known by his justly admired writings on Spain; Cuvier, Member of the National Institute, and professor of natural history; Coquebert, professor of history, and a member of the general department of weights and measures, a young man of very genteel address, and good education. He recommended the introduction of many foreign articles of utility; but, in pursuance of the Minister's advice, he went to Italy, where he exchanged his pen for a sword, and is now a good soldier.

I have already remarked, that morality and geography are not ordered to be taught in the central schools. One teacher

is

is only appointed for Latin and Greek, to which he devotes two hours each day, the age of the pupils being from twelve to fourteen. But in so short a time, pupils of that age cannot be expected to make any great progress in the acquisition of those languages. I have heard many of the best philologists in Paris complain, that ancient literature is very little attended to, not to say quite neglected. In some countries, it is prized beyond its value, and in others, it is depressed beneath it. In my opinion, the lovers of science ought to know at least as much Latin and Greek, as will enable them to trace the roots of those scientific words, for which we are indebted to those languages. Lectures are read in the central schools; but no books are prescribed to the pupils, nor are they called on to repeat what they have heard. I am not quite certain that a youth, from the age of fourteen to sixteen, can be well grounded in the principles of science, by this mode of instruction. I have been present at the public examinations,



tions, and found that most of them knew some things in a general way; but that very few were masters of the primary principles of science.

Towards the close of the republican year, the Directory appointed commissioners to travel through the departments, in order to examine, and to make a report of the state of the central schools. Many of those were my friends and acquaintances, and they assured me, that in most places, they found those schools in a very indifferent state: even some of the teachers knew very little of what they professed. The commissioners saw that it was very necessary, that proper books should be written, for the use of these schools. They lamented, at the same time, that, in most of the departments, the central schools were little sought and attended by very few.

As soon, however, as defects can be supplied, and proper regulations adopted, with the means of carrying them into execution, it is very probable that those central schools,

schools, such as they are, will be found to be of great utility.

The next school, but of a higher order, is the Polytechnic School, in the former *Palais de Bourbon*, where the Assembly of Five Hundred also hold their sittings in a large hall. The pupils are translated from the central schools, after a preliminary examination, in the elements of arithmetic, algebra, geometry, trigonometry, &c. The number of the pupils is settled at 360, who are divided into brigades, twenty to each hall, under the inspection of the teachers, and a visitor, or chief inspector, whom they alternately choose from among themselves. The common courses in these schools require three years, and the school is divided into three corresponding classes. Deshauts-champs, the present director of the Polytechnic School, is a profound mathematician. He is often present at the lectures, and spares no pains to keep the pupils in proper order. The last year, he carried a decree that the teachers and pupils should wear

wear an uniform of buff-coloured waist-coats, and blue frocks with yellow buttons, on which are inscribed the words, "*Ecole Polytechnique*." Besides the director, there are two administrators, Le Brun and Lermina, who are very honest men.

*First Year, or first Class.*

In this class, the higher algebra and analytic geometry are taught, together with that part of geometry which is particularly applicable to the practice of stone-cutting, carpenter's work, sciagraphy, or shadowing, perspective, and the construction of maps. The teachers are Monge, who is now in Egypt, and his assistant Hachette. The chemistry of Fourcroy is also explained in his class, by Salternes. Hasenfratz lectures on general physics, including mechanics, and the other parts of physics, which are found necessary in mechanical employments.

*Second Year, or second Class.*

The arts of laying out roads, erecting bridges, building, and all that relates to

F

house-

household furniture, are taught by Lagarde and Dubois.

The science of building, or any peculiar style of architecture is taught by Gay and Vernon.

Prony and Fourier, explain hydrostatics, hydraulics, and mechanics.

The chemistry of the organic, vegetable, and animal substances, are taught by Berthollet and Chauffier. The former is at present in Egypt.

*Third Year, or third Class.*

Fortification is taught by two officers of the engineers.

The construction of such engines as relate to mechanics, are explained by Prony and Fourier.

The chemistry of minerals, metallurgy, and mining, are taught by Guiton de Morveau.

Lagrange besides, reads lectures on different parts of the mathematics, particularly the analytic. There are three drawing masters.

The Polytechnic School is kept in very proper



proper order ; it contains a good philosophical apparatus, in three rooms on the third story. In the first room, are three ovens or stoves, with glassess, to make experiments on the nutrition of plants by gases, and many conveniences for the prosecution of physical and chemical researches.

In the second room there is a large collection of mechanical and hydrostatical, optical, astronomical, electrical, and magnetical instruments ; most of which belonged to Nollet, and Sigard de la Fond ; and they are kept in good order, and well arranged.

Among the few English instruments, I observed there, was an excellent air pump on Smeaton's plan, improved by Nairn. This formerly belonged to Lavoisier ; but, as it had only one tube, he exchanged it for one with two, which, though more quick, does not evacuate the same quantity of air in a given time. There is on the second floor, a hall highly decorated, which is filled with a great number of instruments

and models, many of which ought to be in the first. A person is appointed to keep those instruments in order, and to arrange the new ones. The pupils have access to them when they please.

This Polytechnic School has a very neat and good library of about ten thousand volumes, of the chief works on the different subjects taught in this institution. It is open, for the use of the pupils, some hours every day, and on the decades the whole day. It is constantly consulted by the students, of whom I have often found from twenty to thirty in it at a time.

In a room, set apart for that purpose solely, there are models of machines, some of which are very interesting and useful; but others are of little value, and indifferently executed. It may be only called the beginning of a collection of that kind, which will be supplied by degrees, with models of machines of more importance, and better workmanship.

All these models, machines, and philosophical

phical instruments, may be said to have cost nothing, having been partly taken from the former public collections, and partly from the royal philosophical and mechanical cabinets, or from those of the emigrants.

Three rooms are set apart for architecture alone. In the first, was stereotomy, which, in the scientific language of the Polytechnic School, signifies that part of stone-cutting, on which Frezier and De la Rue have written so much. The theory and rules of projection are first studied; as when a solid body, of a given figure, is to be cut, according to plans or schemes of a given position, such as a cylinder to be cut by another cylinder, or by two cylinders; or when a body, of which one end is a circle, and the other an ellipsis, is to be cut by a given plane, there to define the curve lines of the projection; or, on a kind of cone, the basis of which is an ellipsis, to define the section, which will be a circle.

These, and many other such problems, are executed from models remarkably good.

This stereotomy, together with descriptive geometry, are cultivated with a great deal of zeal and industry.\* I will not say that the pupils should be ignorant of these

\* In the same school, descriptive geometry is taught, as well as the art of representing on paper, objects which have three dimensions by two.

It were to be wished that the learned author had employed the art he here mentions, in explaining the above sections of solids, which, at the best, are not very easy of digestion. It seems scarcely fair in him to expect ordinary, or, I may venture to say, even mathematical readers, to understand from mere words, a subject in which we see the French geometricians very properly employ both figures and models, to assist the imagination. Cæsar's, merely verbal, description of his bridge over the Danube, is scarcely intelligible. But when a man sees a figure, and still more a model of it, he is ready to despise himself for not having understood so very simple a structure, by a single hint. In my opinion, the solid sections mentioned in the text, are far more difficult to be apprehended, without such assistance, than Cæsar's bridge. But I have translated the passage literally, and must leave the reader to make the best he can of it, as I have done.—*Translator.*

things,



things, nor will I deny that the knowledge of them may be found useful in many respects, particularly in the construction of charts and maps, designs in architecture, and mechanics, &c.; but I think I may venture to assert that they cost more time and application than they deserve.

The second architectural room was entirely appropriated to stone-cutting, or the determinative formation of certain figures. They make use of a composition of stone to form models of portals, gates, bridges, &c. which the pupils must work themselves. Most of those models were very neat, and on the whole well executed. Their height was from eight to sixteen inches.

The third room contained models of all the orders of architecture; and of entire façades, buildings, palaces, and temples. There is a person in the school, who models with great exactness and elegance.

The drawing or designing school is a fine long saloon, to which the light enters from above. It is divided into three classes.

The first is confined to the drawing of heads, hands, feet, &c.; in the second, whole figures are drawn after designs; and in the last from the life, and from fine models in gypsum, of which the school has a remarkably good collection. Some very fine designs of the pupils are hung up in both.

The Polytechnic School has two very large and fine chemical laboratories, besides two of inferior extent, and some mechanical workshops. The director and administrator have lodgings, at free cost, in the school.

As a stranger, I have attended several lectures, among which was the analytic, by Lagrange. Whatever this great man says, deserves the highest degree of consideration; but he is too abstract for youth. In the examination of these lectures, it has been found, that he has discovered a new demonstration of the first principles of the differential calculus; and his *Solution des équations numériques, de tous les degrés, Paris, 1797*, merits attention.

I have

I have heard Prony's hydraulic lectures, particularly on the motion of fluids through pipes, and on the undulation of water. This extraordinary man has the most impressive and captivating delivery, which can possibly be conceived. In the course of the last year, he printed a text book of his lectures, containing theorems and problems, relating to his subjects, and a sketch or skeleton of the lectures themselves. In the 7th year, Prony began a course, in which he proposed to demonstrate hydraulic theories in general. I have heard some of those lectures, which were excellent; but I fear that few of his hearers (about twenty in all) will be able to keep pace with him.

I have heard Fourcroy read on the fermentation of wines, and on the nature, quality, and preparation of alcohol. He made different experiments, to shew that the flame of burning alcohol contains a variety of colours, such as purple, violet, and green; the last of which appeared on

mixing with it a solution of vitriol of copper. Fourcroy's delivery is fine, orderly, and emphatic ; but perhaps a little too rapid, for some youths beginning the study. When he had finished, he proceeded, in pursuance of a certain order, to examine from eight to sixteen pupils.

I have heard Hasenfratz lecture on electricity, lightning and thunder. He concluded with an historical detail of all the systems of electricity ; but passed over Symmer's theory, or the dualistic system entirely. He adopted the theory of Epinus, which was become prevalent in Paris. Haüy has since attacked the system of Epinus, relative to electricity and magnetism. He denies that the peals or claps of thunder proceed from the electric spark, which flies from one cloud to another, and bursts or strikes through the interjacent air, and insists that it comes from a vacuum, produced by the condensation of exhalations, which are converted into rain : if so, there never would be any peals or claps of thunder, which



which would not be accompanied with rain. I have also heard Hasenfratz lecture on machines.

The object of those lectures ought to be whatever relates to machinery, practical mechanics, and the different modes by which the motions of the machines can be made to produce the different effects, so as to attain the object. I have not heard enough of those lectures to enable me to say, how far this object may be attained. Hasenfratz is deficient in delivery. Once in each decade, he conducts his pupils to see the machines, the management of the manufactures, the rooms where the arts are carried on, and where mechanics work. I accompanied him, in one of his mechanical excursions, which are exceedingly useful, and furnish the pupils with ideas, which they could not obtain in lecture-halls or libraries.

It was peculiarly enacted, that each of the pupils should have 1200 livres a year, but this was decreed in the times of the

assignats: so that those 1200 livres in paper yielded very little money, and notwithstanding the assignats are called in, the pupils received little more than 200 livres a year, which amounted in the whole to 72,000 livres a year annually. The Minister of the Interior, in the seventh year, desired the sum of 394,133 francs, for the use of the Polytechnic School; and certainly the pains and expence of the Government are well bestowed on an institution, which will furnish the state with so many public servants, and useful subjects.

When the lectures are closed, which happened this year in Brumaire, there is an examination of all the pupils who have finished their course, and who would wish to enter into the schools destined for the accomplishment of candidates for the public service, in the construction of roads and bridges, ship-building, &c. or of those who would wish to become masters in other useful arts. For the present examination, the Directory appointed Laplace and Boscuit.

ful. The first examined the students in the analytic sciences, and the other in mechanics. Those who were to be examined were called up in order, and were obliged to demonstrate without book the proposed theorems, and to solve the problems on a black table; which was considered at once as a proof of talents and readiness. Laplace proposed questions in series, logarithms, and curve lines, in that part of algebra which is applicable to geometry and trigonometry, and in the differential and integral calculus. He proposed every question with much perspicuity and precision, and gently recalled the pupil to the right point, if he happened to wander from it.

Bossut, in another room, examined in mechanics, statics, hydrostatics, hydraulics, &c. I found most of the pupils answer very well, and with great readiness, difficult problems of the higher mathematics. But it must not be expected, that amongst so many, some would not be found of moderate and some of indifferent talents.

Deshauts-

Deshautschamps, the director, told me, that Laplace, on the whole, was not well satisfied, and that some of the pupils were not entitled to that attestation, by which alone they could be admitted into the Schools for the Public Service. He lamented, and not without reason, that in those examinations, the young men were left without any occasional assistance to their memory or conception, especially when they found themselves bewildered in algebraic calculations. It is certain, that a wink would often set them right, provided they had understanding and knowledge enough to avail themselves of it, which in itself would be a proof that they had not mis-spent their time. I informed Deshautschamps, that with us public examinations were held in gunnery, navigation, land-surveying, &c.; that part of these examinations was by word of mouth, and part in writing, that all the abstruse theorems and problems were proposed in writing, to which the candidate was required

to



to give written answers, and that this method allowed him time to reflect on the subject, to arrange it in his mind, and to revise and correct his piece as often as he pleased. Deshautschamps highly approved of this mode, and said he would spare no pains to have it introduced. These examinations were public, though I very seldom found that foreigners, and those who were not in some measure connected with the Polytechnic School, were present.

## LETTER VI.

SCHOOLS FOR PUBLIC SERVICES, VIZ. FOR THE CONSTRUCTION OF ROADS AND BRIDGES, FOR MINERALOGY, GEOGRAPHY, SHIP-BUILDING, ARTILLERY, FORTIFICATION, NAVIGATION, &c.

*School-house formerly a Palace—Collection of Models—Library—Course of Study and Salary of the Students—Mineralogical School and Collection—Professors—Laboratory—Learned Ladies, not always pretty and neat—Gravimeter, not equal to a good hydrostatic Balance—Instrument for measuring the Angles of Crystals—Instrument for ascertaining small Degrees of Magnetism and Electricity—Geographical School—School for Naval Architecture—Marine Depository—Artillery Schools—Fortification School—Marine Schools.*

IN the preceding letter, I have given an account of the Central Schools, and of the excellent management of those called  
th

the Polytechnic. When any one has punctually attended the Polytechnic schools for term not less than one year, and undergone an examination, he is then admitted to some of the "Schools for Public Services;" or, as they are sometimes called, "Schools of Application." The pupils, soon after their appointment, obtain a small emolument, and afterwards pass from thence to the service of the state, when an opportunity occurs. These Schools of Application are for *the construction of roads and bridges, for mineralogy, geography, ship-building, artillery, fortification, and nautical affairs.*

The School for constructing Roads and Bridges, is situated in the *Rue Grenelle*, and was formerly a palace of the Duke de la Chatel. It is disposed and embellished with consummate taste and magnificence; and contains a number of excellent apartments: the style, indeed, of the building, especially of the two saloons in front, is not very consistent with the modesty of a public school, but

but this congruity would be dearly purchased, by reducing the grandeur of the edifice to a level with its present use. Frudaine was, in the time of monarchy, the first founder of this school. Peronnet, author of an excellent work, entitled "*Description des Projets et de la Construction des Ponts*,"\* has since greatly contributed to its improvement. The busts of both those able men, the first of bronzed plaster, and the other of marble, are set up in the school-room.

Two of the apartments are appropriated to the museum, in which are not only draughts, but also models of buildings and machines, which relate in any respect, to the construction of roads and bridges, such as all sorts of rammers for driving vertical and inclined piles, five different models for

\* The first edition of this work consisted of two volumes in folio; the second and improved edition is in quarto, and the improvements have been printed in folio, for the accommodation of such as were in possession of the first edition.



sawing piles under water, in imitation of an English machine, which is very simple, cheap, and certain in its effects; various models of machines for raising water, of forcing pumps, and of sluices for canals; also models of the most remarkable bridges on the large rivers of Europe, of bridges formerly built in France, chiefly by Peronnet, and of the *Pont Neuf* at Paris, which is built very flat, and is uncommonly strong; models of the bridges at Neuilly, Nantes, Orleans, Branoi, Nonnettes, Bicherot, &c. together with draughts and models of every thing that relates to nautical architecture, some of the most remarkable of which are the caissons at Cherburgh. These have not fulfilled the public expectation; because, as Prony supposes, they have been badly executed. Though, however, the basons are small, and completely filled, yet the anchorage within the cones is tolerably secure. All these models of the school for the constructing of roads and bridges are neat, accurate, and excellent: they are placed in the most beautiful order,  
and

and there is in no country whatever, a finer and more complete collection.

The school has a fine library of about two thousand five hundred volumes of good mathematical treatises, chiefly relating to hydrostatics, hydraulics, water-works, roads and bridges. In the four rooms for instruction, the students are taught the elements of physics and mathematics; and to draw plans and sketches of roads, bridges, canals, harbours, and all kinds of buildings connected with them. They also learn to superintend the actual construction of buildings, to manage the expences, and take an account of the annual rents. The number of students was fifty, thirty-six of whom had a pension of seventy franks per month, or eight hundred and forty franks per annum. Their course of study is usually completed in two years; before they quit the school, and frequently whilst they reside there, they undergo examinations and are obliged to resolve problems and questions, relative to the practical part of their

their profession. Prony shewed me some of these questions; most of which were difficult, and related to roads, bridges, sluices, &c. The solutions were accompanied by excellent drawings of plans and sections, and with exact calculations and circumstantial accounts of the expences attending them. The present managers are the directors Chezy and Prony, and the inspector Le Sage, who exert themselves to the utmost, in preserving every thing in a state of order and activity.

The Mineralogical School, No. 293, University-street, has a large and rich collection of minerals disposed in glazed cases. The collection occupies six different apartments, and is divided into the three following classes: 1. The docimastic collection. 2. A geographic collection of French minerals. 3. An oryctognostic or systematic collection, illustrated by models in wood of the principal varieties of crystallization, after the system and discoveries of Haüy. The geognostic collection is included in the

the three former. There are also deposited here collections of draughts and models of mines, and of tools, instruments, and machines for the use of miners. The appointed number of students is twenty. Haüy is keeper of the cabinet of minerals, and Vauquelin superintends the chemical department. Clouet is librarian and teacher of the German language.

The lectures for the 7th year, or winter of 98-99 are the following :

*Baillet*, inspector of the schools, lectures every first and sixth day of the decade, on the art of mining.

*Hasenfratz*, inspector, lectures every second and eighth day on mineralogy and metallurgy.

*Vauquelin*, inspector, lectures every third and seventh day on docimacy.

*Brongniart*, the younger, lectures every second and eighth day on mineralogy.

*Clouet* teaches drawing, Clouet the German language, and Lefroy descriptive geometry.

The



The celebrated and learned *Dolomieu* is both inspector and lecturer of the mineral school ; but he and two of the best students are in Egypt. The lecturers deliver their instructions in winter only : the summer being generally spent in making experiments at the laboratory, or in making tours to the various mining districts. This school has an admirable laboratory belonging to it, under the inspection of Vauquelin ; the same who, in conjunction with Fourcroy, has made so many noble discoveries in modern chemistry. Vauquelin was not present, the first time I was there ; but two sisters of Fourcroy, who live at Vauquelin's, were so good as to shew me this beautiful laboratory. They seemed to be well informed of every thing there, and told me, that they often assisted their brother and Vauquelin in chemical operations ; but the old saying, that *learned females are not always the handsomest and neatest*, was verified in the persons of both those chemical ladies.

The chearful, kind, and obliging, Haüy  
resides

resides at the Mineral School, as do also most of the inspectors and lecturers. On my first visit, I found him engaged in determining the specific gravity of a calcedon by means of Guiton's gravimeter. This instrument is an improved areometer. The body, whose weight is to be determined, is first put into the upper scale above water, and afterwards into the lower under water, and in both circumstances the areometer is introduced, and sinks to a certain mark, observed on the glass or slip of wood affixed. If my memory do not fail me, this instrument is described in Gren's Physical Journal, and is very much like the areometer of Haüy and Nicholson. It is made either of glass only, or with a thin piece of metal, affixed by the ingenious glass-worker Betaly. That of glass, by which one can determine the weight of twenty gramma, or three-fourths of an ounce, costs thirty-six franks, or thirty shillings.

This instrument has several defects.

1. Small

1. Small articles cannot be weighed by it. 2. It is very difficult to determine whether the mark is above or under the exact surface of the water. 3. The weight can scarcely be determined, to any certainty, nearer than one-sixth or one eighth part of a grain. In my opinion, the specific gravity of bodies can be determined with greater accuracy, by means of a good hydrostatic balance.

The figures of crystallized bodies were investigated, and in some degree determined by Delisle. Haüy has since thrown much light on the subject. He has contrived an instrument for measuring the angles of crystals, which consists of two small wires moveable about a fine pin. The one carries a finely graduated scale, or angle-measurer, and the other extends over the scale; so that when the angle of the crystal is included between those two wires, the scale measures a space equal to the vertical angle. There is also a mechanical contrivance, which fixes the limbs till

G

the

the instrument be taken off the body, in order to observe the magnitude of the angle. Haüy has discovered a method of determining the forms and angles, not only of particular salts, but also of stones, earths, and metals, and he has exhibited beautiful specimens of this method, as practised on subjects in his own collection. He took a regular piece of quartz, and, from different examinations of the exact measurement of the space it occupied, immediately derived the crystalline structure of the body, which is two opposite pyramids, whose common base is a rectangle differing little from a square. A man resides in the school, whose employment it is to cut in wood, the different forms and figures of crystals, under the direction of Haüy.

Thus has Haüy brought mineralogy, by the figures of its objects, and his own calculations, under the dominion of geometry. He has published a Journal of mineralogy (*Journal des Mines*) and Coquebert has edited his *Instructions to the Students at*  
the



*the School*; but these works have not yet reached the hands of the booksellers.

Haüy is at present engaged on an extensive and complete system of mineralogy, in which he gives the character of every mineral as depending: 1, on external appearances; 2, on the forms and figures of its crystals; and 3, on chemical analysis and synthesis. He had seen some letters and minerals from Professor Abildgaard, in the hands of Mr. Ingverfeu. Both the gentlemen were particularly interesting to him, and he often testified the greatest respect for the merit of our countryman. I introduced to Haüy, Dr. Engellstoft, Mr. Horneman, and Mr. Bang; and he seemed very ready to render any service in his power to this promising young man. The Danish minerals presented to him he has already analysed, and has determined not only their physical, but their geometrical, properties.

Haüy had a pair of small instruments for

ascertaining minute degrees of magnetism and electricity. On a small round stand is fixed a well turned steel pin, an inch in height; and on this point, or pin, is placed a moveable needle, repeatedly magnetised, and about two inches in length. He took different iron ores, which he arranged in a straight and apparently exact line, coinciding with the required polar line, making thereby, in fact, a collection of several small and weak magnets. When, for instance, the crystallized iron ore from Norway is used, in order to ascertain the small degree of electricity, a brass needle is put instead of the magnetized one. Before the needle and in a line with it, must be laid a piece of rosin barely electrified, and over it a stick of sealing wax. This is a negative electric; and, since every body which comes into a negatively electric atmosphere, becomes positively electric, the needle will be positive. Haüy shewed me very clearly that different kinds of stones, by being heated,

heated, become electric, showing the positive electricity by repelling the needle, and the negative by attracting it.

Before I close this account of the Mineralogical School, I must observe, that this was to be only a theoretic school ; that a practical school was to be established in a mining district ; and that Giromagny, in the department of the Upper Rhine, was the place fixed upon ; but this school has not been yet organized. The Mineralogical School at Paris has, in the mean time, been regulated and modified in such a manner, that it unites the objects of a theoretic and a practical school. There is annually published, by the professors of this institution, a very important work, entitled "*Journal des Mines.*"

The Geographical School, under the direction and management of Prony, is attended by twenty students, who are taken from among such as have completed their course in the Polytechnic. Here they are taught every branch which relates to the

measurement of land, the drawing of maps, and such problems as occur in trigonometry, astronomy, and mathematical geography. The students then proceed to a finished method of planning, and to make astronomical observations, which they apply to the determination of latitudes, longitudes, and meridian lines; and to the construction of geographical maps. The students undergo an examination in all these subjects, before they quit the school.

The School for Naval Architecture is in the *Rue Dominique*, No. 1016. This institution existed at Paris long before the Revolution, and the managers admitted whomsoever they pleased. But this custom has been altered, and no one can be now admitted, who has not first studied at the Polytechnic. The students have each 1500 francs per annum, and are taught mechanics, hydrostatics and hydraulics, as far as they relate to naval affairs; to draw plans and sections of ships of war, to give an exact account of their expence, and even  
to



to superintend the building of them. This school is obliged to admit annually, from among the private merchants, five pupils who are also instructed in naval architecture.

The students had formerly their drawings at the Louvre, where the National Institute is now held, and where is still to be seen a collection of naval models. But in lieu of this place, they have at present a *General Marine Depository*, in *Rue Vendome*. This situation is a much finer one, and the present depository contains a more elegant and useful collection of naval models and drawings. Borda and Dudin are directors of this school, and Laplace is the examiner, Tilts is professor of mathematics, and Pomet of architecture. Deparcieux lectures on physics, and Fourcroy on chemistry, and Daubenton teaches the students drawing. I must confess that there is too much of physics and chemistry delivered here, when it is considered, that the students are all from twenty to twenty-four years of age,

and have attended to both subjects, not only in the Central School, but also in the Polytechnic; so that they must have necessarily acquired sufficient knowledge of them, and their studies might now be more advantageously conducted, than in attending to these sciences a third time.

*Artillery Schools.* The great preparatory school, for students in artillery, is at *Chalons sur Marne*. The directors of the school are a *chef de brigade* and a *chef de bataillon*. There always reside in this school two captains of artillery, a lecturer on physics and chemistry, two on mathematics, two on fortification, and a drawing master. Laplace is the present examiner. Those students who wish to enter into the artillery service, are obliged to study for at least two years at the Polytechnic. They then enter, after a close examination, into the regiment of artillery; but must still prosecute a necessary and extensive study of drawings, fortifications, and the warlike preparations connected with the artillery service,

service, in the School of Application belonging to their respective regiments.

The following is a list of the Schools of Application, with the places where they are established. The first school is at La Fere, the second at Besançon, the third at Grenoble, the fourth at Mentz, the fifth at Strasbourg, the sixth at Douai, and the seventh at Auxonne. In each are a teacher of the mathematics, a private teacher and a drawing master; and every school is placed under the inspection of a general of brigade of the artillery. There are to be two more artillery schools, one at Thoulouse and the other at Rennes, but they are not yet organized. The artillery school at *Chalons* is to continue in its present state till peace be concluded, when it will undergo a new regulation, and it is supposed that the preparatory school will be removed to Paris.

*The Fortification School*, with which that of the *Miners* is united, is at Metz, and established in the *ci-devant* abbey of St. Ar-

nould. The number of pupils is not to exceed twenty: they must be all taken from the Polytechnic, and, when examined and admitted into this school, are immediately made second lieutenants, and receive the pay due to that rank. Here they are taught to apply their theoretic knowledge in founding, and actually building, works of defence and fortification, in mining and countermining, in defending and besieging places, in drawing military plans and maps, and in every art and science which belongs to the business of an engineer, both in fortified places and in the field. The School at Metz is under the inspection of a general and two *chefs de brigade*, who all three belong to the department of fortification.

The Marine Schools are established at Brest, Toulon, and Rochefort. The students are admitted into them after previous examination in arithmetic, algebra, geometry, statics, and navigation. I have not been able to procure any certain account of the



the number of scholars, or of their plan of study. It was proposed and ordered, that a corvette should be annually equipped for different expeditions, with students on board, who should be instructed in rigging and unrigging a vessel, and taught by practical knowledge and experience, every thing which belongs to the duty of a mariner. But the war has in some measure obstructed the execution of this commendable decree.

The Navigation Schools are intended for teaching mathematics and hydrography both to officers in the navy, and those of merchant ships. By a decree of the 30th of Vendemiaire, in the fourth year, "these schools were to continue in the state in which they had hitherto been," and the Marine Minister was directed to establish two other schools, one at Morlaix and the other at Arles.

## LETTER VII.

SCHOOLS FOR MEDICINE, PHARMACY, AND  
THE FINE ARTS—THE FRENCH COL-  
LEGE.

*Medical School—Collections of anatomical Preparations, &c.—Philosophical Apparatus—Library—Amphitheatre—Lectures—Students from one Thousand to one Thousand two Hundred—Free School for Pharmacy—Military Hospital—Lectures there—Free School for Painting—National School for Architecture—French College—Lectures there—Public Assembly of it, and Proceedings on the Occasion—Hint to Ladies to make themselves useful, by visiting and attending the Sick.*

THE Medical School is very beautifully situated in *Rue des Cordeliers*. It contains—1. A great number of excellent anatomical

anatomical preparations, and imitations made of wax ; 2. A valuable collection of surgical instruments ; 3. A small philosophical apparatus ; 4. A large library, consisting of works on physiology, chemistry, anatomy, surgery and medicine ; 5. A truly magnificent lecture room, or amphitheatre ; and 6. A beautiful chemical laboratory and reading room. The lecturers are two in number to each of the following divisions : 1. Anatomy and physiology ; 2. Medical chemistry and pharmacy ; 3. Internal pathology ; 4. External pathology ; 5. Natural history and botany ; 6. Medical operations ; 7. Treatment of internal clinical cases ; 8. External clinical cases ; 9. Modern improvements in treating such cases ; 10. Midwifery ; 11. *Medicina Florensis*. There is but one professor in each of the remaining divisions. 12. History and description of rural accidents ; 13. Medical bibliography ; 14. *Materia Medica* and surgical instruments.—There are besides, a draughtsman and modeller in wax. A room  
is

is now building for the library ; in the place where the books now are, the anatomical preparations will be deposited, and more convenient apartments will be appointed for the surgical and philosophical instruments, and for the objects of the *Materia Medica*. This school is carried on with great industry, and the number of students amount to from one thousand to one thousand two hundred.

The body of apothecaries of Paris, in the year 1777, were formed into a regular college. They have a laboratory and a botanic garden in the *Rue de l'Arbalète*, where lectures are publicly delivered on chemistry, pharmacy, botany, and natural history ; and at the annual close of those lectures, premiums are bestowed on the most able and diligent students. In the fourth year of the Republic, the college formed itself into a free society, for the cultivation of the scientific pursuits connected with their profession, and admitted members from all the departments of France, and even from hostile countries.



countries. By a decree of the 3d Prairial, in the 5th year, the Directory, in a message to the minister of the interior, approved and confirmed its system of public instruction, and gave it the name of *The Free School of Pharmacy*. In this school are two lecturers on pharmaceutic chemistry, together with an honorary professor and an adjunct; two on pharmaceutic natural history, and the *Materia Medica*, with an adjunct; and two on botany, with an adjunct. This free Pharmaceutic School consists at present of one hundred and twenty-three regular, and fifty-two corresponding, members. A journal is published by this society, under the title of "*Journal de Pharmacie*." To the class of institutions for surgery and medicine, is to be annexed *The Military Hospital for Instruction* in Rue St. Jacques, not far from the National Observatory. It was formerly that well known and beautiful building *Val de Grace*.

According to the Programma, or account of the institutions, the following lectures  
were

were delivered there, in the 7th year, or from the 22d of September, 1798, to the 21st of September, 1799. The first, or winter course, consisted of, 1st, Anatomy, with physiological observations, by Huttier; 2dly, Internal pathology, by Chairon; 3dly, Practical medicine, and particularly clinical cases, by Gibbert; 4thly, Practical surgery, by Barbier; 5thly, Natural history, with reference to the *Materia Medica* and pharmacy, by Perinet. In the summer half year were explained, 1st, Pharmaceutic chemistry, by Brougniart; 2dly, Observations on gun-shot wounds, by Dufouart; 3dly, The diseases and setting of the bones, by Huttier; 4thly, Botany, by Barbier, who takes botanic excursions with the pupils.

Clinical lectures are read by all the six professors in medicine and surgery, with medical conferences and prescriptions in the morning; and, in the afternoon, consultations are held, on clinical diseases, in the amphitheatre.

In the last decade of Thermidor, or  
about

about the middle of August, a general examination of the students take place, in order to confer premiums on such as have distinguished themselves by assiduity in the service of the hospital, or by attending the lectures and acquiring knowledge.

The Free School for Painting is in *Rue des Cordeliers*. This patriotic institution was established thirty years ago, and was at first a private foundation for instructing in the principles of drawing, one thousand five hundred children, intended for artists or professors, but it is now rendered quite general. Every first, fourth, and seventh day, of the decade, the students are taught arithmetic, practical geometry, statuary, perspective and architecture; every second, fifth, and eighth day, they paint men and animals; and every third, sixth, and ninth day, they draw flowers and ornaments. Of this school there are two directors, who manage its concerns, a cashier and five lecturers.

The

The National School for Architecture is at the Louvre, or National Palace for Arts and Sciences, and consists of a professor of geometry, who, at the same time, shows the application of that science to architecture, and of a professor, whose business it is to teach architecture in particular, with its subsidiary arts.

The French College is situated in the *Place de Cambray*, close to *Rue St. Jacques*, and is a very ancient institution. Lewis the Twelfth, and Lewis the Thirteenth enlarged it, and either repaired or new built most of the present edifice. This college is the only institution of the kind which has not undergone some change during the revolution. To give you an accurate idea of what is taught here, I shall subjoin a list of the lecturers for this year, 1799, in the order communicated to me by Lalande.

*Jerome de Lalande* is inspector of the College and professor of astronomy. All the parts of astronomy, with their use in navigation,



gation, are explained by that distinguished master, or in his absence, by Francis de Lalande.

*Manduit*, professor of geometry, lectures on that science, and on trigonometry and algebra.

*Cousin*, professor of theoretic physics, lectures on the *Analysis Infinitorum*, with its applications, particularly to mechanics.

*Lefevre Gineau*, professor of experimental philosophy, gives a complete course on that subject.

*Boerchart*, professor of medicine, explains Stoll's aphorisms on fevers and feverish diseases.

*Portal*, professor of anatomy, lectures on the causes and seat of diseases.

*Darcet*, professor of chemistry, explains the chemical analysis of different substances.

*Daubenton*, professor of natural history, discourses on that science, at the museum in the botanic garden.

*Bouchard,*

*Bouchard*, professor of natural and popular laws, expounds political rights.

*Levesque*, professor of history and morality, delivers a course of lectures on the history of Greece, political, literary, and philosophical.

*Riviere*, professor of the Hebrew and Syriac languages, expounds the text of the fourth and fifth books of Moses.

*Caussin*, professor of the Arabic, teaches his pupils to read and write that language, and to translate Lockman's fables, and a part of Bilpai's moral and political work.

*Perille*, professor of Turkish and Persian, or in his absence *Sylvestre Lacy*, explains the first principles of the Persian language, Hafez Oder, and the Expedition of Diamis Beharistan.

*Bosquillon*, professor of Greek, delivers philological commentaries on the Prognosticon of Hippocrates; and *Gail*, professor of the same language, expounds the *Corona* of Demosthenes.

*Dupuis*

*Dupuis*, professor of Latin eloquence, and in his absence, *Gueroult*, interprets *Tacitus De Oratoribus*.

*Delisle*, professor of poetry, or in his absence, *Selis*, explains the principles of poetry in general, and of epistles in particular; he expounds most of Horace's epistles, and compares that poet with Boileau, Rousseau, Voltaire and Pope.

*Courand*, professor of French literature, treats of French literature, as compared with that of Greece and Rome, beginning with French fables. Each of the above-named professors delivers four lectures in every decade.

It is evident, from the nature of this institution, and of the lectures delivered, that in France the utmost attention is still given to Grecian, Roman, and Oriental literature. But as the youths are only initiated in the languages, at the Central Schools, the professors, at the French College, are under the necessity of beginning with the first principles of language, and of course

can

can make but a slow progress. Of these seventeen professors, six, together with the inspector, live in the College. In the Central Schools also, several of the professors reside on the spot.

By an invitation of Lalande, I was present on the 26th Brumaire (16th November), at a public assembly of the French College. A meeting of this kind is annually held at the commencement of the lectures. The *Auditorium* of the College is a large and elegant hall, beautifully painted. The ceiling, in particular, is covered with this fine species of decoration. In the middle of the hall, is a very long table covered with cloth, about which are seats for the minister, professors, and visitors. On both sides of the table, there are forms for other hearers; but these are inconvenient, and rather too far distant, so that one cannot come sufficiently forwards. The hall was tolerably well illuminated; but such a strong and disagreeable current of air passed through it, that the wax candles, both in the chandeliers



liers and on the table, melted away before they were half burnt, and the meeting, near its close, was almost in the dark.

About seven o'clock came *Francis de Neufchateau*, Minister for the Interior, attended by the professors of the college, and he took his seat at the head of the table, on the right of the inspector De Lalande. The minister appeared in his public dress, and was accompanied by his adjutants, officers, and other attendants. *Lalande* opened the meeting with an oration, or rather a *prælectio*, in which he briefly enumerated the lectures on different branches of science, which were to be commenced. He then exhibited a few biographical sketches of some of the deceased lecturers of this college; and proceeded to give an account of his astronomical labours, and of the many thousands of telescopic stars which he had observed, in conjunction with his nephew, Francis Lalande. Much of his discourse was taken up with separate narrations, which unavoidably produced frequent and abrupt transitions.

transitions. The history of astronomy cannot be unknown to those who read the *Connoissance des Temps*, much of the contents of which had already appeared in Zach's Geographical Ephemeris: as an instance, we may mention the account that Dr. Burchardt, who resided a year with Lalande as a student in astronomy, had calculated to a day, the orbit of a comet.

C. *Depuis*, author of *Origine de Cultes*, recited some historical accounts of the Pelasgi, in which he introduced rather violent fallies against kings in general, and against all states which were not republics, interlarding, however, his philippic with some strong eulogia on Bonaparte, and several compliments to Francis de Neufchateau. Most of the gentlemen who spoke offered to that minister some incense of commendation, which indeed the worthy man perfectly merited. But, from what passed, one might see that the *captatio benevolentiae* exists in republics, as well as in monarchical governments.

Bosquillon

Bosquillon recited some aphorisms of Hippocrates ; but his delivery was bad, and his voice so indistinct, that I could not comprehend the whole of his meaning.

Delisle recited part of a poem on Youth, a work on which he is at present engaged.

The mathematician, Couffin, read a pleasing essay on Benevolence towards the Poor and Sick. He particularly wished that *the Ladies would make themselves useful by visiting the sick, and even by attending the hospitals.*

Gail, professor of Greek literature, recited a tract on the Spartan Republic, being part of a work which he intends to publish : he concluded with several translations from Anacreon. Gail's genius appeared to much better advantage, in historical and prose composition, than in poetry.

The whole hall was crouded with auditors, among whom was a party of ladies, who, by clapping of hands, assisted in applauding the speakers, and particularly Couffin, who introduced into his discourse

H

some

some beautiful sketches, and admirable traits of the liberality and tenderness of the fair sex.

The French College has a collection of philosophical instruments, the greatest part of which formerly belonged to the old institution. This college has also an observatory ; but I must defer the description of it till another opportunity, when I shall give an account of the great national observatory, and others of less note, which I have visited at Paris.



## LETTER VIII.

THE NATIONAL MUSEUM OF NATURAL  
HISTORY.

*Library, Menagerie, &c. of this Museum—  
Its Botanic Garden—English said to have  
seized Baudouin's Collection, which their  
Government had promised to protect—Gal-  
lery for Natural History—Vaillant's fru-  
gal Present to the Museum—Diamond sto-  
len from it—Collection of Quadrupeds, Ze-  
bra, Elephant, &c.—Directorial Palace—  
Collection of Skeletons—Library of Bo-  
tany, &c.—Paintings and Drawings of  
Animals and Plants—Menagerie for wild  
and tame Animals—Lecture Room, a real  
Amphitheatre—Lecturers and Officers—  
Statues of Linnæus and Buffon—Wanton  
Outrages of the Mob, at the Revolution—  
Dead dug up—Body of Turenne, still un-  
decayed,*

*decayed, shamefully exposed—Chests still unpacked, filled with Curiosities from the conquered Countries.*

THE National Museum of Natural history was formerly called *Jardin du Roi* ; but received its present name by a decree of the National Convention of the 10th of June, 1793. One end of it extends to the *Seine* : it consists of a botanic garden, library for natural history, a menagerie, or collection of foreign animals, and an amphitheatre, or lecture room.

The botanic garden which belongs to it is three hundred and twenty toises, or fathoms, long, and one hundred and ten in breadth. It is partitioned lengthways, that is, from its entrance down towards the *Seine*, by three very fine alleys ; and intersected across by various others, which terminate in the public *promenades*, or walks. The different square divisions thus formed, are used for plantations, and are at present all inclosed with rail-work. The green-house  
and

and orangerie were formerly in pretty good order, and separated into rooms and spaces. But a new green-house and orangerie are now additionally erected, and they are very conveniently disposed. Here is a great abundance of foreign plants and trees, and from hence all the botanic gardens of the Central Schools are supplied with seeds, and with trees, as soon as they can be transplanted. From the same highly cultivated spot, the cultivators of land can procure œconomic and nursery trees, and even the indigent poor can obtain plants, when they can be spared.

Captain Baudouin, in his travels into different parts of the world, had collected a great variety of natural curiosities; and presented the whole to the nation, on condition that he should be furnished with a ship to convey them to France. The English Government consented that this ship should perform her voyage without molestation. Meanwhile the English had taken possession of the island of Trinidad, where

this extensive and famous collection had been left. When Captain Baudouin arrived at Trinidad, in order to bring away his collection, the English would not give it up, on pretence that their Government had consented to the safety of the expedition by sea, and not by land. However, this and the former expeditions were not altogether fruitless; for Baudouin has brought into the botanic garden about one thousand different kinds of live plants, besides assortments of seeds, and a considerable herbarium.

The gallery for natural history is a building situated on the right hand, as you enter the botanic garden from the street. On the second floor of this building are four large apartments, where fishes, birds, shells, insects, minerals, earths and stones are deposited on shelves, furnished with glass fronts. The inner apartment is allotted to vegetables, and contains specimens of trees, together with the herbarium of Tournefort.

Vaillant presented to the Museum a part  
of



of his birds. But several persons, who had certain knowledge of the fact, assured me, that Vaillant reserved for himself the most singular and curious.

The gallery is open to the public the first, fourth, and seventh days of every decade, when it is crowded by all sorts of people, who come there not for instruction, but merely to view the place, by way of amusement. A certain number of veterans and invalids are then stationed in different places about the rooms, in order to see that the drawers are not broke open, or the curiosities in any manner injured or destroyed. Before this regulation took place, a diamond was stolen from thence, in the time of the revolution. Every second, third, fifth, sixth, eighth and ninth days of the decade, this gallery is open for such only as are desirous of studying natural history.

The excellent Lacepede, who is not less kind and obliging than eminent for erudition, gave me a letter to Lucas, keeper of the gallery, who, with great civility, shewed

me every thing that was curious and remarkable in this museum, and particularly the collection of quadrupeds, which is never exhibited to the public. Here I had a second view of some singular objects, which I had seen at the Hague one and twenty years before, in the Stadtholder's collection, such as the sea-horse, zebra, elephant, orang-outang, and a variety of monkeys. There are likewise to be seen in this museum, a lion, a tiger, a leopard, an uncommonly large dog from the Pyrenees, and a fine skeleton of a camelopard, whose height from his forefoot to the top of his crown is sixteen feet.

All these and many other quadrupeds, and some large birds, are exhibited to view in an apartment on the third floor, or rather on a part of the garret formed into an apartment. The remaining part of the floor has the appearance of a large hall; above are sky-lights, and on each side are dens for wild beasts.

The Directorial Palace, formerly *Palais de*

*de Luxembourg*, is arranged with the utmost conveniency and grandeur, and is now the residence of the Five Directors. All the window glass which the great manufactory at Paris had made for some time, was ordered for that building. But the Directory had so much respect for science, as to part with whatever glass was wanted for the cases of the gallery for natural history ; so that this large hall was soon fitted up with all the state and magnificence in which it now appears. In the building where Cuvier now resides, is a choice collection of skeletons of men, quadrupeds, and birds.

It must be observed, that as natural history and botany are almost unlimited, the descriptions which I give of the natural treasures of the garden, green house, and gallery, cannot but be superficial.

Two very promising students of natural history now reside in Paris ; M. Neils Hoffman Bang, and M. Wilken Horneman, who has published, and received a premium for, his descriptions of Danish plants. Both

the gentlemen attend the museum and garden, and are intimately acquainted with the French naturalists, Jussieu, Lacepede, Lamarck, Cuvier, Brogniart, Thouin, and others; and they certainly intend to publish their observations on the museum and the botanic garden.

The library, which is on the second floor, by the side of the gallery, contains from nine to ten thousand volumes, relating to botany and several other branches of natural history. On the walls are hung several very masterly paintings of plants and animals, executed by the students at the museum. All remarkable plants and animals are drawn on vellum paper, and laid up in common bindings: the number of parcels of this kind is very considerable. This library was formed in the time of Lewis the Fifteenth, and has been continually increasing. It is open every day, excepting decade days, from eleven till two o'clock.

The menagerie seems to be separated into two parts, the one for mild animals,  
and



and the other for the wild and ferocious. Between two of the long alleys, on the right hand, as one enters from the city, and about the middle of the garden, are inclosures of very fine railing, within which are the mild animals, such as camels, dromedaries, African oxen, East Indian deer, several kinds of sheep, Angora goats, &c. &c. some of which have even propagated their species in this garden. The other part of the menagerie is for ferocious animals, which are kept on the left hand side, in a low building with different apartments. Here are a lion, four lionesses, a white bear, and several Alpine bears (which formerly had free possession of the state den of Berne, but now inhabit that of Paris,) a wolf, an African porcupine, sea bears, &c. It is remarkable that there is a dog here which continually lives in company with a young lioness.

In a large cage are contained different birds of prey: such as eagles, griffins, hawks, storks, &c. On the left hand, on

entering the garden, and behind the green house, are several buildings. In one of them are two grey elephants from Holland; and in another, two ostriches, a cassowary, and some antelopes. In other parts of the garden, are inclosures for land and sea fowls, and three ponds of spring water for fishes.

The amphitheatre is a remarkable building, which faces the garden on the left side. This lecture room indeed is an amphitheatre in its true acceptation, that is, the forms are all constructed in semicircles, and rise regularly one above another. At the centre below stands the lecturer. I attended a lecture on chemistry, delivered in this amphitheatre, by Brogniart. It was difficult to hear and understand him; but I cannot say with certainty, whether the cause was to be looked for in the voice of the speaker, or in the construction of the building. I was, however, rather inclined to ascribe it to the latter, as the voice must necessarily be confused by reverberation. In  
the

the same building there is a chemical laboratory.

The superintendants of this museum are Jussieu, who is principal director and professor of rural botany, and the following managers, viz. Daubenton, professor of mineralogy; Fourcroy, of general chemistry; Brogniart, of technical chemistry; Desfontaines, of botany; Geoffroy, of the zoology of quadrupeds and birds; Lacepede, of the zoology of reptiles and fishes; Larmark, of the zoology of insects, worms, and testaceous animals; Portal, of human anatomy; Mertrud, of the anatomy of animals; Thouin, of gardening; Faujas, of geology; Vanspaendonck, of ichnography, and who also teaches the students to take sketches of animal and vegetable objects, &c. Cuvier is adjunct in the anatomy of animals. All these professors deliver their public lectures in rotation, and in the summer months only. The other officers consist of a principal and sub librarians, two keepers of the gallery for natural history, a gardener

gardener and a secretary. The assistant professors are, one in mineralogy, two in zoology, and one in botany. Two Captains constantly keep guard with their veterans at the museum. Most of the professors and officers have a free residence in buildings belonging to this museum.

There formerly stood in the library of the museum a statue of the celebrated Buffon, of Parian marble, and as large as life. During the jacobin government, it was taken down, but preserved from damage. It is said that it will be restored to the former honourable situation, deservedly due to the inanimate representative of Buffon, whom the French have generally named the second Pliny.

Just below the entrance from the city into the botanical garden, and on the left hand, there is to be seen a plantation of trees and shrubs, which rise up to a considerable height, and have a beautiful appearance. In this fine grove formerly stood, under a noble cedar of Libanon, a marble bust



bust of Linnæus, the Swedish naturalist, and the inventor and founder of the modern system of natural history. This bust was destroyed, at the time when the *peuple souverain* amused themselves with spreading ruin and devastation. The cedar of Libanon, either by a cannon ball or some other violence, then lost its majestic top. Those Vandals destroyed every memorial and monument, without any discrimination whatever. They even demolished the tombs, and dug up the bodies, of the most meritorious of their countrymen; not exempting that of the great Turenne himself, who had been, more than once, the deliverer of France. His sacred remains, in which was still visible the wound of the cannon ball by which he fell, in the service of his country, were treated by those barbarians in the most inhuman and contemptible manner. The mortal part of that great General lay in the museum, shamefully exposed among the skeletons of quadrupeds and birds; till it was removed by the orders of Francis de Neufchateau,

chateau, and placed in an apartment of the amphitheatre, where it is set upright in a glass case.

Before I take my leave of the Muséum for Natural History, I must observe, that it contains a great number of chests still unpacked, which are full of curious objects brought hither from conquered countries. I have been told by men, who had every opportunity of being well informed, that those chests inclose a collection as interesting and extensive as that already deposited in the museum, in which there is no room for more objects without additional buildings.

## LETTER IX.

THE CENTRAL MUSEUM FOR ARTS AT PARIS, AND THE MUSEUM FOR THE FRENCH SCHOOL AT VERSAILLES.

*The Central Museum, a general Collection of Statues, Paintings, &c—Entrance—Gallery of Apollo—Picture Gallery five hundred feet long—Pictures and Statues from Italy, greatly injured on the Journey—Catalogues of Paintings brought from Italy, &c. which greatly exceeded the Author's Expectations—Saloon of Lacoön to be prepared—Exhibition of the Works of French Painters, Statuaries, Draughtsmen, and Engravers now living—General Museum for French Paintings.*

NEAR the Louvre, or National Palace for Arts and Sciences, is a building appropriated to collections in the fine arts of drawing,

drawing, painting, and sculpture, under the name of the *Central Museum of Arts*. All the foreign pieces of art formerly seen in France, together with the paintings and statues which have been since acquired from Belgium, Lombardy, Venice, Rome, and other States, either by the force of conquest, or by express conditions in treaties of alliance and neutrality, are now formed into one general collection. The large and strong four-wheeled carriages which brought those subjects of art from Italy, are now standing in the garden of the Louvre.

The entrance to the Museum of Arts is from a large square in front of the Louvre, and close by a corner formed by this square and that palace. All the way in entering, statues of bronze, and busts of marble, are presented to view in porticoes. In the front room, among other pieces of sculpture, are four beautiful colossal slaves, which once stood by the pedestal of the statue of Louis XV. in the *Place des Victoires*. Below



low the entrance into the stair-case are several statues, which have been brought from Italy, and on the different landing places of these noble stairs, are various fine models of Gibbs. On entering the second floor there is a large front room, or saloon, with sky-lights at top. On the left hand is the gallery of Apollo, containing only sketches and some crayon paintings, most of which were brought from Holland, Belgium, and Italy. On the right hand, is an excellent and singularly extensive picture gallery. It is a room of no less than five hundred feet in length, and was formerly filled with paintings, small statues, busts, idols, vases, mechanical contrivances, mathematical and philosophical instruments, models of buildings; and, in short, it was that kind of disorderly jumble which some virtuosos are fond of amassing, in what they call a cabinet of curiosities. This great gallery is at present undergoing an alteration and new arrangement, on which account it has been shut up for the whole summer.

The

The managers of this museum announced, on the 18th Brumaire, in the seventh year, “ that they had made considerable progress “ in arranging and putting into proper “ points of view, the paintings produced by “ the Flemish and French Schools, in a “ part of the great Gallery, which they “ intend opening as soon as possible ; that “ they will then publish a new catalogue or “ explanation of the paintings in the gallery of Apollo, and will work with all “ possible dispatch, in preparing the place “ where the Italian statues are to be exhibited to public view.”

The Italian paintings have been publicly explained in two catalogues. The first of which extended from the 18th of Pluviose to the 30th of Prairial, sixth year, (from the 6th of February to the 18th June, 1798,) and included the pieces brought from Lombardy, that is, from Parma, Piacenza, Milan, Cremona, Modena, Cento, and Bologna. To this catalogue have since been added, some Italian pieces from Versailles,

in

in order to collect the whole Italian school into one point of view.

The managers have had the candor to acknowledge, that some of those master-pieces of art are in such bad condition that they cannot be exhibited. This seems tantamount to a confession, that they have been much injured on the journey, if not totally abraded and destroyed. In particular, it is known, that an excellent portrait of Raphael, by Foligno; the Holy Virgin and some Saints, by Bellini; the repast at the house of Levi, by Paul Veronese; the Marriage of Cana, by the same master; St. Peter, the martyr, by Titian; and several of the statues brought from Italy, have suffered greatly from the length of the journey.

I shall subjoin the titles of the pieces mentioned in the first catalogue, or explanation, together with the names of the artists, and the places from whence they were brought.

*By*

*By Albani (Francisco) who died in 1660:*

1. The Birth of Mary, from Bologna.
2. Diana and Acteon, from Versailles.
3. Apollo with Admetus, do.
4. Cybele's Triumph, do.
5. The Holy Family, do.
6. Resting on the Journey to Egypt, do.
7. The Annunciation of Mary, do.
8. The same on a smaller scale, do.
9. Christ, as seen by Mary Magdalen, do.

*By Bellini (Giovanni) who died in 1512:*

10. His own portrait, his brother Gentil Bellini being included in the same piece, from Versailles.

*By Carraccio (Hannibal) who died 1609:*

11. Christ in Mary's arms, from the Capuchin at Parma.
12. St. Luke and Mary, from Modena.
13. The Resurrection of Christ, from Bologna.
14. Do. on a smaller scale, from Versailles.
15. Christ asleep, do.

16. The



16. The Birth of Christ, do.
17. Christ laid in the Tomb, do.
18. Abraham's Offering; do.
19. John preaching in the Wilderness, do.
20. A Concert, by Water, do.
21. The Stoning of St. Stephen, do.
22. The same designed and executed in a different style, do.

*By Carraccio (Augustin) executed in 1602.*

23. St. Cecilia and St. Magdalena, from Parma.
24. Mary's Ascension, from Bologna.
25. St. Jerome's Conversion, a masterpiece of Carraccio, taken from Bologna.

*By Carraccio (Ludovico) who died in 1619:*

26. Mary, Joseph, and St. Francis, from Cento.
27. Mary, as seen of St. Hyacinth, from Bologna.
28. The calling of Matthew, from Bologna.

29. The

29. The Interment of Mary, from Piacenza.

30. The Apostles at Mary's Grave, do.

31. The Annunciation of Mary, from Versailles.

32. Mary and the Child Jesus, do.

33. St. Bernhard delivering the city of Carpi, from Modena.

The Four Elements, painted by the three brothers Carraccio's.

*By Carraccio (Ludarg).*

34. The Earth, represented by Flora.

35. Water, by a Nymph sitting in a large muscle-shell, drawn by Dolphins.

*By Carraccio (Augustin).*

36. Fire represented by Pluto, and Hell.

*By Carraccio (Hannibal).*

37. The Air, represented by Venus sitting on a cloud.—The last four paintings were brought from Modena.

*By Cavedone (Giacome), who died in 1660.*

38. St. Petronius and St. Eloi, from Bologna.

*By*

*By Correggio (Antonio Allegri) who died in 1534.*

39. Mary, with the Child Jesus, St. Jerome, and Magdalen. This is the greatest master-piece of the art of painting. The King of Portugal, in the year 1749, bid for it 40,000 zechinas, or 18,000l. sterling: it was taken from Parma.

40. The Holy Family, resting on their journey to Egypt.—The King of Poland, in the year 1750, offered for this piece 20,000 zechinas, or 9,000l. sterling, from Parma.

41. The taking down from the Cross.

42. The Execution and Martyrdom of St. Placide and St. Flavia.—Both these pieces (41 and 42) are very excellent, and were brought from Parma.

*By Zampieri (Dominico) who died in 1641.*

43. Mary with a Bunch of Roses, from Bologna.

44. St. Agnes's Martyrdom, do.

45. David playing on the Harp, from Versailles.

46. St. Cecilia, do.

I

47. The

47. The cursing of Adam and Eve.  
48. St. Paul raised in a Trance to the Third Heaven, do.  
49. The triumph of Love, do.  
50. Mary and St. Antonius of Padua, do.  
51. Mary drawing water with a muscleshell, do.

*By Dossi, who died in 1560.*

52. The Circumcision of Christ, from Versailles.

53. Christ proclaimed to the Shepherds, from Modena.

54. Mary with the Child Jesus, from Versailles.

*By Herrari (Gaudenzio) painted about 1540.*

55. The Apostle Paul, from Milan.

56. The Birth of Christ, from Versailles.

*By Feti (Dominico) who died in 1624.*

57. Melancholy, under the emblem of a pale young lady, from Ecouen.

*By Titio Girolamo (Benvenuto) who died in 1559.*

58. His own Portrait, drawn by himself, from Versailles.

59. Mary,



59. Mary, St. Luke, and John the Baptist, do.

60. The Holy Family, from Bologna.

61. Another Holy Family, from Versailles.

*By Genhari (Cæsar) who died in 1648.*

62. Magdalen in the Wilderness, from Cento.

63. Mary's Marriage with Joseph, from Modena.

64. Mary with the Child Jesus, from Cento.

*By Bonzi (Peter Paul).*

65. Latona's Vengeance, from Versailles.

*By Barbieri (Franciscus Guérchin) who died in 1666.*

66. The Bliss of Paradise, from Cento.

67. Mary, Joseph, and several other Saints, do.

68. Christ giving the Keys of the Church to St. Peter, do.

69. Wilhelm, Duke of Aquitain, takes the cowl, from Bologna.

70. St. Francis and St. Benedict, from Cento.

71. St. Peter fastened to the Cross, from Modena.

72. Christ is seen by his Mother, from Cento.

73. The Execution of St. John and St. Paul, from Modena.

74. Mary's Visit to Elizabeth, do.

75. Mars, Venus, and Cupid, do.

76. The Circumcision of Christ, from Bologna.

77. Mary is seen by St. Bruno, do.

78. Trinity in Unity, or St. Gemini, St. Francis, and St. Sebastian, from Modena.

79. The Marriage of St. Catherine, do.

80. Salome with the head of John the Baptist, do.

81. Mary is seen by St. Jerome, from Cento.

82. The Virgin Mary with a Child, from Modena.

83. St.

83. St. Francis obtains an Impression of the Wound of Christ, do.

84. Mary, St. Germinius, John the Baptist, St. George, and St. Peter the Martyr, do.

85. St. Bernard receives from Mary the rules of his order, from Bosco.

*By Guido (Reni) who died in 1642.*

86. The compassionate Conduct of the Saints, who are the protectors of Bologna.—This is held to be one of the best pieces of Guido Reni, taken from Bologna.

87. St. Roch in Prison, from Modena.

88. The slaughter of the Innocents.—This piece was drawn, to shew those who envied him, that he could paint not only sentimental, but also historical pieces, from Bologna.

89. Job restored to his former prosperity, do.

90. The Purification of Mary, from Modena.

91. Mary with the Child Jesus, from Versailles.

92. Unison of the Arts of Design and Painting, do.

93. The Child Jesus asleep, from Modena.

94. Christ on the Cross, do.

*By Julius Pipi Romano.*

95. His Portrait, painted by himself, from Versailles.

96. The Shepherds worship the Child Jesus, do.

97. Venus and Vulcan, do.

98. The triumph of Titus Vespasian, do.

*By Lana (Ludovico) who died in 1646.*

99. Death of Clarinda, from Modena.

*By Lanfranchi (Giovanni).*

100. St. Peter and St. Paul taking leave of one another, from Versailles.

*By Lelio Orsi, of Novellara, who died in 1587.*

101. Virgin Mary, St. Joseph, and St. Michael, from Parma.

*By Leonardo da Vinci, who died in 1519.*

102. Virgin Mary and St. Anne, from Versailles.

103. Por-



103. Portrait of Jocund, do.

104. Portrait of a Woman, do.

105. Salome, with John's Head, do.

*By Licinio (Bernardino).*

106. A Holy Family, from Milan.

107. John the Baptist, when a Child, do.

*By Mazzola (Girolamo) who flourished about  
1550.*

108. The three Kings worshipping the  
Child Jesus, from Parma.

*By Mola (Pietro Francisco) who died in  
1666.*

109. John preaching in the Wilderness,  
from Versailles.

*By More (Francesco Torbido) who flourished  
about 1500.*

110. Charles the Fifth in a pigmy form,  
from Versailles.

*By Palma (Giacomo) who died in 1596.*

111. A Holy Family, from Versailles.

*By Mazzuoli (Francesco Parmesano) who  
died in 1580.*

112. The Virgin Mary and Holy Mar-  
garetta, from Versailles.

113. Mary with Jesus and John the Baptist, when a Child, from Versailles.

114. The Holy Family, do.

*By Perin del Vaga, called Buonacorsi, who died in 1547.*

115. The Muses and Pierides challenging one another, from Versailles.

*By Pietro Perusino Vanucci, who died in 1524.*

116. Virgin Mary, St. Jerome, and St. Augustine, from Versailles.

*By Pietro Berettini da Cortone, who died in 1669.*

117. Mary's Nativity, from Versailles.

*By Giacomo Pontormo Caruccio, who died in 1556.*

118. An engraved Portrait, from Versailles.

*By Procaccini Camillo, who died in 1626.*

119. Mary, St. George, and other Saints, from Modena.

*By Julius Cæsar Procaccini, who died in 1621.*

120. St. Sebastian, from Milan.

*By*

*By Raphael Sanzio, who died in 1521,  
aged 37.*

121. St. Cecilia—a most excellent piece,  
from Bologna.

122. Christ in celestial Bliss, with St.  
Paul and St. Catherine, from Parma.

123. Child Jesus, lying with the Child  
John, from Versailles.

124. Plenty, under the emblem of a  
Woman, do.

*By Salvator Rosa, who died in 1673.*

125. Purgatory, from Milan.

126. Saul, the Witch, and the Shade of  
Samuel, from Versailles.

*By Bartolemeo (Schedoni) who died in  
1615.*

127. Christ in the Tomb, from Parma.

*By Andrea Solario.*

128. Mary giving Jesus the Breast, from  
Versailles.

*By Leonello Spada, who died in 1621.*

129. St. Francis offering a Flower to  
Christ, from Modena.

130. The Execution of St. Christopher,  
do.

131. Joseph's Charity, do.

132. The Return of the Prodigal Son,  
do.

*By Tiarrino (Alexander) who died in 1668.*

133. Joseph repents of his suspicions of  
Mary, from Bologna.

134. The Marriage of St. Catherine,  
from Modena.

*By Tintoret (Giucomo Robusti) who died in  
1594.*

135. Whole Length Portrait of a Man,  
from Versailles.

*By Tiziano Vecelli, who died in 1576.*

136. Christ bearing the Crown of Thorns,  
a master piece, from Milan.

*By Breughel (Jean) who died in 1642.*

THE FOUR ELEMENTS, VIZ.

137. The Air, represented by Urania.

138. The Earth, represented by Para-  
dise.

139. Water,



139. Water, represented by Naiades, and the Sea by Fishes and Water-fowls.

140. Fire, represented by Forges and Cannon-founderies. — These four pieces were taken from Milan. The execution is excellent, and 150,000 livres, or £6,250 were once offered for them.

141. Daniel in the Lion's Den, from Milan.

Out of these one hundred and forty-one paintings, which have been exhibited from the 18th of Pluviose to the 30th of Prairial, there were thirty-six formerly in France: this reduces the number brought hither from Italy to 105. They will all be hung up in the Great Gallery, as soon as it is ready for their reception.

The other catalogue or explanation consists of pieces brought from Venice, Verona, Mantua, Pesaro, Fano, Loretto, and Rome. It begins with the 18th Brumaire, 7th year, or 8th of November, 1798, and contains the following paintings:

*By Alfani (Dominico di Paris) who died in 1553.*

1. Mary, St. Francis, and Antonius of Padua, from Perugia.

*By Baroccio (Frederigo) who died in 1622.*

2. Jesus taken down from the Cross.—This is one of the best pieces of this artist, and was taken from Perugia.

3. The calling of St. Peter and St. Andrew, from Pesaro.

4. St. Micheline, from do.

5. The Annunciation, from Loretto.

6. The Circumcision of Christ, from Pesaro.

7. Mary, St. Antonius, and St. Lucy;

8. The Resurrection of Lazarus, from Venice.

*By Bassano (Leandro da Ponte) who died in 1623.*

*By Bellini (Giovanni) who died in 1516.*

9. Christ in the Tomb.—This piece has been greatly injured, and is in a bad condition, from Venice.

*By*

*By Caravaggio (Michael Angelo Amerigi).*

10. Christ carried to the Sepulchre.—  
This is looked upon as the best piece of  
this master, and was taken from Rome.

*By Caraccio (Hannibal) who died in*  
1609.

11. Birth of the Virgin Mary, from Lo-  
retto.

12. Christ lying on Mary's Bosom, from  
Rome.

*By Caraccio (Augustin) who died in*  
1602.

13. St. Jerome's Change in his last Mo-  
ments.—This is the master-piece of Car-  
raccio, and was taken from the Carthusian  
Church of Bologna.

*By Giovanni Contarino, who died in*  
1615.

14. Mary, St. Sebastian, and several  
Saints, from the Doge's Palace at Venice.

*By Dominico Zampieri, who died in*  
1641.

15. St. Jerome's Conversion.—This is  
Dominico's

Dominico's best piece, and was taken from Rome.

*By Benvenuto Tizio Girolamo, who died in 1559.*

16. The Holy Virgin and St. Catherine, from a gallery at the Capitol of Rome.

*By Barbieri (Giov. Francesco), called Guercini, who died in 1666.*

17. St. Petronille—the best piece of this artist, taken from Rome.

18. St. Thomas's Unbelief, from the Vatican at Rome.

*By Guido Reni, who died in 1642.*

19. The Crucifixion of St. Peter.—This is esteemed one of the best works of Guido, and was taken from the Vatican.

20. Christ giving the Keys of the Church to St. Peter, from an altar-piece at Fano.

21. Mary, St. Jerome and St. Thomas. This too is one of Guido's best pieces, in another style. It was taken from the cathedral church of Pesaro.

22. For-



22. Fortune. This painting is of great celebrity, and was taken from the Capitol of Rome.

*By Fermo Guisoni, who flourished about 1568.*

23. The Calling of St. Peter and St. Andrew, from St. Peter's church at Mantua.

*By Mantegna (Andreas) who died in 1517.*

24. The Holy Virgin Triumphant. This was taken from the altar piece of the Philippine church of Mantua, which was built on account of a victory gained by F. F. Gonzague, Duke of Mantua, in the year 1496.

25, 26, 27, are three separate paintings, joined together in one frame. 25 is the middle piece, and is the Holy Virgin. 26 is on the right side, and contains John the Baptist, St. Lawrence, and St. Benedict, and a Bishop. 27, on the left side, exhibits St. Peter, St. Paul, John the Evangelist, and St. Zeno. This groupe is in an ornamented frame,

frame, with imitations of festoons and bas-reliefs in the antique manner.

28. Christ praying in the Garden.

29. Christ on the Cross between the Thieves.

30. The Circumcision of Christ.

These six pieces, 25, 26, 27, 28, 29 and 30, were taken from the great altar of St. Zeno's church at Verona.

*By Paolo Cagliari Veronese, who died in*  
1588.

31. The Report at the house of Simon. This is one of the first pieces of P. Veronese, and was taken from St. Sebastian's cloister at Venice.

32. The Virgin, St. Jerome, and many Saints, from the Sacristy of St. Zechariah's nunnery at Venice.

33. The Martyrdom of St. George. This piece has always been esteemed one of the best of P. Veronese, and was taken from the high altar of St. George's church of Verona.

34. St.

34. St. Barnabas recovered from his Sickness, do.

35. The Rape of Europa, from the Doge's palace at Venice.

36. Jupiter punishes Calumniators with his Thunder, do.

37. Juno pours out Riches over Venice, do.

38. St. Mark crowns the Virtues, do.

39. St. Antonius's Temptation by Devils, from the cathedral church of Mantua.

40. A Holy Family, from a private collection in the Bevilacqua palace of Verona.

41. Christ lying in the Tomb, do.

42. Portrait of a Lady, do.

*By Pietro Vannucci, called Perrugin, who died in 1524.*

43. Ascension of Christ : held to be one of the best productions of this artist.

44. The Three Kings worshipping the Child Jesus.

45. The Baptism of Christ.

46. The Circumcision of Christ.

The

The four last pieces were taken from the Benedictine church of Perugia.

47. The Family of the Holy Virgin, taken from the hospital church of Verona, and esteemed the very best piece of this master.

48. Mary and some Saints, who are protectors of the town of Perugia, from a chapel at Perugia.

49. Mary, St. Augustine, and St. Jerome, from an Augustine Sacristy at Perugia.

50. The Marriage of the Virgin Mary, from the cathedral church of Perugia.

51. The Eternal Father, from a Benedictine church at Perugia.

52. St. Sebastian and St. Agatha.

53. John the Evangelist.

54. The Apostle St. James and a Bishop.

These three paintings are from an Augustine Sacristy of Perugia.

55. Michael, the Archangel.

56. St. Bartholomew, the Apostle.

57. St.



57. St. Apollius praying.

These three were also taken from the Augustine Sacristy.

58. The Prophet Jeremiah.

59. The Prophet Isaiah.

The above two from the Benedictine church of Perugia.

*By Licinis da Perdon (Giov. Antonio) who died in 1540.*

60. St. Lawrence, Justinian, and other Saints, from the church of Madonna del Orto at Venice: is held to be a master piece.

*By Pouffin (Nicolai) who died in 1665.*

61. Martyrdom of St. Rasmus, from the Vatican.

*By Raphael Fanzio, who died in 1520.*

62. Mary taken up to Heaven.

63. The Annunciation.

64. The Three Kings worshipping the Child Jesus.

65. The Three Kings presented in the Temple.

These four paintings were taken from the Sacristy

Sacrifice of St. Francis's church of Perugia. They are Raphael's juvenile productions, having been painted when he was but seventeen years of age. Lord Bristol bid for them 80,000 francs, or about 3,340l. sterling.

66. St. Benedict, St. Placide, and St. Cecilia, from the Benedictine church of Perugia.

67. The Christian Virtues, Faith, Hope, and Charity, do.

68. Mary crowned in Heaven, after her Ascension; from the Nunnery of Monteluce, near Perugia.

69. The Athenian School is drawn on grey paper, with white chalk, and shaded with black. It was taken from the Ambrosian library at Milan, and was the first sketch of the *al Fresco* painting at the Vatican. This is without doubt the finest composition of the greatest painter who ever appeared.

70. The Transfiguration of Christ on Mount Tabor, taken from the high altar of  
St.

St. Peter's church at Rome. This masterpiece is the last and most perfect production of the extensive and prolific talents of the great Raphael. The painter died soon after his entering on the thirty-seventh year of his age. He executed this piece on the request of Julius de Medicis, then Cardinal and Vice Chancellor, and afterwards Pope Clement the Seventh. Raphael received for his labour 655 ducats.

*By Sacchi (Andrea) who died in 1661.*

71. St. Remuald, taken from the high altar of the church of St. Remuald, was always esteemed one of the best pieces in Rome.

72. St. Gregory's Miracle, from the Vatican.

*Tintoret (Giacome Robusti) who died in 1540.*

73. St. Mark liberates a Slave. This is one of the artist's best pieces; and was taken from the Fraternity of St. Marco at Venice.

74. Celestial Bliss. This is only a sketch :  
it

it is a draught of the large one at the Doge's palace in Venice, and was taken from a collection of the Bevilacqua palace at Verona.

75. St. Agnes raises up the Ruler's Son, from the church of *Madonna del Orto* in Venice.

*By Tiziano Vecelli, who died in 1576.*

76. Religion, from the Doge's palace at Venice.

77. The Ascension of Mary, from the cathedral church of Verona.

78. The Martyrdom of St. Laurence. This is one of the most celebrated pieces of Tizian, and was taken from the Jesuit's church at Venice.

*By Moses Valentin, who died in 1632.*

79. The Martyrdom of St. Martinian, from the Vatican.

The following are by various artists :

80. The Three Prophets, by some master of the Venetian school. It was purchased at Arles.

81. Christ



81. Christ laid in the Grave, painted by *Pietro Vannucci Perrugino*, and taken from the Augustine church of Perugia.

82. The Eternal Father, painted by *Guido Reni*, and taken from the cathedral church of Pesaro.

Eight bas-reliefs in bronze, representing historical circumstances respecting *Mausolus*, King of Caria.

83. *Mausolus* seized with a dangerous Disease, in the midst of his Triumph.

84. His Queen, *Artemisia*, offers a Sacrifice to the Gods, and supplicates them for the Recovery of her Husband.

85. *Mausolus* dies in the midst of his disconsolate Family and People.

86. *Artemisia* gives him a sumptuous Funeral, and erects to his Memory a magnificent Monument.

87. *Charon* carries in his Boat the Shade of *Mausolus* to the Regions of the Dead.

88. *Artemisia* celebrates his Memory by Poems and Orations.

89. *Artemisia* reunited with *Mausolus*.

90. Fame

90. Fame publishes their connubial Affection and mutual Attachment.

These eight beautiful bas-reliefs, of something more than a foot in length, and rather less than a foot in height, were taken from the church of St. Fermo Maggiore at Verona. They were applied to the mausoleum belonging to the family of *della Torre*.

It is to be observed, that they were executed by Guillo della Torre, whose various medals and other productions in bronze are now known.

#### BUSTS.

91. Raphael's Bust, in marble.

92. Hannibal Carraccio's Bust, in marble.

93. Andrea Sacchi's Bust, in burnt clay.

94. Andrea Mantegna's Bust, in bronze.

This second collection I have visited more than once. I went there the first time possessed with the idea of seeing something great and beautiful in the enchanting art of painting ; but I must say that the  
works

works of Raphael, Guido Reni, Paul Veronese, Andreas Sacchi, and other great masters, exceeded my most ardent expectations. Yet I cannot forbear mentioning, that I also saw some pieces which were not at all pleasing to me: but they all exhibit authentic traits of the times, and ought to be there, as they form a history of the art, its progress and perfection in design, colour, light, shade, &c.

With respect to the statues brought from Italy, a plan has been drawn of the order in which they are to be set up, in a number of adjoining rooms, which are to be prepared and embellished. In the middle of each, is to be erected a large statue of superior beauty, such as *Lacoon*, the *Farnesian Hercules*, the *Apollo Belvidere*, &c. the rooms to derive their names from these statues, and to be called the *Saloon of Lacoon*, the *Saloon of Hercules*, &c. &c. the statues of less size and beauty are to be set up in those saloons.

In the Great Saloon, or Gallery of the

K

Central

Central Museum, where the Italian paintings just noticed are hung up, are annually exhibited the performances of French artists now living, together with those of their pupils. Such a collection was exhibited in the sixth year, for four weeks, commencing on the 1st of Thermidor, or the 19th of July, 1798. It consisted of four hundred and forty-two pieces, some drawn in oil colours, some in water colours, and some with Indian ink. A collection thus extensive, and executed by so many different young artists, must necessarily possess different degrees of merit. *General Angereau*, on the *Pont d'Arcole*, painted by Charles Thevenin, is a large piece, wherein every thing is of its natural dimensions, and seems to me to be very well done. Angereau, observing that the column which is to assault the bridge, does not proceed briskly enough, mounts his horse, and, with a standard in his hand, advances before the column, though opposed by a hot fire from three Austrian batteries. His flag and hat are



are shot through ; an inferior officer is shot, and dies by his side ; and a lad, who is a drummer, pulls Angereau back, signifying his dread of the danger to which the General exposes himself : the entrance of the bridge is seen, and some of the wooden rails shot in pieces.

*Apollo and Urania*, very well painted by Charles Meinier.

The Death of General Marceau, painted by Lejeune, an officer of the engineers, is also a good piece. The General was ordered to post himself in a wood near Hocstbach : while reconnoitring the wood, he was shot by an Austrian chasseur from behind a large tree. The place and country around it are drawn from nature, and the whole is well executed.

Among the portraits done with oil colours, and as large as life, that of Professor Charles seemed to me to be very happily designed, and well painted. He is drawn in a kind of grey silk morning gown, in which, I am told, he used to lecture on

K 2      electricity.

electricity. In his hand is a solar microscope, which is a very proper emblem, as he had a remarkably fine apparatus for optical experiments, and his lectures on that science, which he delivered in the summer season, were particularly admired.

The statuary performances consist of forty-nine pieces. Among them is a bust of the worthy Daubenton, at the age of eighty-three. There are eleven architectural drawings, and twenty-six copperplate prints, among which is a fine portrait of *General Marceau*, engraved by his brother-in-law *Sergeant*. This piece is extremely well coloured.

I have to mention in this place, that there is at this time prepared, at the uninhabited palace of Versailles, "A General Museum for the Paintings of the French School." This museum occupies eight large apartments, on the upper floor. The paintings have been all taken from cloisters, churches, and collections belonging to the emigrants, and to the former government. The whole

is

is well arranged, and has a very good effect. It contains a number of excellent paintings ; but there are also some which have but a moderate appearance, when examined after one has seen the great master-pieces of painting which have been brought thither from Italy.

## LETTER X.

OF THE NATIONAL OBSERVATORY AT  
PARIS.

*The Danes first erected an Observatory—The Parisian Observatory, as a Building—Was decaying before the Revolution—Injured during the Reign of Terrorism—M. Jeaurat, an old and able Astronomer, now thrust down into a Cellar, and ill provided for—The Observatory under Repair—Astronomical Instruments, by Dollond, &c.—The French have but lately used transit Instruments—Large Telescope, a mean Instrument, and almost useless.—Telescope with Specula of Platina—An Achromatic, by Rochette, far inferior to one of the same Dimensions, by Nairne and Blunt—The Paris Observatory inferior to those of Greenwich, Edinburgh, Copenhagen, &c.*

**Y**OU will readily believe that the National Observatory appeared to me one of the most interesting places that I had seen.

It



It is situated near the farther end of *Rue St. Jacques*. The length of this street, from *Pont Notre Dame* to the *Barriere*, is 1275 toises. The observatory stands 150 toises from the Barrier, on an eminence, and, like the whole of Paris, on a chalky basis. This outlet of the city not being much built upon, there is much open space about the observatory. It is not incommoded by smoke and damp, and possesses a free air, and a fine prospect. We Danes claim the honour of having been the first nation in Europe who dedicated public temples to the service of Urania, or, in other words, erected solid and durable observatories. Who has not heard of the immortal Tycho Brahe's Uraniburg at Huen? Who does not know that, after this great man's exile from Denmark, Christian the Seventh, without doubt, lamenting this loss to the sciences, caused the round tower at Copenhagen to be built, and there fitted up an observatory for Christian Longomontanus, the most famous

disciple of Tycho ? The observatory at Copenhagen was finished in 1637 : and it was not till thirty years after, that the observatories of Paris and Greenwich were built, almost at the same time. The establishment of the Academy of Sciences, and of the observatory at Paris, owe their origin to the anxiety which the great Colbert,\* Minister to Louis the Fourteenth, felt for the promotion of sciences. The observatory was erected by the celebrated French artist Perrault, who has paid more attention to the beauty of the edifice, and to his own fancy as an architect, than to the accommodation of astronomers. The building consists of two very large and high stories ; all the floors are in good order, and on the roof is a platform or gallery. Under the building are caves of remarkable depth, and which I shall hereafter particu-

\* Colbert was a cadet of the family of the Cuthberts of Castle Hill near Inverness. See the Statistical Account of Scotland, article *Inverness*.

larly notice. The finest front is the least seen, as it faces a garden belonging to one of the residing astronomers, who at present is Mechain; so that from the common entrance in *Rue St. Jacques*, the observatory appears to some disadvantage. This establishment was falling into decay during the latter years of the monarchy; at least some of the instruments were so old, that others, suitable to the present improved state of astronomy and mechanics, had become absolutely necessary. Count Cassini, who was at that time Director of the Observatory, represented to the Government the deficiencies complained of, and had actually begun to make them good. But the revolution took place, Cassini was obliged to quit the observatory, and the building and instruments were greatly injured in the times of terrorism. When that direful period of frenzy was past, and the arts and sciences were again thought of, astronomy and the National Observatory were not forgotten. It is now undergoing a thorough repair, which it

much wanted ; and it is to be supplied with instruments corresponding to the present perfection of science.

When I first visited the observatory, I found below, in a kind of roomy and well furnished cellar, a door open, and an old man sitting at a table. Supposing him to be the porter, I enquired for Mechain, Delambre, and Bouvard. He told me, that Mechain and Delambre were gone to Perpignans, in order to measure a base line for determining a degree of the meridian. The supposed porter had papers before him, containing geometrical figures and algebraic calculations. I asked him, If he amused himself with geometry and algebra ? “ Yes, in part,” replied the venerable man, “ but chiefly with astronomy. I was formerly astronomer of the observatory, but am now, as you see, thrust down into this cellar.” “ Your name ? ” “ *Jeaurat.* ” “ And I am Byggé, from Copenhagen, who highly esteem you, and am well acquainted with your former labours.” It gave me great pleasure



pleasure to become acquainted with this worthy man, who calculated the *Connoissance des Temps* from 1776 to 1787. Jeaurat, who is the oldest of all the present astronomers of the Parisian Observatory, established and put in order a similar erection at the military school, and is the author of thirty essays in the Memoirs of the Academy. It happened to him, as to many more, during the revolution, to be supplanted by younger rivals of superior interest, though not always better qualified. This astronomer, in his seventy-second year, has nothing to live upon but the salary of the youngest member of the National Institute, which is 1,200 francs, two small apartments on the ground floor, and a little garden. I requested him to have the goodness to shew me the observatory; but he declined it, and deprived me of an opportunity of thanking him. I was then obliged to enquire who superintended the observatory in the absence of Mechain and Delambre? And was answered, Bouvard, ad-

astronomer, who lives in a small separate building belonging to the observatory, and where Mechain formerly resided for twenty years. Bouvard again unluckily was not at home, and I was obliged to content myself with the *Citoyen Portier*, a follower of St. Crispin, who, for the last eighteen months, had made shoes, waited at the observatory, and shewed it to strangers, and I had great reason to be satisfied with his service.

On the first floor, apartments are fitting up for Mechain, who lives at present in those which Cassini formerly occupied; and on the other side of the principal passage, Messier is to be accommodated in rooms, which are now under repair. There is, on the same floor, a spacious apartment for the use of the observatory, from which is an entrance to the side building, where transit instruments, and mural quadrants are set up, of which I shall give a more particular account. The whole observatory being at this time under repair, the instruments have been laid aside wherever convenience

venience allowed. The following are in a lower apartment :—1. *A brass equatorial instrument*, made by Hauvoir, in 1792, for measuring the declination, having affixed on each side a circle of two and a half feet in diameter. It must be acknowledged that Hauvoir is a good workman, as the divisions appeared accurate, and the whole well finished : but the instrument itself is by far too complex and troublesome to be used in observations. 2. *A brass quadrant*, by Hauvoir, 1793, of eighteen inches radius, very well made : this is generally used for taking corresponding altitudes. The stand appeared to me to be very weak, and not sufficiently steady. 3. An excellent astronomical time-piece, by Berthoud, with a pendulum to correct the errors arising from the influx of heat, which is in fact nothing more than Harrison's gridiron pendulum. 4. A reflecting telescope of five feet, by Dollond. The stand is exceedingly steady and strong ; this telescope is set up like an equatorial instrument, in order to assist in observations

tions taken off the meridian. It is a thoroughly good instrument, executed in such manner as might be expected from an English artist of Dollond's abilities. I requested leave to look through this telescope, which the porter granted me, with greater readiness than I expected. I tried it on a very remote object, and found it exceedingly good. In this apartment are the busts of Colbert, Jacob Cassini, Dominic Cassini and Maraldi, all of gypsum.

In a smaller apartment adjoining the large one above described, was a three foot quadrant, made by Langlois in the old French manner. This quadrant has over it a kind of moveable cap, or shade, and has been long used in taking corresponding altitudes. The French of late have begun to use the meridian circles, called by them *Instrument de Passages*, and which was invented by our countryman Roëmer, under the name of *Rota Meridiana*. This instrument has been used by the English ever since 1716, and termed by them a transit instrument.



instrument. De la Caille formed his catalogue of the fixed stars, by corresponding altitudes, all without the help of that instrument.

I next went into a room, intended for transit instruments, and mural quadrants, and which was under repair, the floor and ceiling not having been finished.— We then went up into another floor, which is very lofty: the height, I should suppose, might exceed twenty Danish ells. In the middle is a large room, on the floor of which is drawn a meridian line. It should be observed that meridian lines were, at one time, in great vogue in France. I have found them drawn on floors at Versailles, St. Cloud, Trianon, Chantilly, and many other places. There is nothing in this room but a large telescope of sixteen feet focus, which formerly belonged to the King, and had been set up at Passy. Its metallic specula have, by negligent treatment, lost their polish, and are totally spoiled. At the bottom of the stand, is a  
large

large cog wheel, acted on by a pinion, by moving which the telescope can be shifted horizontally from one direction to another. From the centre of this wheel rises a strong axis, to support the telescope, to which is fixed a semicircle, which, by means of a pinion, raises or lowers the instrument; so that by this horizontal and vertical motion, the heavens can be swept at various altitudes. The tube of the telescope is metal painted blue with oil colors. Upon the whole, this instrument has but a mean appearance, and is of no value. Indeed it ought to be laid aside, unless the specula be newly polished.

On one side of this large room are two apartments, one of which is appointed to be the library of the observatory, and the other to be the residence of Delambre. On the opposite side is an apartment with windows in three directions, which contains the following instruments:—1. A reflecting telescope of six feet focus, by Hochen. The stand is of mahogany, made on the plan of Herschel's stand to his seven feet telescope:  
the

the specula are of platina ; but the porter could not let me examine them. 2. A parallax instrument carrying a glafs of four feet focal distance. 3. Another on a larger scale, with a tube of six feet : they are both made on the common plan of the French parallax instruments. 4. An acromatic telescope of three feet, with triple object glasses, by Rochette. The stand is firm and good, and such as Dollond or Nairne would have made for a telescope of the same dimensions. The object aperture is three and a half inches. The porter assisted me in directing this instrument towards some clear and distinct objects near Montmartre ; but I found it dull and indistinct. There is, at the observatory of Copenhagen, an instrument of the same dimensions as this, by Nairne and Blunt, and set up in the same manner ; but it is far superior to this instrument of Rochette. 3. A good astronomical time piece, by Berthoud, with a correction pendulum. 6. A smaller one,  
or

or perhaps one of the same kind, but without the appendages.

On the other floor, which the singular ideas of Perrault, the architect, intended for the sole purpose of an observatory, neither transit instruments, mural quadrants, nor sextants, can be set up ; so that the large and important astronomical instruments, which are most wanted in an observatory, are here totally useless. The floor underneath it is of no service, except it be by fixing a telescope in one of the windows, in order to observe the eclipses of the sun, moon, and satellites of Jupiter, or the occultation of fixed stars by the moon ; and then there is an inconvenience in taking down the time by some other chronometer, or by signals, according to which the moment of observation is to be determined ; and the calculations for determining such times are always subject to great uncertainties.

Whoever has seen, or been otherwise made acquainted with, the observatories of Greenwich,



Greenwich, Oxford, Edinburgh,\* Mannheim, Gotha, and Copenhagen, will find that their arrangements, though much more simple, are also far more complete and commodious, for all kinds of astronomical observations, than this of Paris.

The porter, in the last place, conducted me up to the platform, where, on a fine clear day, one has an excellent view of this great city, so very remarkable, not only for its scientific, but its political history.

When I had satisfied myself with view-

\* The learned author might have added the Observatory of Glasgow, where Dr. Wilson, who succeeded his learned and respectable father as Professor of Practical Astronomy, has watched the motions of the heavens for many years. The state of his health having lately obliged him to vacate his chair, he had the observatory and the instruments, some of which are very excellent, compleatly repaired, at his own expence. And he generously settled, on the institution, £1000 payable at his death, the interest of which is to be applied to the progressive improvement of the astronomical apparatus.—*Translator.*

ing as much of the observatory as the porter could shew me, I gave him my card to deliver to Bouvard. The porter reading my name, cried out, "Ah! I know you very well—I am much surprised at it—this is an honour I could not have expected—stay a little, and I will convince you that I am right." He went into the library, and brought out different numbers of the "*Connoissance des Temps*," in which he shewed me several astronomical communications of mine to *Lalande* and *Mechain*. "You see now, said he, that I am not mistaken." I was rather struck with this fantastical shoe maker, this door-keeper of the heavens, who seemed to be so familiarly acquainted with me, merely from his having read my name in an astronomical calendar. A few francs having satisfied him for his attention and trouble, we parted the best of friends; and he bawled after me, "Come again soon, I am always at your service!"

LETTER

## LETTER XI.

## ACCOUNT OF THE NATIONAL OBSERVATORY CONTINUED.

*A Time-piece, by Berthoud, goes well, as do twelve or fourteen by Arnold—Platina well purified, makes excellent specula—Story of a Reflector of sixty Feet, with platina specula, a mere Rhodomontade—Instruments of De la Hire, &c. disused, but preserved—Observations interrupted by the Revolution—Cassini's large Lunar Chart, and Drawings of Lunar maculae, recovered after being long lost—His reduced Lunar Chart—The best is in Keill's Lectures, as improved by Lemonnier—Improvements in the Observatory—Le Noir's transit Instrument described—Mural Quadrants by Bird and Sisson—Astronomical Sector, by Graham.*

**I**T was not long till I revisited the observatory, though the nearest distance to it, from the place where I reside, in Rue  
Honoré

*Honoré*, is half a Danish mile. After I had paid my respects to the father of the Parisian astronomers, the aged Jeaurat, in his cellar, I enquired for Bouvard, whom I found at home. With all possible goodness and complaisance, he shewed me the observatory, and such curiosities as were inaccessible to my astronomical shoemaker. Bouvard had in his apartment, 1, a silver watch, or chronometer, made by Berthoud, and which belonged to Borda. This had been on trial for fifteen months, and was found to keep time well : it cost one hundred louis-d'ors.\* I wished to see whe-

\* In justice to an artist whose merit ought to be better known than it is, I must observe, that excellent chronometers have long been made by Mr. Alexander Hare, of Greville-street, Hatton-garden, for less than half the price mentioned in the text. Mr. Hare has received letters from his employers in different parts of the world, expressing the highest satisfaction with those productions of his ingenuity and experience. But such is his modesty, that his friends cannot prevail on him to make those letters public, or, indeed, to take any other method to make his performances known, and of course this note is inserted without his knowledge.—*Translator.*

ther



ther it was of the same construction as Arnold's chronometer, of which I have from twelve to fourteen upon trial at Copenhagen, and have found them all keep time excellently ; but Bouvard could not inform me, as he was unacquainted with its internal structure. I then desired to have the piece opened, that I might see the construction of it. But this again could not be done, as there was a cap screwed down over the work. 2. Coulomb's declination compass : to prevent friction on the supporting pin, the needle, in this contrivance, is suspended by a silk filament, as spun by the worm. The idea is altogether excellent, but still it is not easy to make the centre of the circle described by the needle steadily coincide with the centre of the graduated circumference.

Besides what I had before seen, and now re-examined, at the observatory, Bouvard shewed me, 1. the platina specula of Kochon's telescope. The great speculum was very good, yet there were here and there

there some dark speckles on the surface of it, which were undoubtedly owing to the platina not **being** perfectly purified before the speculum was cast ; as it still contained some small quantity of iron. The little speculum, however, was particularly excellent and clear, and of a beautiful polish ; so that there are no doubts left, that excellent specula for reflecting telescopes can be made of platina.

The frame which fastens and supports the speculum was of iron, forming a square of two inches. In the corners of which were screws fastened, which, by pressing on the back of the speculum, kept it from falling by its own weight. But this must be done with great care ; for the figure of the speculum would be changed by much pressure. Bouvard has now invented another contrivance for fixing the great speculum, namely, by inclining it a little ; so that the object is thrown to the other side of the farther part of the tube. He then took the least or farthest speculum away,  
and

and disposed the image so as to be in a right line with the eye-glass. Herschel has very properly made use of this method, in his large telescope of above twenty feet; and it can always be used to advantage in telescopes of a smaller size, in which the head of the observer intercepts so much light, that the image must necessarily be indistinct. 2, Bird's mural quadrant of eight feet radius, which formerly belonged to Le Monnier, and which will be an excellent instrument when set up on its wall, and properly adjusted. 3, De la Hire's mural quadrant of five feet radius, all of iron. 4. The elder Cassini's mural quadrant of the same metal, and of six feet radius, with a brass adjuster. It is divided by dots into spaces of five minutes, and the divisions are taken by a micrometer, after the old method of the French astronomers. The two last instruments are not to be set up again, but are to be looked upon as venerable agents in the service of astronomy; since it was with them that so many observations were made in the early part of the

L present

present century. 5, Among the astronomical antiquities, are also to be seen eight or ten object glasses, of eight, ten, and twelve inches in diameter, and of sixty, eighty, one hundred, and one hundred and twenty feet focus, by the Italian, Campani, who, at the close of the last century, was as famous for his refracting telescopes, as Herschel is at the present day for his large reflectors. I must here observe, that the optical and astronomical rhodomontade of a gigantic reflecting telescope of sixty feet, with a platina speculum, said to have been made here, has no foundation, and has not been heard of, except in a German Gazette, and some other newspapers. With the telescope of Campani, the Cassini's, father and son, made many discoveries, such as the satellites of Jupiter and Saturn,\*  
the

\* There appears to be some mistake here. I apprehend the following to be the generally received history of the discovery of the Jovian and Saturnian satellites.—Simon Marius, astronomer to the Marquis of Brandenburg, discovered all the four satellites of Jupiter, in 1609, as he mentions in the preface to his  
*Mundus*



the maculæ of Venus, Mars, and Jupiter,  
and their rotations round their own axes, &c.  
6, The

*Mundus Jovialis*, printed at Nuremberg in 1614. In the mean time, Galileo observed the same four satellites in 1610, and published his discovery the same year, in his *Nuncius Sidereus*. In 1655, Huygens discovered the fourth satellite of Saturn, and the first, second, third, and fifth were discovered by Cassini, from 1671 to 1684. Vide *Wolfii Elem. Astron.* (in *Element. Math. Univ.*) § 500, 519; *Diction. de Math. et de Phys. de Saverien art. Satellites*; *Heathcoti Hist. Astronomiæ*, p. 46, 81.

The learned Dr. Zach, however, astronomer to the Duke of Saxe Gotha, in his Ephemeris for 1788, has made it extremely probable, not to say absolutely certain, that our great Harriot discovered the Jovian satellites at least as early as Galileo, and that Harriot was equally early in the discovery of the solar maculæ, which were also observed by that celebrated Italian philosopher. Harriot's observations on the Satellites were made from January 16th, 1610, to Feb. 26th, 1612; and those on the maculæ, from Dec. 8th, 1610, to Jan. 18th, 1613. Dr. Zach's authorities are of a very cogent kind, being a large collection of Harriot's unpublished papers, deposited at the house of Lord Egremont, at Petworth, in Sussex, and which the Doctor carefully reviewed in

6, The rough draught of the observations from the first establishment of the observatory till the Revolution. A chafin for some years succeeds ; but now every thing is re-established in good order, and the arrangement will be still more complete, when the repairs are finished

The observatory is now under the direction of the Board of Longitude, by whose order Bouvard made me a curious present, being a copy of the large chart of the moon, twenty inches in diameter, which Jacob and Dominic Caffini caused to be engraved, after a series of observations for nine years, viz. from 1671 to 1680.

The plate was lost for about eight or ten years, but has been fortunately recovered and made public. In the national observatory has also been found a port-folio, con-

1784. In the same papers, he found convincing proofs that Dr. Wallis and others had ample reason to charge Descartes with having taken most of the *purely algebraical* improvements, to be found in his Geometry, from Harriot's *Artis analyticae Praxis*.

Translator.

sisting of sixty leaves, with original drawings by Le Clerc, one of the best draughtsmen of his age, of singular and distinguished spots in the moon. The observations corresponding to those drawings, and on which they were founded, are all of them in Cassini's own hand-writing.

The present Cassini, about the year 1788, reduced this large lunar chart to a diameter of eight inches, and had impressions of it taken in blue. I am possessed of one of those impressions, which he sent me to Copenhagen as a present. Both these lunar charts of Cassini are much better resemblances of the moon than that of Tobias Mayer, so much valued in Germany. The only thing I have to observe respecting this chart of Cassini, is, that the ridge of mountains, proceeding in faint streaks from the lunar macula, called Tycho, are not distinct or well defined. The lunar chart, which I look upon as the most accurate resemblance of the full moon, is to be seen in *Institutions Astronomiques*, Paris 1746,

p. 140. This book is merely a French translation of *Keill's Astronomical Lectures*, with additions and improvements by the famous French astronomer Le Monnier.

I have before observed, that there is no mural quadrant erected in the building appropriated for observations; nor indeed does it contain any instrument of this kind, which I can much commend. The observatory is at this time receiving great improvements, and will be put into a proper state of repair. For this purpose, it has been found requisite to build a solid wall to the same height as the lower floor of the observatory, and to erect a side building on this basis, for the reception of the instruments above mentioned. This last, though it appear to be only a protuberance on the great body of the edifice, is to be the proper and real observatory.

In this side building are three apartments :

- 1, One for an observer, in which there is a fire-place.

- 2, An



2, An apartment for a transit instrument.

Though this instrument is not yet brought to the observatory, I shall offer a description of it, having been often permitted to see it by that skilful instrument maker, Le Noir. The achromatic tube is five feet in length, and has a very large aperture. The two movements, one for raising and depressing the axis, and the other for bringing the instrument to coincide with the meridian are very good. The extremities of the axis are of bell-metal, and set in triangular plates. A counterpoise balances a part of the weight of the tube. The level is excellent, and can be very conveniently fixed up, and adjusted. These are entirely new improvements. I have an instrument at the observatory of Copenhagen, in constructing which, the same general principles have been observed. See *Observationes Astronomicae Hafnienses*, 1783 et 1784. In the telescope are five vertical threads, and on this account the eye glass

is made moveable, and can be fixed before any of the threads, so as to prevent the line of vision from being bent or indirect. In the year 1777, I saw a transit instrument at Greenwich, adjusted in the same manner. The only thing which appeared to me to claim the merit of novelty, in the Parisian instrument, was the manner of illumination. A and D (Fig. 2.) are bell-metal gudgeons on the axis A B C D. E F is a telescope, the object-glass being opposite to E, and the eye-glass facing F. At D is an aperture within the axis, half an inch in diameter, and at an angle of  $45^{\circ}$ , is fixed a metal plate G H, in the middle of which is a circular aperture I, in a line with the axis E F. M is a lamp, in a glass lanthorn, to prevent the wind from blowing it out, in the time of observation, or at least to keep the flame from agitation, which would make the light changeable and unequal. The light produced by this lamp falls through the aperture D on the plate G H, by which it is reflected in the direction I F, towards

towards the threads and eye-glass at F, and thus the whole field of the telescope becomes enlightened. This illumination should be greater for the larger and clearer planets and stars, and less for those of an inferior magnitude and lustre, which, by a strong light, would become indistinct. To effect this, Le Noir has introduced a triangular prism of green glass, resting on one arm of a lever, the other arm of which is placed towards the observer, and is so long, that he can lay hold of it, and thereby raise or lower the prism. When the prism N P is so depressed, that the thick part towards N comes between the lamp M and the aperture D, a number of rays are lost, and the light becomes weaker, and calculated for the more obscure stars. On the same principle, if the prism be raised higher, the rays will have to pass through a thin body of glass, and the illumination will be stronger, and adapted to the larger and more luminous celestial objects. The darkness of the glass, and the intervening

dimensions of the prism, must be determined by experience. This prism was made of light green glass, like the common glass for spectacles. The depth NP of the prism was four inches, and its greatest thickness at N somewhat more than an inch. This disposition is undoubtedly well contrived, as well as safe and accurate in practice. The common method, however, used at the observatories of Greenwich, Oxford, and Copenhagen, by an illumination plate, without the telescope, which throws the light in through the object-glass, and can be easily fixed, so as to cast a greater or less quantity of light, is equally good. A description and drawing of this method may be seen in my *Observationes Hafnienses*, 1781, 1784, Introduct. c. 2. sect. 18. In the English and Danish method of illumination, the glass is closed and shut up; so that not an atom can enter into it from without: on the contrary, in this French method, the dust enters through the aperture D, falls on the illuminating plate GH, and



and through I, it proceeds to the threads, and to the object and eye-glasses.

The fine particles of matter, floating in the air, are more numerous than is generally supposed by those, who have not had an opportunity of making observations on this subject. These particles will render the thread thick and uneven, and the glass dull; so that annually, or biennially, the instrument must be taken to pieces, and the glasses and thread cleaned. The inconvenience of having the instrument to set up again and adjust, must be a great obstruction, in conducting a series of observations, which require an instrument to be in a perfectly invariable condition. But, though these defects are not to be denied, this transit instrument is well executed, and will be found a very fine one, when set up on its proper pillars, which Bouvard told me, are to be of granite.

3d, The third apartment in the side-building is intended for a mural quadrant. In the middle of this apartment, a wall is

now building, of the common calcareous stone, generally used at Paris. When this wall is completed, a mural quadrant of eight feet radius, by Bird, will be suspended on its left side. The limb of this quadrant has a two-fold division, namely, into ninety and ninety-six degrees ; and is constructed in the manner described by Bird, in his “ Method of constructing mural quadrants, London, 1768 ;” and on the same plan with the Copenhagen mural quadrant, of six Danish feet radius.\* See *Observ. Astron. Hafniens. Introduct.* p. 54. On the right side of this wall, a mural quadrant of five feet radius by Sisson, is to be suspended. This was not in the observatory ; but under repair at Le Noir’s, where I saw it. The instrument on the whole was good, but of an old construction, and more weakly joined than the quadrant of Bird.

Thus is this little building (the most important part of this colossal National Observatory) provided for the use of some of

\* Nearly five feet nine and a half inches English.

the most able and eminent astronomers of Europe, Messier, Delambre, and Mechain. Bouvard, the adjunct, who last year discovered a comet, will most certainly contribute his share towards making a proper use of those instruments. Mechain and Bouvard, who alone live at the observatory, make the observations, and record them in very exact and well arranged protocols. Messier and Delambre told me, that not being inclined to change their abodes, they have each of them a small observatory at their own houses. All the four gentlemen are as kind and obliging as they are eminent for their observations and mathematical abilities.

It gave me great pleasure to become personally acquainted with C. Mechain, after his return from measuring degrees of the meridian, in executing which, he instituted a series of triangles from Barcelona to Rodés, and, with unwearied industry, ascertained the height of the pole at different places, situated nearly on the meridian  
of

of Paris. Ever since 1781, I have kept up a regular astronomical correspondence with him, Lalande, and Cassini, who, before the Revolution, was Comte de Thury, and director of the observatory.

I observed that there was one instrument wanting at the national observatory, namely, an astronomical sector of ten or twelve feet radius. Lalande gave me to understand, that there is at Paris an excellent instrument of this kind, being a twelve foot sector by Graham, used by Maupertius in measuring a degree of the meridian, and that this famous instrument will be brought to the observatory.



## LETTER XII.

NATIONAL OBSERVATORY CONTINUED—  
OBSERVATORIES OF THE MILITARY  
SCHOOL, OF THE FRENCH COLLEGE, AND  
OF PRIVATE PERSONS.

*Instruments for ascertaining the magnetical  
Variation—Caves of the Observatory de-  
scribed—Magnetical Variation and Tem-  
perature in them—Searched for Arms and  
Aristocrats—Observatory advertised for  
Sale—Cassini driven from it, and now in  
poor Circumstances—Platina specula by  
Carroché—His excellent Achromatic—Pil-  
lars for the transit Instrument too low—  
Wall of the Mural Quadrant spoiled by  
the capricious Builder—Mechain's Astro-  
nomical Labours—Bouvard's Comparison  
of Arabian Observations with later ones  
—Defective organization of the National  
Observatory—Telegraphs in Paris—Ob-  
servatories*

*servatories at the Military School, and the French College—Lalande's Merits not sufficiently acknowledged—Observatories of Messier and Delambre.*

ON the 10th Brumaire, 6th year, or 31st of October, 1798, I was at the observatory, in company with Professor van Swinden, and Ænea, director of navigation, both from Holland, and Professor Tralles from Switzerland, who, like myself, were foreign Commissioners for weights and measures. Cassini met us there by appointment, in order to shew us the instruments he had constructed, and the methods he used for ascertaining the variation of the compass. Before the principal door of the observatory, on a terrace, at the end of Mechain's garden, the instruments of Coulomb and Cassini were erected on a round pedestal of stone, on which a horizontal meridian line was drawn, a vertical section having been also raised on the whole height of the building.

Cassini's

Cassini's instrument is a circle of ten inches in diameter, furnished with a needle of the same length, suspended by a silk filament, after the method of Coulomb, and a Nonius at each end points out single minutes. Over the center is fixed a vertical stand to receive a small transit instrument with its level, the line of vision of its telescope being made to correspond with the diameter of the instrument at Zero.

The principal diameter of the instrument can be set to the meridian by the telescope, and the above mentioned vertical line, on the wall of the observatory, and by a mark on a wall on the other side of the instrument; and its superficies can be fixed horizontally by two screws below the circle. The angle of variation can be thus found, either directly or by doubling it, as with the circle of Borda, in order to obtain the minutes still more accurately. With this instrument of Cassini, the variation was observed on the 31st of October, 1798, by the following gentlemen :

By

By Bouvard	—	22° 13'
Tralles	—	22° 11'
Van Swinden	—	22° 11'
Bjögge	—	22° 11'
Mean variation of the		
needle	- - -	22° 11' 45''

C. Coulomb's instrument has a needle of twenty-four inches in length, and three-fourths of an inch in breadth, suspended by a small wire. It is not a perfect circle, but has at both ends an arch of about thirty degrees, divided by tangents, and over each of the arches is a microscope. It was unanimously agreed, that there was some eccentricity, and that the needle was accurately suspended. Bouvard, with this instrument, observed the variation to be 22° 12'; so that with both instruments the observations agree very well. Lastly, with a variation instrument, of a construction similar to that of mine at Copenhagen, and which the meteorological society at Mannheim



heim had given to the celebrated *Le Cotte*, the variation was observed to be  $22^{\circ} 24'$ , and the excess of twelve minutes might very well be accounted for from an error of the fiducial parallelism with the meridional line, which is properly owing to the sudden friction of the agate on the steel. The justness of the well known preference of Coulomb's method of suspension to the common one, appeared on this occasion very evident.

Cassini went down with us to the caves of the observatory, which are very remarkable. The descent is by one hundred steps, to the depth of forty feet beneath the surface of the earth. The caves particularly consist of several labyrinth passages of four feet in width, and five or six in height. In most places those subterraneous passages are walled; but in several the natural stone or rock forms the ceiling, in some places the sides, and in others the floor. These caves are in general very dry, but in some places, either the ceiling or the floor are moist.

moist. In several parts of the ceiling, drops are crystallized into stone and stalactites, and the moisture on the floor is covered with a stony scum or membrane. I have seen at Stevens's Cliff, in Zealand, the water, issuing in this manner out of a chalk rock, form a concretion, which seemed to be flint covering soft chalk.

When Cassini was director of the observatory, he caused two apartments to be constructed, and separated from the labyrinth by a wall: one of these apartments was designed for observing the variation of the compass under ground. In the years 1783 and 1784, Cassini found no sensible difference between the variation above and under ground. See *De la Declinaison et des Variations de l'aiguille aimantée, par Cassini, à Paris, 1791, p. 24.*

In the other apartment was a Reaumur's thermometer, made by Borry, under the direction of Lavoisier.

Every degree of this thermometer was four inches three lines. Cassini made observations

servations by it for three years, and found that the temperature of the earth, or heat of the air under ground, did not undergo a greater change than three tenths of a degree.

These labyrinth caves and large passages under ground, lead to a grate or iron-doors from which there was, in ancient times, a communication with the quarries : but no man knows how far, or in what precise direction, this passage extends. This grate was set up when the observatory was first built. In taking notice of it, Cassini related to us some of his history in the time of the Revolution, when his going regularly every day down to these caves, in order to observe the magnetic needle and thermometer, gave rise to a rumour among the then ruling jacobins and sans-culottes, and which, as usual, acquired in its propagation, considerable alterations and additions. It was, in short, concluded, that provisions, arms, ammunition, and aristocrats were concealed in the caves of the observatory.

observatory. One morning Cassini was very early taken out of his bed, by three or four hundred jacobins and sans-culottes, armed with firelocks, swords, pikes, and cudgels, and forced half naked to conduct them down to the caves of the observatory, in order to examine those subterraneous recesses. Cassini told them that he obeyed them the more willingly, as he was certain the caves contained none of those articles which they expected to find in them; yet he must tell them before-hand, that the caves of the observatory led to a fastened iron-door or grate, which opened into a hitherto unexplored subterraneous passage, which, for aught he knew, might communicate with places in the city; that he was totally unacquainted with those passages, and of course could not be answerable for what might be found in them. Not half dressed, and surrounded with bayonets, swords and pikes, he was obliged to conduct them through all the caves, and the inextricable windings and meanders  
of



of those caves ; and this brave band found them, as Cassini had predicted, totally empty. They finally approached the iron-door, which they found had been forced open, probably by some masons and smiths belonging to the troop, while the rest went in quest of Cassini. They demanded that he should conduct them down into the subterraneous passages in the rock : but he reminded them of what he had before said ; adding, that he was perfectly in their power, but that he had rather suffer death on the spot, than conduct them down into those unknown passages, for which he neither would nor could be answerable, and that he coolly waited for their decision, even if his death should ensue. 'The most important among this corps then held a council of war, the result of which was, that Cassini, guarded by six men armed with pikes, should return to his apartments, and that the rest should go down into the passage or cavern. After they had proceeded a good way in, and found nothing,

thing, they became tired, returned back again, and spared the observatory for that time. But that edifice has since been often searched, and the instruments, astronomical constructions and apartments of the astronomers very much injured by such visitations.

C. Bouvard, though a staunch and zealous republican, told me, that those vandals once took it into their heads to sell the observatory, and actually wrote, in large characters, over the door,

PROPRIÉTÉ NATIONALE A  
VENDRE.\*

The Cassini, whom I have so often mentioned, began, in 1784, to improve the observatory, to procure new and superior instruments, and to conduct the observations on a better and more accurate plan. He published yearly, from 1785 till 1791, a number or volume of his astronomical observations, on the fixed stars, sun, moon and planets, calculated and compared with

\* National property to sell.

the best astronomical tables, in order to ascertain and correct the errors of those tables. He sent those numbers annually to other astronomers, and he had the goodness not to forget me. He did every thing, in short, that could be reasonably expected from an able, industrious, and experienced astronomer.

In the midst of Cassini's celebrated career, the revolution took place. Having been suspected by the terrorists, he was driven from the observatory, which he had so honourably conducted, and not only deprived of his office and income, but confined in prison above a year; and he has saved nothing but his life, and a small property, which he inherited from his ancestors, where this worthy man, with his numerous family, exists upon a scanty income. In the opinion of some people, the ambition, envy, and egotism of certain other astronomers, have greatly contributed to drive both Cassini and Jeaurat from the observatory.

Among other contrivances, Cassini had a foundery built for casting the large astronomical instruments, which he intended to have had constructed for the observatory. This foundery, when France was filled with manufactories of salt-petre, powder, and fire arms, was converted into a cannon foundery. As relics of that direful and alarming period, eight cannons, twelve pounders, still remain there. But the times are now so much changed for the better, that the votaries of the beautiful and pacific Urania have now nothing to fear from these dispensers of the thunder of Mars; especially as they are not charged, or so much as furnished with touch-holes.

The best French optician is the able Carroché, of whom I shall on another occasion give a fuller account. Carroché is the only man who has cast and ground specula of platina, which he did for what is called the Hochon telescope, of six feet. He had the goodness to go with me to the observatory, and to shew me the effect of this telescope,



scope, and of one of his newly ground six foot achromatics, belonging to Borda. The object glass consists of a crown and a flint glass, between which is a mastic effusion (*Mastic en larmes*). The aperture of these conglutinated object glasses, called by the French *collés*, is somewhat more than five inches.

The reflector and achromatic were successively directed towards a piece of paper fixed at the distance of four or five hundred toises. This could be very evidently distinguished by both the instruments; but with this difference, that the reflector not only magnified much less, but gave a remarkably brown reflection, and an obscure and confused image: and the telescopes made with the general composition are found to cast a reflection more or less yellow. Carroche's achromatic not only magnifies much more, but has at the same time very great clearness. The paper has its true, and perfectly white colour.

On the last day of January 1799, I paid my final visit to the observatory, partly with a view to take my leave of Mechain, Jaurat, and Bouvard, and partly to see how far they had proceeded with the apartments intended for the transit instrument and mural quadrant. The apartment for the former was completed, except that the pillars, or pyramidal *frusta*, designed to support the axis of the instrument, were not finished. Bouvard had told me, that they were to be made of granite; but, when I approached to view them more minutely, I found that they were too low, and were to be heightened with a piece of marble. Of this joining I by no means approved, and endeavoured to persuade my astronomical friends to have the pillars made of one piece of marble, or some other hard stone. The stone floor of this apartment had been laid the preceding summer; so that holes were now to be made in it, to receive the pillars. It would have been  
more

more proper either to have had the pillars in readiness to be fixed when the floor was laid, or else to have deferred the laying of the floor till the pillars could have been provided.

The apartment for the mural quadrant was also ready, and the *muris*, or wall, was built. But this wall has three defects. 1. It is not broad enough at top; so that a part of the quadrant, from 0 to  $30^{\circ}$  in height, is without the wall; nor is it sufficiently supported. 2. The pivots, by which the quadrant is to be hung, are fixed so low, that the nethermost edge of the instrument would not be a foot from the floor. On this account, no object at a great altitude could be observed; for it would be impossible for the observer to put his head between the floor and the eye-glass, or at least to keep himself in a steady position, which, in all observations, is a most important circumstance. 3. The wall is built so much forward, that the telescope of the quadrant does not answer to the narrow

aperture in the side wall of the apartment ; so that one cannot see through the telescope, as it is fixed on this clumsy wall. The consequences are, that, besides building the whole wall over again, it must be made broader ; the two pivots of the quadrant must be fixed at least two feet higher, which cannot be done without taking away the two uppermost courses of hewn stones, and substituting others much higher : and lastly the aperture through which one looks, in using the instruments, must be made wider. Broad or wide apertures are, in every respect, more convenient than small ones.

The astronomers of the National Observatory complained of the obstinacy and caprice of the builder, which obliged them to have the wall of the mural quadrant altered.

I have already said, that the astronomers of the National Observatory are Messier, Delambre, Mechain, and Bouvard ; that Messier and Delambre do not reside at the observatory, and that Mechain is an able, industrious



industrious, and excellent man, and has laboured in the observatory for thirty years. In the years 1786 and 1787, he measured part of the longitudinal arch, in order to unite the observatories of Greenwich and Paris. See "*Exposition des Opérations faites en France, pour la Jonction des Observatoires de Paris et de Greenwich, par M. M. Cassini, Mechain, et le Gendre, Paris, 1796.*" From 1792 to 1798, Mechain has been occupied in measuring a meridional arch, from Barcelona to Rodés. He has completed this measurement, and the concomitant observations on the height of the pole, with all the accuracy to be expected from so able a man. Besides the place he holds at the Observatory, Mechain is Hydrographic Astronomer to the "*Depôt de Marine,*" or The Marine Depository: and has collected and calculated, with incredible industry, such observations as contribute to determine the extent of harbours and sea-coasts. From a correspondence of twenty years, which he has held with me, I can bear testimony to the

industry he has applied to the northern coasts. Mechain possesses, and deserves the regard and confidence of the Marine Minister, Bruix, and of Vice-Admiral Rosilly, who preside over the Depository. This deserving man, however, is not without his opponents, and I have heard some persons take great pleasure in reviling his character.

Bouvard, who came to the observatory since the revolution, is a very industrious and skilful astronomer. He always calculates his observations, and compares them with the best astronomical tables. The observations of the Arabians were collected by Iben Junis, whose principal manuscript is in the library at Leyden. Joseph de l'Isle, who formed an extensive collection of astronomical manuscripts, had a copy of it, which Messier received from him. This is now translated, and Bouvard has calculated out of it, and compared with our modern tables, twenty-six eclipses of the sun and moon, observed by the Arabians from  
the

the year 829 to 1004; twelve solstices; and several occultations of the planets; and one of Regulus, or  $\alpha$  in Leo, by the intervention of the moon. He has found that the mean longitude and anomaly of the moon must have decreased eight minutes, and that the place of her node has decreased two or three minutes. He has also found, that the Arabians were well acquainted with the mensuration and true length of the year, to within about five seconds of the truth.

The National Observatory is now in good condition, and provided with excellent instruments, for the common use of the four established astronomers, Messier, Delambre, Mechain and Bouvard. In the present organization of the observatory, no one of the astronomers is subject to another; but all the four are under the control of the Board of Longitude. It is possible that this organization may have its advantages; but it may also be attended with inconveniences. As long as perfect harmony

and a good understanding subsist among the astronomers, every thing will go on well. But unanimity is not always to be found in this sublunary world of our's, and the interruption of it might be attended with several difficulties. For instance, A undertakes a series of observations, which require that the instruments should neither be moved nor altered. B observes with the same instruments, and unacquainted, perhaps, with the designs of A, he finds that the transit-instrument, or the mural-quadrant, requires an adjustment only of a few seconds. He alters the instrument accordingly, and thus renders A's course of observations useless. Would not confusion ensue, if all the four co-ordinate astronomers should wish to observe at once, one and the same phænomenon; as, for instance, a planet's opposition to the sun, entrance into its node, its aphelion, the inclination of its orbit, &c. ? Would it not be better, therefore, to have this observatory organized like all the other establishments of the kind in Europe,



rope, where there is one principal astronomer, and the rest assist, and labour under his direction? But if each astronomer had the command of a separate set of instruments, the present regulations of the French National Observatory, would undoubtedly deserve the preference.

On the platform are two small chambers for the accommodation of those who attend the telegraph there erected. In summer, several trials were made there, with flag signals; but I am not acquainted with the object, or the success, of those trials; nor could the astronomers at the observatory give me any information concerning them. I should suppose that there can be no better construction of telegraphs than that with one principal pole, and two arms moveable at the ends; and such is the construction of the telegraph at the house of the Marine Minister, on the corner of the *Place de la Revolution*, and *Rue St. Florentin*; of that at the *Garde-meuble*, which conveys signals to Brest; of that on the Louvre, to Lisle;

and of that on the church of St. Sulpicius, to Strasburg; and these are the only telegraphs at this time in Paris.

I now proceed to the inferior observatories at Paris, which are to be considered either as public or private: the public are those of the Military School and French College, and the private ones are at the houses of Messier and Delambre.

The observatory at the Military School was put in order by Jeaurat, and Lalande has since had it under his direction. It is on the third floor of one of the wings of the Military School. The walls whereon the observatory and instruments rest are entirely solid, all the way up, and carefully overlaid; so that nothing has been neglected to ensure every possibly degree of steadiness. The instruments are, 1, An excellent eight-foot quadrant, by Bird. 2. A very fine four-foot transit instrument, by Lenoir, constructed entirely like the meridian telescope, at the National Observatory, which has been already described.

The

The place on which it is fixed is but just large enough, and I am rather afraid, that this situation on a high corner wall is not the best ; because the rays of the sun produce, on this account, more violent changes of heat and cold. Here are also a time-piece, a smaller quadrant, and several telescopes. Lalande has several apartments at this observatory, though he resides at the French College. At this observatory, which is very well constructed, that astronomer and his nephew observe the many thousand stars, which are most of them telescopic, or invisible to the naked eye.

The observatory at the French College, is on the third floor, and contains, 1, A small transit instrument of three feet, which is not well fixed. 2, A common French quadrant of three feet radius, with a moveable shade over it, intended for taking correspondent altitudes. 3, A four-foot sector. 4, Several time-pieces and telescopes. 5, Borda's circle of eighteen inches in diameter, by Lenoir, which, in my opinion,  
is

is the best instrument in this observatory. There are also several other less important and older instruments.

The observatory at the French College, as well as that at the Military School, is under the inspection of Lalande. This learned man is the Ptolemy of our age; for, as the *Almagest* of that old author contains a complete body of ancient astronomical knowledge; so Lalande's astronomy is a complete and excellent depository of the modern improvements in that science. He is a man of very extensive reading, is well acquainted with all the astronomical writers, and possesses great literary knowledge, qualifications not altogether common, even in France. He has greatly improved the astronomical tables, by determining and calculating their first principles, from the best modern observations. In conjunction with his pupil, and intimate friend, Delambre, he has calculated new tables of the planets, which are inserted in the latest edition of his astronomy, and are the best tables



bles of the kind extant. Lalande has a very extensive correspondence with all the astronomers in Europe, who have laboured to promote his favourite science. But it is admitted that he has lost some of his reputation in Paris, and that sufficient justice is not done to his merit.

Messier, so celebrated for the many comets he has discovered, lives at *Rue des Mathurins, Maison de Clugny*, No. 334, and has, on the upper floor, a small observatory, containing an accurate meridian line, a time-piece, a quadrant, and a parallaxic machine, wherewith he has discovered and traced his comets. This worthy old man is very lively and chearful, as I have experienced in the many agreeable hours I have passed in his company. Apartments have been prepared for him at the National Observatory; but his age, and the convenience he finds in his present situation, and in the use of his own instruments, sufficiently account for his continuing in his old abode.

Delambre,

Delambre, one of the best and greatest astronomers of France, lives in *Rue de Paradis au Marais*, No. 1, where he has a neat little observatory, with a small transit instrument, a good time-piece, which formerly belonged to *De la Caille*, the two circles, which Borda used in measuring a degree of the meridian in France, and several good telescopes. From a series of more than eight hundred observations, on different circumpolar stars, with the largest of Borda's circles, he has this winter determined the polar altitude, at his observatory, to within a second, or at least as nearly as the truth can be approached with instruments of fifteen or eighteen inches in diameter. Delambre told me, that, when he transferred the latitudes of his own observatory to the National Observatory, allowing for the known difference in latitude, ascertained by the measure of the meridian, he found the latitude of the National Observatory to be what Lalande had made it.

it. I must, however, observe, that owing to uncertainty of refraction, even when Bradley's table is used, as being the most accurate, an uncertainty of a second in latitude may still remain.

## LETTER XIII.

THE BOARD OF LONGITUDE, THE BOARD OF GEOGRAPHY, THE NATIONAL LIBRARY, AND THE LIBRARIES OF THE ARSENAL AND THE PANTHEON.

The Bureau des Longitudes, *instituted in Imitation of the British Board of Longitude, but with ampler Powers—Of whom composed—Fleurieu's large Marine Atlas—Business of the Board of Geography—Excellent Mathematical Tables—The War deprives France of Men and Money—Large Maps of France and Denmark—Cassini suspected, and his Maps, &c. locked up—National Library and its Regulations—Pair of Globes thirty Feet in Diameter, an useless astronomical Luxury—M.S. Letters of Colbert, &c—Prints—Antiques—Egyptian Curiosities—Shields of Scipio and Hannibal—*



*nibal—Intaglios—Antiquities despised in France—Schools for Oriental Languages—Libraries of the Arsenal and Pantheon—Libraries, Paintings, &c. of those banished, &c. partly destroyed, partly formed into new Collections.*

EXPERIENCE has proved, that the Board of Longitude in London has been productive of much good. That laudable institution has been imitated here, and the *Bureau des Longitudes* was established by a decree of the 7th Messidor in the 3d year. But this Bureau is on a more extensive scale, and endowed with greater authority than the Board of Longitude in England. The *Bureau des Longitudes* has under its inspection the National Observatory at Paris, and the one at the Military School, together with all the astronomical instruments belonging to the nation. It gives orders for the necessary regulations which take place at both the observatories; and appoints and pays astronomers and attendants.

tendants. It employs itself in improving the astronomical tables, and the methods of determining the longitude, both by sea and land; in publishing the astronomical and meteorological observations; in calculating the *Connoissance des Temps*, which is published two years in advance, in order that the French navigators, when, on long voyages, they would determine the longitude, from the calculated distance of the moon from the sun or the stars, may be under no embarrassment. This, however, cannot happen at the present period; as the French have neither trade nor navigation. Privateers never proceed so far as to make the calculation of longitude necessary; for they take the first vessel they meet, whether she belong to friends or foes. The members of the Commission are men of the greatest celebrity: *Geometricians*, Lagrange and Laplace; *Astronomers*, Lalande, Messier, Mechain, and Delambre; *Navigators*, Borda and Fleurieu; *Geographer*, Buache; *Artist*, Carroché; *Adjunct Astronomers*, Fran-

çois Lalande and Bouvard. These commissioners meet regularly, once in every decade, and oftener when circumstances require it, in one of the smaller apartments of the National Institute.

Of all these members of the Board of Longitude, I have either already given an account, or intend doing it more fully in the next letter. What relates to Fleurieu, I shall mention in this place. He was formerly an officer in the navy, and, since the revolution, was, for some time, Minister of the Marine. Among many other voyages, he made one in the year 1769, on board the frigate *Iris*, in order to make a trial of two of Berthoud's sea time-pieces. He has published an account of this voyage, in the course of which, he determined the longitudes and latitudes of many harbours and coasts, more accurately than had been before done. He has bestowed much labour on the improvement of sea charts in general, but more particularly on those of the sea of Kamtschatka, and of the Baltic and eastern

eastern seas. He shewed me a large and beautiful atlas of the above voyage, and which consisted of about one hundred and thirty charts, extremely well engraved. At the same time, he shewed me a quarto volume, already printed, consisting of about three series of alphabets, and containing the astronomical, geographical, and nautical observations, by which the situations of the coasts were determined. He not only made those observations, but calculated them throughout, or had them calculated by others, on the same plan in which Mechain calculated the great Swedish and Danish triangles, and deduced therefrom the latitudes and longitudes. He found it necessary to correct, alter, and improve several things in the Swedish calculations, but none in the Danish, having found all the longitudes and latitudes such as I calculated, and partly published, them. The printing both of the charts and text of this important work, was begun in times of monarchy. Since the revolution, it has been



been suspended for want of support. The Directory have promised, however, that the printing of it shall be resumed, as soon as money and opportunity will admit. It would be a great loss to the sciences, if this elegant and useful work, which has cost Fleurieu so much time and labour, should be laid aside unfinished.

The Board of Geography (*Bureau du Cadastre*) is a very good institution, and under the superintendence of the excellent Prony. The geographers employed by this Board are all taken from the geographical school, and are therefore well acquainted with theory, and highly capable of performing all the mensurations and calculations relating to their department. Under the superintendence of this Board, are executed geographical and topographical admeasurements and descriptions of the territories of the republic; geographical maps; maps for particular purposes, such as mines, forests, farms, inland navigation, &c. statistical calculations of the square contents and

and population of departments ; population of cities, &c.

To this Board also belongs the calculation of new mathematical tables, according to the centesimal system, (namely, one hundred degrees to a quadrant, one hundred minutes to a degree, one hundred seconds to a minute, &c.) both for the natural and the logarithmic sines, tangents, &c. According to some *formulæ* published by Prony, the sine of any angle after  $30^{\circ} 10'$  on the top of the page, is calculated by the differences 1, 2, 3, 4, &c. for every ten seconds, while the differences are invariably the same. The number of decimals, if my memory do not fail me, amounts to sixteen places. At the bottom of the page, the sine is in like manner calculated for the angle there situated,  $30^{\circ} 30'$ , with all its differences. By the regular method of adding the difference, one finds the sine of  $30^{\circ} 10' 10''$ , of  $30^{\circ} 10' 20''$ , of  $30^{\circ} 10' 30''$ , &c. and can proceed all the way through, to  $30^{\circ} 30'$ , at the bottom of the page. By the differences,  
and

and their additions, the same result will be given to the lowermost angle at the bottom of the page, as has been calculated by Prony's *formula* of infinite series. By this method, those difficult calculations are made so perfect and simple, that any one can fill up occasional deficiencies. Those tables are calculated by two persons, who compare their results; so that no error can remain undetected. The page is to contain the logarithms of sines, tangents, cosines and cotangents, most of which are already calculated. Prony shewed me some stereotype proofs of the impressions of those tables, by Didot, inventor of that mode of printing.\*

\* The apposite name, *Stereotype*, may have been first applied by that excellent printer, Didot; but the *art* was invented, about the year 1725, by a Mr. Ged, who, among other books, printed a very neat 24to. edition of Sallust, by that method. But, after persevering many years, he was obliged, by a shameful combination, to abandon it. I have Ged's Sallust, and have seen his plates of the 13th and 102d pages of that work, which has for imprint, "EDINBURGI: *Gulielmus Ged, aurifaber Edinensis, non typis*  
N *mobilibus,*

It will be very long before those laborious, expensive, and copious tables can be printed; but they will be the most complete and ac-

*mobilibus, ut vulgo fieri solet, sed tabellis, seu laminis fustis, excudebat, MDCCXLIV,*" that is, "Edinburgh: Printed by William Ged, Goldsmith in that City, not with common moveable Types, but with fused, or cast, Plates, 1744."—In 1782, Mr. Alexander Tilloch revived, or rather re-discovered, this art; for he was ignorant of Mr. Ged's invention, till long after he had perfected his own; and, in the succeeding year, he took out a patent for it, in conjunction with Mr. Andrew Foulis, printer to the University of Glasgow. In attempting to introduce it, they experienced some illiberality from the booksellers. Yet they printed several volumes in that way, one of them a 4to Xenophon, and sold them to the *Trade*, without their knowing how they were printed. Constant occupation and other causes have prevented the parties from availing themselves of their patent; but Mr. Tilloch had brought the art to such perfection, that the people employed made plates of *all sizes*, with as much facility and certainty, as if they had been making tiles, or pursuing any other process, which requires mere labour, without ingenuity. Mr. Tilloch obviates the great objection to his art, by cutting out and replacing, any damaged or erroneous part of a plate, with the utmost ease.

Translator.  
curate



curate that have ever appeared. Prony has consulted all his preceding labourers, Rheticus, Vlacq, Petiscus, Gardiner, Schultz, Vega, &c. In the new stereotypic edition of Callet's Tables, the fines are inserted after the new division of the quadrant into  $100^\circ$ , but not into centesimal minutes.

Borda intends publishing new tables of fines, in centesimal degrees, minutes, and seconds, constructed in a commodious and perfect form, for finding out the seconds; nearly on the same plan as that on which Pezena and Callet's tables are constructed for 90 degrees, with sexagesimal divisions. On my visits to Borda, I have often found him occupied in correcting his tables. He complained that he could procure no paper, and must still defer the printing of them. Since the revolution, manufactures of almost every kind, have either been stopped, or carried on very slowly. Money, that great spring which keeps the world in motion, has been wanting in their manufactures, commerce and every establishment what-

ever. In some parts of the country, the want of men has also been felt; for, when it is considered, that the government have, this last year, imposed a conscription of 200,000 men, besides from 4 to 600,000 already carrying arms, hands must necessarily be wanting in manufactories, which, even before this conscription, were at a stand.

It has been already shewn, that geographical maps are under the superintendence of the Board of Geography. Cassini and De la Hire had, in the close of the last century, proceeded in measuring a part of the meridian of Paris; Cassini, the son and grandson, have since completed the rest of the meridian through France, and to this meridian have drawn a perpendicular. Finally, Cassini and De la Caille, in 1740, repeated the whole measurement of the meridian through France. See "*La Meridienne verifiée par Cassini de Thury, Paris, 1744.*" Since that time, the geographical situations of many sea-ports, towns and churches have been determined, and their latitudes and longitudes.

longitudes accurately ascertained. Besides drawing this meridian over a part of France, as a basis for an exact and general map, the Cassini's had it in view to compleat these great triangles, by a general admeasurement of the situations of particular places, country towns, castles, enclosures, woods, roads, seas, rivers, sea-coasts, &c. and to publish an exact general map of France. But the necessary advances and subscriptions were wanting for purchasing instruments, and paying for the surveys, and for drawing, engraving, and publishing the maps. These extraordinary expences, however, were defrayed, partly by the support of government, and partly by private contributions and loans. An account of these subscriptions and contracts is to be seen in

*"Description Géométrique de la France, par M. Cassini de Thury, Directeur de l'Observatoire Royal, à Paris, 1783, pp. 194—200: Projet et Acte d'Association, pour l'entreprise d'une Carte générale de France, par M. Cassini de Thury, pp. 200—207: Projet de*

*Souscription pour la Carte de France, en 173  
feuilles, proposé par M. Cassini de Thury.*

The work was begun about the year 1740, and is at this time continued. These maps which, by the best informed geographers, are called The Cassinian Maps, are one hundred and eighty-three in number, and form an atlas of France, so accurate and beautiful, that no other state whatever can produce a similar work. In the small kingdom of Denmark, the Academy of Sciences have at least imitated, if not surpassed, this excellent design : and it is with pleasure I reflect, that those geographical admeasurements were the principal labours of my youth, and are still carried on under my direction. The present Cassini and his associates had almost finished a general map of France, when the revolution took place.

I have before observed, that Cassini was suspected of royalism and aristocracy. The ruling party seized the draughts of the admeasurements, drawings, and copper-plates, and



and even the innocent white paper belonging to Cassini, and deposited them altogether at the Board of Geography, where they still lie, and of which, for the present at least, no impression can be obtained; so that the Cassinian maps will, in future times, be a rare and scarce collection. Cassini complains bitterly on the subject, and has shewn me copies of several petitions to the Government for reparation. It is possible that government may have good and sufficient reasons for preventing the circulation of these charts, while internal commotions are apprehended; but, on the other hand, equity and justice require that the property of Cassini and his associates should not be injured, and that the loss they have sustained should be made good.

*The National Library*, formerly the King's Library, is situated in *Rue de la Loi*, formerly *Rue Richelieu*, opposite to the great Opera-house. The south side faces the *Rue Neuve des petit Champs*, and its north side is in the *Rue Colbert*. The building

of the library, with its appurtenances, is very large ; its length in *Rue de la Loi* being no less than eighty-five toises, and its breadth between the two streets abovementioned, twenty toises. In the court of the National Library, is a fine statue of bronze, representing a woman standing on one foot, in a very easy and natural attitude. The principal floor of the building, which surrounds this large court, is entirely filled with books, from the floor to the cieling ; it is surrounded by a slight gallery, from which one can reach the books on the upper shelves. At the windows, and in different parts of one of the wings, tables have been placed for the accommodation of readers. While the weather continued mild and fair, I always found from forty to sixty persons, some of them ladies, reading at those tables. The library is open every day, except the decade days, from ten to two, for the accommodation of readers ; but no books are lent out. For such as only wish to see the library, it is open from ten to two

two, every third, sixth, and ninth day of the decade.

In a small recess of one of the four sides of the library, is a group of about five feet in height and six in breadth, erected in the time of Louis the Fourteenth. It represents, as far as I could collect, Parnassus with Apollo and the Muses, and several attributes applicable to the æra of that Monarch. There are also in the library some busts of celebrated French *literati*, and of others, who have contributed to the improvement and augmentation of the library.

In the other wing of the library, a very large perforation in the floor presents two large globes, the celestial and the terrestrial, which stand on the floor below, and their upper parts project above the floor of the library. These globes are thirty feet in diameter. The Meridians and horary circles are gilded. On the terrestrial globe, the water is coloured blue, and the land white. Cities are painted with red and gold colours, and the mountains with a

N 5. green

green ground, and shaded with brown. The ground colour of the celestial globe is a light blue, and the figures of the constellations of a darker blue; the fixed stars are inserted according to their right ascension, declination, and magnitude, and all very thickly gilt. These globes are very well executed, and are the largest I have ever seen. They are a piece of art characteristic of the close of the last century, when they were made, and when large globes were in great repute. But they are, in fact, nothing more than an astronomical luxury, a piece of scientific profusion, of no real effectual service; though they must have cost a very considerable sum of money.

Caperronnier, the present librarian, supposes the library to contain about 300,000 volumes. It is very incomplete in modern literature; for, since the year 1789, no new books have been added to it, not even French, and much less foreign productions. Of this last description, several capital works seem wanting; so that in the midst of this  
great



great opulence, a kind of literary penury is still felt. The national and other libraries have received considerable augmentations from the libraries of monasteries and emigrants. This is an easy, and a very cheap method of increasing a stock of books.

The manuscripts, to the number of 80,000, are in more retired apartments. The oriental manuscripts are kept by Langles; those in Greek and Latin by Laporte Dutheil; and those in the modern languages by Legrande. The manuscripts are divided agreeably to this classification, and are well arranged. Since these subjects are foreign to my sphere of study, I shall only relate such observations as I made, in a cursory manner. Here is a complete collection of Colbert's letters in about sixty volumes. A volume of letters, some in English and others in French, written by Henry VIIIth of England, in a good, legible hand. A volume of letters from King Henry IVth of France to one of his mistresses: his hand-writing is tolerably neat.

and legible, and he has expressed himself with much vivacity and gallantry. To indicate the ardour of his amorous attachment, he says, "*Je vous aime plus, que vous aimez vous meme.*" I love you more than you love yourself. Here is a large collection of the French King's *heures*, or missals, all written very beautifully on the finest vellum, and embellished with elegant borders and fine drawings, most of them scripture histories. On every leaf of one of those missals, is a beautiful drawing of a flower, with its name in Latin and French, so that it forms a collection of botany as well as religion. Vanquished Italy has been obliged to contribute her mite to the treasury of the national library; for all the most valuable printed books and the scarcest manuscripts, have been taken from the Italian libraries. Among those Italian manuscripts, I particularly observed two Codices in parchment, a Terence, and a Horace, from the library of the Vatican. I am no hunter after various readings; yet it is possible that

these Codices have no critical merit, but are remarkable only for their external beauty and excellent preservation.

Two rooms belonging to the library are filled with a large collection of prints, which are under the superintendence of Joly. Some pieces are hung to the walls, but most of them are in port-folios and cafes. Here in particular is a collection of about sixty volumes of prints of remarkable transactions and events, in the history of France, arranged according to the year, or reign, down to the time of Louis XV.

The collection of antiques and coins is at the end of the library : the keepers are Barthelemy and Millin. The latter gentleman is remarkably attentive to strangers, and every seventh day of the decade has an agreeable party to drink tea at his house, where he is glad to see foreign travellers. Mr. Manthey, secretary to the Danish embassy, whose civility and goodness I thankfully acknowledge, first introduced me to this society, in which I enjoyed much comfort

fort and satisfaction during my stay in Paris.

Millin reads public lectures on archæology every second, fifth, and eighth day of the decade. He is editor of the *Magazin Encyclopédique*, and is well known by his other publications. The collection of antiques and coins is not open to the public, but is to be seen by particular permission. Millin had the goodness to shew this collection to Captain Friboe, Mr. Wedege, Mr. Duncan, myself, and other travellers.

Straight against the entrance and over the chimney-piece, various Egyptian antiquities meet the eye; such as an altar of basalt, an Isis, Anubis, and several curiosities of bronze, stone, and burnt clay. Here is a mummy taken to pieces, the upper covering having been taken off, and extended upon the wall: it is remarkable for its fine colour and drawings, which without doubt were emblems of religious ceremonies. Near the fire-place are drawers, containing French and other medals,



dals, chiefly of gold. On the wall to the right of the door, are hung up lamps, and sacrificing knives and vessels of bronze. Between the windows, on the same side, are several large chests with glass-lids, containing antiquities of the primitive times of Christianity, chiefly Greek. In the third and fourth divisions, are stones cut in *bas-relief*, some of them Greek, and others Roman productions. Almost all of them have been executed in stones, which have their *laminæ* of different colours, disposed in such a manner, that the features of the figures had one colour, but the hair, helmet, clothes, &c. different ones. There are among them many beautiful and excellent pieces. At one end of the room, are several warlike instruments of different Indian nations. On the floor, stands a large antique marble table, with a Latin inscription; and the walls are decorated with the shields of Scipio and Hannibal, which were once suspended in temples. They are of silver, and of very beautiful workmanship.

By

By the side of them are placed the arms of Francis the First, such as his helmet, shield, sword, battle-ax, and spurs, all of steel, inlaid with gold, and most exquisitely formed. On the shield are Arabian drawings, executed with regularity and taste. His stirrups which are of silver, gilt and carved with open work, are placed underneath.

Between the windows on the left hand side, are several intaglios: in the sides of most of them are incisions through which one can discover their comparative beauty. At the end of this side is a case which contains a very valuable stone, with several figures projecting out of it. It is about twelve inches high and ten inches broad, and having been broken quite through, it has been joined with such art, that the fracture cannot be distinguished. In this case are different vases of stone, one of which is of sardonyx, about seven inches high, and five in diameter. Millin assured us, that the pieces in this case are the most beautiful

beautiful and curious of their kind in Europe.

In the middle of this cabinet of antiquities, is a long table covered with Hetru-rian vases of superior beauty. Under the table are drawers, containing Greek and Roman coins, both of gold and silver, and a vessel of the former metal, about eight inches in diameter, in which are a great number of old gold coins.

After having viewed this room, where every thing was arranged in the best manner, Millin conducted us to the third floor, where are two apartments, which contain a very large and remarkable assemblage of antiquities; Hetru-rian vases of extraordinary magnitude; a bathing vessel of porphyry in good preservation; figures in bronze; sacrificing knives, lamps, household furniture, &c. not suspended separately on the walls, but placed here and there along the floor, as convenience admitted. Those apartments on the third floor, seemed to be more distinguished as antiqua-

antiquarian lumber rooms, than for any regular arrangement of the many valuable curiosities which they contain. Millin, for above three years, has been requesting money for constructing cases and shelves for arranging and containing this chaos of antiquities; but his applications have not yet been attended to. He is full of zeal and activity in this his favourite pursuit: he complains that the study of ancient literature and arts are not only neglected, but totally despised, as unnecessary for forming a good taste and accurate ideas of the fine arts. On the first of Vendemaire, or last of September, none of the attendants belonging to this collection had received any salary for the preceding eight months.

By a decree of the 10th Germinal, in the third year, a school was instituted, adjoining to the National Library, for the modern oriental languages, where public lectures are delivered by Langlés, on the Persian and Malay languages; by Silvestre Sacy, on the common and learned Arabic; and



and by Bohenam, on the Turkish and Tartarian.

While I was in Paris, my countrymen, Dr. Müller, Dr. Englestoff, and Dr. Thorlacius were also in that city. As those gentlemen regularly visited the National Library, they will be able to give very particular accounts of that establishment; nor is it to be doubted, that when opportunity serves, they will favour the public with some of their observations.

Besides the public libraries mentioned in this and preceding letters, there are the two following :

1. The library of the arsenal, which is supposed to contain 75,000 printed volumes, and 6,000 manuscripts, and which formerly belonged to the Count d'Artois. It is open every first, sixth, and eighth day of the decade, from ten till two.

2. The library of the Pantheon, formerly the library of St. Genevieve, which consists of about 100,000 printed volumes, and 2000 manu-

2000 manuscripts, and is decorated with different marble busts of French *Literati*.

Before I quit this subject, I must remark, that on the first appearance of terrorism, the libraries, paintings, natural curiosities, and instruments of such as were banished or put to death, were partly destroyed, and partly carried off. But the more prudent put a stop, as soon as possible, to those robberies; and it was resolved, that all such articles should be considered as national property, and be collected and preserved, until farther orders. Of such collections of books, three depots have been formed one in *Rue des Capucins*, one in *Rue des Cordeliers*, near the Medical School, and one near the Central School in *Fauxbourg St. Antoine, ou ci-devant Jesuites*. Those books are now arranged and distributed among the libraries of other Institutes in Paris, and in the departments; and I have often seen cart loads of books taken from those collections.

## LETTER XIV.

THE NATIONAL INSTITUTE, WITH AN ACCOUNT OF ITS MEETINGS.

*Academy of Sciences, &c. founded by Louis XIV. and Colbert—Respectable at the Revolution—National Institute, founded on their Ruins, more comprehensive—Its Members, Classes, Sections, and Times of Meeting—Proposes Prize Questions—Its Members and Pupils to travel for Information, at the Public Expence—Is the first learned Body in Europe—National Palace of the Arts and Sciences described—Fire-escapes, which did not answer the End—Meetings of the Institute, and Memoirs read—Ministerial Impertinence and Partiality, in the Case of Bralle—Numerical Telegraph proposed—Maskelyne's Name partially omitted in a Report concerning the Longitude—Excellent Pun—Mercury frozen—Severe Frost at Paris—Reviews of the Institute, impartial and well written—Ministers often ask the Opinion of the Institute*  
—Its

*—Its solemn Meetings—Artists rewarded and crowned.—Arts and Manufactures—New Animal—Bougainville's Eulogy of Cook, &c.—Memoirs, Publications and Pursuits of the Members of the National Institute—The Author falsely accused of calumniating that learned Body.*

**L**OUIS XIV. and his minister Colbert, were both favourable to the sciences. Seeing their happy influence on navigation, arts, manufactures and trade, they encouraged and patronized the cultivators of science and useful arts. In order to promote agriculture, and extend scientific inquiries, Louis XIV. founded "The Academy of Sciences," which comprehended mathematics in all their branches, physics, natural history, chemistry, and medicine: he also established the Academy of *Belles Lettres*, the Academy of Inscriptions, the Academy of Surgery, and the Academy of Architecture. These academies, as appears from their memoirs, have always consisted of able and skilful men, who have thrown  
new



new light on the arts and sciences, in their writings, and have enriched them by numerous and important discoveries. At the commencement of the Revolution, the Academy of Sciences in particular, included some of the greatest men in Europe, in their respective departments. To be convinced of this, we need only name the mathematicians Lagrange and Laplace; the chemists Lavoisier and Fourcroy; the natural historians and mineralogists Daubenton, Lacepede, and Haüy; the astronomers Lalande, Messier, and Delambre; not to mention many others who have contributed more or less to the extension of scientific inquiries.

During the Revolution, all preceding monarchical institutions underwent a change, and even the free temples of the sciences were subverted. Upon their ruins, was founded the National Institute, which not only comprehends all the branches into which the academies of sciences, and of the *Belles Lettres*, were formerly subdivided,

vided, but also includes logic, morals, and politics.

The decree, which established the National Institute, passed the 3d Brumaire, 4th year, or the 24th of October, 1795. According to this decree, the Institute belongs to the whole republic; but is to be situated in Paris. Its object is, to extend the limits of the arts and sciences, by discoveries and inquiries, and by corresponding with learned societies in foreign countries. By the resolution of the Directory, the Institute is to undertake and promote such scientific labours as conduce to the general utility and honour of the Republic. It consists of 144 members, residing in Paris, and of an equal number in other parts of the Republic, and it may additionally admit eighty foreign associates; but they have not yet been chosen. The National Institute consists of three classes: the first, or mathematical and physical class, is divided into ten sections, each of which has six members.

The 1st section. Mathematics; Lagrange,

grange, Laplace, Borda, Bossut, Legendre, and Delambre.

2d Sect.—Mechanics ; Monge, Prony, Leroy, Perier, &c.

3d Sect.—Astronomy ; Lalande, Mechain, Messier, Jaurat, &c.

4th Sect.—Experimental philosophy ; Charles, Briffon, Coulomb, Lefevre, &c.

5th Sect.—Chemistry ; Berthollet, Guiton Morveau, Fourcroy, Vauquelin, &c.

6th Sect.—Natural history and mineralogy ; Darcet, Haüy, Dolomieu, &c.

7th Sect.—Botany ; Lamarck, Adanson, Jussieu, L'Heretier, &c.

8th. Sect.—Anatomy and Zoology ; Daubenton, Lacepede, Cuvier, &c.

9th Sect.—Medicine and Surgery ; Desfarts, Sabatier, Portal, Laffus, &c.

10th Sect.—Agriculture and the Veterinary art ; Thouin, Cels, Parmentier, &c.

There are, in all, in this class, 60 members at Paris, and an equal number in the departments, where they are also di-

vided into ten sections, each consisting of six members.

The second class comprehends Moral and political science, and is divided into six sections, each consisting of six members; in all thirty-six members, and as many in the departments.

1st Sect.—The analysis of sensations and Ideas.—2d Sect. Morals.—3d Sect. Civil society and laws.—4th Sect. Government.—5th Sect. History.—6th Sect. Geography.

The third class is occupied with literature and the fine arts, and is divided into eight sections, each six members; in all forty-eight members in Paris, and as many in the departments.

1st Sect. Language or grammar.—2d Sect. Ancient languages.—3d Sect. Poetry.—4th Sect. Antiquities and monuments.—5th Sect. Painting.—6th Sect. Sculpture.—7th Sect. Architecture.—8th Sect. Music and Declamation.

Every



Every class meets twice in every decade; the first class on the first and sixth days; the second on the second and seventh days; and the third on the third and eighth days. Each class has its president and two secretaries, who are elected by the class they respectively belong to, and continue in office for six months.

On the 5th day of the first decade, in every month, the three classes unite, and hold a general meeting, to deliberate on such affairs as relate to the general interests of the Institute. The oldest of the three presidents of the classes then takes the chair, and acts as president of the whole Institute.

The National Institute has four public quarterly meetings; namely, on the 15th of the months of Vendemiaire, Nivose, Germinal, and Messidor. Each class annually proposes two prize questions; and in these general meetings, the answers are made public, and the premiums distributed.

The united sections of painting, sculpture,

and architecture elect the pupils who, at the expence of the Republic, are to travel to Rome, and to reside at the national palace, in order to study the fine arts. By virtue of a decree of the 3d Brumaire, 4th year, the Institute should likewise elect twenty young men, to travel in France and foreign countries, for the purpose of studying rural œconomy. Six members of the Institute itself, are also to travel at the public expence, in order to collect information, and to acquire experience in the different sciences. But I do not apprehend that any of these scientific expeditions have been performed; war and the want of money having probably obstructed these very useful undertakings.

It may be presumed, that the members have named, in the several sections of the mathematical and physical classes, are the most celebrated and eminent men in their scientific departments. The two other classes are also composed of members equally respectable; and, upon the whole,

it cannot be denied, that the National Institute of France is the first learned body in Europe.

Among the many pleasures I have derived from my travels, I account it the greatest that I have become personally acquainted, and frequently conversed, with so many excellent men, all eminent in their respective pursuits. I may particularly mention Lagrange, Laplace, Borda, Bossut, Legendre, Delambre, Prony, Perier, Lalande, Mechain, Messier, Jeaurat, Charles, Brissot, Coulomb, Lefevre-gineau, Fourcroy, Vauquelin, Darcet, Haüy, Lacepede, Cuvier, L'Heretier, and Gregoire. The remembrance of these excellent men will always be dear to me, and I shall ever thankfully acknowledge their friendship and civility. As soon as I arrived at Paris, I was presented, by Mr. Secretary Dreyer, to Talleyrand and Perigord, the ministers for foreign affairs, by whom I was introduced to François Neufchateau, the minister for the interior, and by him again to

the mathematical and physical class, whose president at that time was Boffut, well known for his many excellent mathematical writings.

This chearful, good man received me with much civility and friendship; he informed me who were the French commissioners for weights and measures, and that the Institute had resolved that the foreign commissioners, during their stay in Paris, should be considered as members of the Institute, and have free admission to every particular class, and to their general and solemn meetings. He then delivered to me an oval printed card, inscribed round one side *Republique Française*: in the middle *Citoyen Byggé, Membre et Commissaire de l'Institut National des Sciences et des Arts*: and it was subscribed *Cels, President de la Commission des Fonds, et de la Bibliotheque*. On the other side were printed the words, *Le Citoyen Byggé, Commissaire des poids et mesures, envoyé de Dannemark*.

The apartments of the Institute are on  
the



the first floor of the *ci-devant Louvre*, now called the *Palais National des Sciences et des Arts*. At the entrance is an elegant anti-chamber, through which one enters the hall of the Institute, which is oblong, lighted by windows in each end, and hung with tapestry. Small tables covered with green cloth are placed parallel with the walls and windows. In the middle of one of the longest sides, is the chair of the president, and his two secretaries are seated one on each hand of him. Straight before the president, in a rectangular space, is a table where those who have any thing to read usually stand, particularly if they be not members of the Institute. Within this space, a table was placed for the foreign commissioners for weights and measures. The length of the hall is sufficient to admit twenty-six persons to sit at each of the longest sides of the tables, and about ten may be seated at each end, besides benches for strangers adjoining the wall and windows. On one side of this great hall, is a

smaller apartment for the reception of the communications of correspondents. The library, in three large apartments, contains about 16,000 volumes, including the transactions and memoirs of the former French academies, and of foreign scientific establishments and literary societies. The Institute has also an apartment for the secretary and his assistant; and a large room for a collection of machines and models, wherein are many pieces of mechanism which belonged to the old Academy of sciences: and a great number of models of all kinds of ships; for this room was once used as a model-room for the students of naval architecture.

Since the establishment of the Institute, there have been deposited here more than twenty models of machines, intended to enable people to escape from the upper stories of buildings on fire. Of these models the descriptions and drawings of three, which were looked upon as the best, have been published, under the title of *Rapport*  
*sur*

*sur les moyens de sauver les personnes, renfermées dans les maisons incendiées, par Prony, Coulomb, Peyre, Bougainville, Perier et Boullée.*

In the garden of the *Palais Royal*, now the *Palais d'Egalité*, a building had been erected, one hundred fathoms in length, and chiefly of wood. In 1798, this building took fire, and during this violent and dangerous conflagration, some of those machines were produced and tried; but were consumed along with the building.

I have been several times at the meetings of the second and third classes; and those of the first, or mathematical and physical class, I almost always attended. I shall give some cursory accounts of what passed in those meetings. The president, Bossut, conducted me to the National Institute on the 11th Fructidor, or 28th of August. The meeting began, as it generally does, at six o'clock, and continued till eight. It was opened, as usual, by reading an abstract of the proceedings in the

meeting, which was this evening followed by a chemical dissertation on the analysis of saliva, with physical conclusions thence deduced. Portal, the physician, did not seem satisfied with it, but objected that it was impossible to reason on effects in the human body, from those which casually took place in glasses and retorts. Chaptal read a method of producing from vegetables, a material which communicates to linen and woollen manufactures, a much more beautiful and durable yellow than the common one.

Dizé, a pupil of Darcet, read a treatise on light and caloric, wherein he attempted to prove that these principles are always united, and are only one and the same element in nature. He had mixed alkalies and acids, which by combustion produced heat, and he had very often seen, in the dark, sparks emitted by the mixture. Laplace, who has extended the limits of several branches of science, and who often speaks before the Institute, with that order and clear-



clearness of thought which might be expected from so eminent a man, raised a doubt, whether this light might not be electric. He said he remembered to have made a similar experiment along with Lavoisier; and advised the author to repeat it, and for the greater certainty, to insulate the vessels.

Maindon, a lieutenant in the navy, produced a new graphical method of ascertaining the observed distance between the sun and moon, or a fixed star and the moon, in order to find the refraction and parallax, in observations for finding the longitude at sea. This treatise was delivered to Borda and Levesque of Nantes, (known for his excellent book on navigation) for them to report their opinion of it to their Institute.

The Institute in its manner of debating, resembles the English Societies. Any individual who is inclined to speak, asks leave of the president, to whom he addresses his discourse, and every individual speaks in

order which his inclination suggests. Hence those debates are carried on with regularity, decorum, and mutual respect.

At the meeting of the 16th Fructidor, or the 2d of September, a programma was read by François de Neufchateau concerning the festival of the 18th of Fructidor. Chaptal read a memoir, in which he and other chemists were disposed to prove, that there was an essential difference between acetic and acetous acids: his experiments and proofs appeared to me to be very convincing. Beaumé, who is still an advocate for the phlogistic system, raised several objections. Fourcroy spoke with his usual elegance and solidity, and supported Chaptal's propositions. Two petitions from Beaumé and le Sage were produced, praying for an augmentation of their scanty allowance. In consequence of the opinion of the Institute, those petitions were sent to the minister of the interior, and both were recommended to his attention. A similar petition was read from one who mentioned  
his

his having travelled with the Abbé Haute Roche, and assisted him by his astronomical observations: but as none of the astronomers knew this man, or had heard any thing of his abilities and labours, his petition was not recommended.

In a meeting of the National Institute on the 6th of Vendemiaire, in the 7th year, or 27th of September, 1798, the famous botanist Jussieu, elected president in the room of Boffut, who went out in turn, took the chair. Jussieu having a very good voice, and a regular and distinct delivery, made an excellent president. The meetings, in the winter months, begin at half past five o'clock, and close at half past seven. A letter was first produced from the Minister for the Interior, inclosing a plan for altering and improving the water-works at Marly, proposed by Bralle, the engineer. Prony and Coulomb having already offered plans for a similar improvement, the minister proposed, that they should be authorized to examine this project

ject of Bralle. Laplace, Borda, and many more objected to this proposal, whilst others supported it. It was finally decreed, by a majority of voices, to write to the minister, that, if he requested the opinion of the mathematical and physical class, he must permit them to elect their own committee; but, if he only wished to have the opinions of Prony and Coulomb concerning this plan, it should be sent to them accordingly.

Guiron Morveau read an extract of a work sent to the Institute, concerning an analysis of Spanish minerals. Chaptal read a very favourable account and report of Dize's memoir on the identity of light and caloric. Laplace read an account of the disruptions of the dykes near Doel in Flanders, which happened under circumstances causing the highest tides. It was new moon, near the equinox, and the moon was, at the same time, in perigee, or nearest the earth, and consequently acting with her greatest possible force.

At



At this meeting was exhibited a model of a new telegraph, calculated to make signals by numbers. There were three perpendicular poles AD, BE, and CG. (See fig. 3.) The first pole may be allotted to units, the second to tens, and the third to hundreds; and to express the numbers of each, long pieces of board, *a*, *b*, *c*, can be suspended on every pole respectively. For example; when there are six pieces of board on CG, two on BE, and four on AD, the signal is 624. A particular signal may be made by a flag hoisted on BE, to represent what AD, BE, and CG denote in their decuple order. For instance; a white flag may signify the value first shewn; a red flag may shew that AD is 1000, BE 10,000, and CG 100,000; a blue flag may denote units, tens, and hundreds of millions; and a yellow flag, 1000 millions, 10,000 millions, and 100,000 millions, &c. On this principle, a signal system was proposed to be calculated, and a protocol of signals to be formed, wherein  
certain

certain numbers were to denote certain syllables, words, and meanings, according to which the signals of the telegraph were to be given and read.

This method is undoubtedly well contrived ; but it appears to me, that the telegraphs now used at Paris, with two moveable arms, which stand at different angles, in order to signify different syllables, are more simple in structure, and expeditious in practice \*.

Fourcroy,

\* It may not be amiss to observe, that a particular description of a telegraph, illustrated by wood-cut figures, and dated 1684, is to be seen in an octavo volume, entitled, “ Philosophical Experiments and Observations of the late Dr. Robert Hook,” and published by Mr. Derham, London, 1726. In that contrivance, the intelligence was to be conveyed by large wooden characters, some of them signifying whole sentences, which were to be successively brought into the field of vision, and drawn back again into a side-box. Though far from being complex, it was not quite so simple as the French one, with moveable arms, of which our author speaks. A similar contrivance is mentioned, but not described, in the Century of Inventions,

Fourcroy, in the last place, read an excellent account of a chemical analysis of *calculi* formed in the human bladder, undertaken by himself and Vauquelin. He had examined more than three hundred of those concretions, and found that they all consisted of the same component parts; but that they ought to be reduced into different classes. He mentioned one mon-

ventions, of the Marquis of Worcester, who, in a petition to Parliament, in the reign of Charles II. offered to publish the hundred processes and machines therein enumerated, on condition that money should be granted to extricate him from the difficulties, in which he had involved himself, by the prosecution of useful discoveries. But the petition does not appear to have been attended to. There were doubtless *other* uses for money in that profligate and needy reign; and many or most of the Marquis's expensive and admirable inventions were lost, probably for ever! The steam engine, however, which may be plainly traced in his interesting little piece, was afterwards re-invented by Thomas Savery, Esq. who was treasurer to the Sick and Hurt Office, and who gave the first description of it in his book entitled, "The Miners' Friend." — *Translator.*

stuous

stuous stone of the size of a melon. It is a luxury to hear this enlightened master treat of his science, with so much zeal and precision.

At the meeting of the 11th Vendémiaire, or 2d of October, several members read various extracts of memoirs communicated to the Institute; but none of any particular importance. Levesque read, in his own and Borda's name, a report concerning lieutenant Maindon's graphical method of ascertaining the distance between the sun and moon, in order to find the parallax. This report began with an historical relation of the first attempts made for determining the longitude. The whole was written with great ingenuity; but a little national partiality still prevailed, and the very great service which Dr. Maskelyne has rendered in this business were not thought worthy of notice. That able astronomer, by his *Mariner's Guide*, first contributed to promote and introduce the methods of distances among the English navigators;



navigators; and first proposed the publication of the Nautical almanack, and the Requisite tables to be used with it, which have afforded infinite assistance in the calculation of the Longitude.

Levesque took some cursory notice of the several methods for calculating the Longitude suggested by Lyons, Dunthorne, Maskelyne, and Borda. There appeared some degree of meanness in so often naming and commending Borda, who assisted in drawing up this report; yet I am not on that account disposed to depreciate, in any respect, the merit of Borda. The circle which Mayer invented, and Borda first brought into use in France, is an excellent instrument. Borda's method of calculating the Longitude is very good and expeditious; and he has been as active in introducing the Method of Distances among the French seamen, as Maskelyne was in promoting it among the English. About four-fifths of this report was taken up by the above-mentioned well written historical relation;

relation; the remainder consisted of a particular account and opinions of Maindon's memoir. The theoretic principles and algebraic processes, on which Maindon's invention depended, were shortly noticed, and, on the whole, his performance received becoming and well merited commendation. The Institute resolved that the report should be printed; but the form gave rise to debate. Some wished it to be printed separately, and others proposed that it should be inserted in the second volume of the memoirs of the Institute; and this last proposition was carried by a majority of voices. This day's transactions were closed by Prony, who read a letter from Delambre, mentioning that the measurement of a base-line near Perpignan, was very nearly completed.

At the meeting of the 21st Vendemiaire, or 12th of October, the president gave an account of several French and foreign communications received by the Institute. Dr. Humboldt read a memoir on the application

cation of the principles of modern chemistry to agriculture, and particularly in explaining the effect of manure on the growth of plants. The president read a list of reports of committees, which had not been returned to the Institute, before the current academic year. Some present members of committees promised to bring them in with the required notices: others declared, that the respective authors had withdrawn their plans and memoirs, which plainly indicated a conviction of the impracticability of their proposals, and the inconclusiveness of their deductions. Some memoirs and reports could not be accounted for; and it was conjectured that they had been carried to Egypt by Monge and Berthollet, who had acted as members of committees.

The National Institute had, by circular letters, requested descriptions of the climate, state, agriculture, manufactures, natural productions, &c. of other countries; and  
when

when the Institute had nothing particular to attend to, for the two hours of meeting, some of those descriptions were read. It is evident that such productions must have very different degrees of merit. This evening a piece was read, which contained accounts of Greece, Egypt, and Turkey, by Felix, the French consul at Salonica. It seemed to possess no considerable merit, except its describing countries, towards which the national attention was, at that juncture, particularly directed. After it was read, Deseffarts, the physician, who either had not heard, or pretended not to know, the author's name, enquired who had written that memoir. The president answering it was Felix the consul, Deseffarts excited a general laugh, by rejoining, in his usual facetious manner, "*Felix qui scripsit, infelix qui audivit.*"

Among the transactions of the meeting on the 11th Nivose, 7th year, or 31st of December, 1798, I shall only mention the  
 very



very remarkable experiments made on artificial cold by Fourcroy and Vauquelin. These experiments, which were formerly made on a small scale, by Lowitz at Peterburgh, have not only been repeated, but very considerably extended, at Paris. Within a large tub was placed a smaller one, and the interval between them was filled with a mixture of snow and salt, which produced a remarkable degree of cold. Within the second was placed a third, and the interval between the second and third was filled with a composition consisting of eight parts of muriate of lime, and six parts of snow. In the inner tub was very soon produced an intense degree of cold, which sunk the common thermometer of Reaumer to  $32^{\circ}$  below zero. In order to keep out the external warm air, the whole apparatus was covered with a glass case. By these interesting experiments, 20lb. of mercury was made to freeze in thirty seconds into a solid mass, which  
assumed

assumed a chrySTALLIZED form.\* Spirits of wine, the strongest vinegar, nitric acid, pure ammonia, and æther, froze in like manner. A finger applied to this mixture or solution, in four seconds lost all sense of feeling, became frozen, and as white as paper, with a very acute sensation, resembling a violent pinch. Most liquors froze, in a platina crucible, in thirty seconds; but, in a crucible of porcelain or clay, they required about two minutes, which is easily accounted for, from metals being more capable of conducting heat than clay.

The atmospheric cold, when those experiments were performed, was  $7^{\circ}$  by the centigrade thermometer, or 5,  $6^{\circ}$  of Reaumur's. Decimals being quite fashionable in France, thermometers are used, in which the dis-

\* In the Philosophical Magazine, Vol. III. we have an account of 56lb. of mercury having been frozen in London, the same winter, by Messrs. Allan and Pepys, who produced the artificial cold by mixing muriate of lime with dry, uncompressed snow.—

*Translator.*

tance

tance between the freezing and boiling points, is divided into 100 degrees, instead of Reaumur's division into 80 degrees. The Swedes have long used this division, under the name of Celsius's, or Christiernin's, thermometer.

On the same evening, Delambre and Mechain related to the Institute an account of their observations on the cold this winter, which has been very severe at Paris, stating, that on the 5th, 6th, and 7th Nivose, the centigrade thermometer stood at  $16,2^{\circ}$ , and Reaumur's at  $13^{\circ}$ . The frost first commenced in December, 1798; and, except a few days thaw, continued till the beginning of February, 1799. For some days in December and January, the thermometer stood at  $13^{\circ}$ , snow falling now and then, but seldom exceeding the depth of six inches, and the river Seine was frozen over. Indeed, severe weather is the more sensibly felt in southern countries; because the construction of the houses and

P

the

the apartments is not calculated to exclude the cold.

I have already observed, that when an author, whether French or foreign, sends any publication to the Institute, the president nominates a member of abilities in the science treated of, to select extracts from the work, and to read them at one of their meetings; a practice which has the advantage of making every member of the Institute acquainted with the contents and merits of the book. These reviews are always well written and impartial, conveying accurate ideas of the contents of every work—not like those critiques in some other countries, which may rather be called reviews of authors and individuals; than of their writings; and which, being composed with a view to introduce the thoughts and opinions of the censors, instead of those of the authors, are more of a didactic than a critical nature.

Many things are sent from the minister

for



for the opinion of the Institute. Private individuals, in like manner, send in memoirs, drawings, or models of machines, plans of various practical works, &c. in order either to make them known, or to obtain some other advantage. The class, to which the matters communicated are submitted, always nominates a committee to examine them, whose reports are read, and the communications are approved, rejected, or modified. It is natural to suppose that many projects are sent in, which are neither important nor useful; and I have often pitied the members of the Institute, in being obliged to spend much of their time on business of this kind.

Having thus given an account of some of the particular meetings of the National Institute, or more properly of the mathematical and physical classes, which take place every first and sixth days of the decade, I shall describe two of their public or solemn meetings. These meetings were not held

in the same room as their particular assemblies, but in another much more extensive and beautiful, and which formerly belonged to the academy of sciences. Both its longer sides are adorned by two beautiful colonnades; and the ceiling is finely painted and decorated. Between the columns are fourteen beautiful marble statues (seven on each side) of the greatest and most celebrated men whom France has produced; namely, Condé, Tourville, Descartes, Bayard, Sully, Turenne, Daguesseau, Luxembourg, L'Hopital, Bossuet, Duquesne, Catinat, Vauban, and Fenelon. At the ends, are two sitting figures of Pascal and Rollin. In the antichamber, are the statues of Moliere, Racine, Corneille, La fontaine, and Montesquieu. The hall extremely well lighted, by chandeliers and silver lamps. The floor is covered with carpet; tables are placed parallel to the four walls of the hall, at which the members of the Institute took their place.

The

There are particular places for the Directory, the ministers of the republic and foreign ambassadors.

The president of the Institute is seated at the uppermost end of the hall; and in the middle, and rather on one side of him, is a tribune, from which whatever is proposed is received by the president, who does not leave his chair. The place allotted for members is furrounded by a rail, between which and the walls there is round the whole hall a row of benches, where the spectators (among whom were many ladies) took their seats.

The first public quarterly meeting, at which I was present, was on the 15th of Vendemiaire in the 7th year, or the 6th of October, 1798. Jussieu, the president, opened the meeting in a short speech, wherein he signified that, in the first place, an account of the labours of the National Institute for the last three months, would be given by the secretaries of the different classes. Laffus, after an extemporaneous

preamble, read a well written abstract of the labours and memoirs of the physical class; Lefevre-gineau stated those of the mathematical; Daunon those of the moral and political classes; and lastly, Andrieux read abstracts of memoirs relating to the fine arts. In particular, he gave an account of a dissertation by the famous Dupuis, who wrote the *Origine des Cultes*, and many other well known works, in which the author endeavoured to prove that Denis, the *ci-devant* tutelar saint of France, was no other than Bacchus. As this must be a very acceptable sentiment to every Frenchman who is fond of wine, it was received with a general plaudit.

The president then delivered a short speech, on the progress which the arts must necessarily make among a people, where they are cultivated, esteemed, and rewarded, and then crowned with green wreaths, the following pupils who have received premiums in the fine arts: Harriet and Le Roi for a painting representing the  
combat



combat of the Horatii and Curiatii; Laville for a basso relievo of Marcellus, the Roman general, who, after the sacking Syracuse, permitted his soldiers to carry specimens of the arts to Rome; and Clemence and Pompon for drawings in architecture, and plans of an exchange. These industrious young artists, by obtaining the first premiums, have acquired the right of being sent to Rome, whenever circumstances will permit, and there prosecuting their studies at the expence of the republic.

In the next place, Camus delivered an extemporaneous discourse, and gave an account of other great and important labours in which the National Institute were engaged. Under the monarchical government, the Academies of Sciences and Literature had begun different works of importance to mankind, and which on that account would reflect honour on the nation. They intended to publish, 1. The whole of the

French historical writings; 2. French and foreign diplomatic papers; 3. A catalogue of the manuscripts in the National Library; 4. Descriptions of arts and manufactures. These designs were interrupted by the revolution; but every friend to science and literature must hear with pleasure, that these important labours are to be again undertaken, and that the present government will grant the supplies necessary for that purpose.

The National Institute have nominated committees, who are to proceed on the plan of those, who, under the former government, laboured on collections and editions of the old French historical writings, such as Brial and De Clement, the famous author of "*L'Art de verifier les Dates.*" These committees are also to confer with Dutheil and Brequigny, concerning a diplomatic collection. Camus assured the Institute, that a volume of the old historical writings, collected by Brial and Druons, and

and another of diplomatic papers, collected and published by Dutheil, would be sent to the press in about a month.

The National Institute intends publishing a collection of crusade histories, which are important monuments of the history of the eastern and western countries, from the eleventh to the fourteenth century. Hitherto the histories of the crusades have been related to us only by western authors. But it is equally important for us to know the accounts of the orientals, and to see what they thought of the arrival, stay, customs, and victories of the Europeans, with other particulars respecting those invaders. Camus then proceeded to an account of the manuscripts in the National Library, a work which was begun by the Academy of Sciences, in the year 1785. Their design was to give moderate abstracts of the less important manuscripts, but complete translations of the most valuable, and, in some cases, the manuscripts themselves in their original languages.

The Academy had appointed eight commissioners, of whom three undertook to examine the Oriental manuscripts; two, those in Greek and Latin; and three, those of the middle ages. Those commissioners had published four volumes of "*Notices des Manuscrits de la Bibliotheque du Roi.*" This work, so auspiciously begun, is now carried on with all possible zeal, and the business appears to be of the greater concern, as the number of manuscripts in the National Library is considerably augmented by others brought hither from Italy, Flanders, and Germany, and from the libraries of emigrants, and abolished cloisters. The Institute has particularly in view such manuscripts as concern the sciences, arts, history, and geography. The Arabian and Persian manuscripts which relate to astronomy, geography, and history, are to be first published. The Arabians have undoubtedly a number of important and useful astronomical observations, the comparison of which with modern astronomy will be a great



great acquisition. Nothing is wanting but a good translator, who can comprehend the true meaning; it being a great disadvantage if the orientalist be not an astronomer, or if the astronomer be not a complete orientalist. Camus reported, that considerable progress had been made in the impression of the first volume of the new collection of manuscripts, being the fifth of the whole collection. It contains an account of Oriental, Greek, Latin, and French manuscripts, concerning natural and civil history, morals, and the arts; and will afford considerable knowledge respecting the sciences of the twelfth, thirteenth, and fourteenth centuries. Specimens of the original manuscripts, in their respective characters, are to be printed in this volume, which will make it an important acquisition to palæography.

Camus next proceeded to give an account of the arts and manufactures, which the National Institute had cultivated in obedience to an order of government, of

the 15th of Germinal, second year. From the printed programma, which is distributed at the public meetings, it appears, that the former Academy of Sciences had either written, or extracted from the writings of others, eighty-seven memoirs on arts and manufactures: whereas those which the National Institute have either caused to be written on the same subjects by its members, or have received from others, amount to no fewer than two hundred and ninety-seven, which are alphabetically arranged. This circumstance is a proof of the industry and attention with which technology has been pursued by the Institute. Among the principal memoirs there are some on subjects altogether new, such, for example, as those on aerostatics, or the method of constructing and managing air balloons; on the art of conducting and maintaining fire; on the art of erecting conductors of lightning; on tachygraphy, or a secret method of writing by signs of abbreviation; and on telegraphy, or the

con-

construction of telegraphs, and the signals which accompany them. I might mention various other articles, not immediately reducible to the head of arts and manufactures, such as the projection of maps and charts, surveying and planning, pharmacy, and the method of making anatomical preparations. In conclusion, Camus mentioned the admeasurement of the arc of the meridian, through the whole extent of France, from Barcelona to Dunkirk, and the weights and measures founded on that admeasurement by the commissioners of the Institute, in conjunction with the foreign commissioners, who had come to Paris for that purpose.

Extracts from the memoirs, at the particular meetings, presented to the Institute, during the last six months, were then read by several members. It is natural to suppose, that they selected such pieces as appeared to be the most important and interesting. Cuvier read a description of portions of skeletons found in quarries, in the country

try about Paris, and particularly at Montmartre. It so happened, that he had collected such a number of bones, as to be able to compose the complete skeleton of an animal. He believed that it formed a new species, which ought to be placed between the rhinoceros and the camel; but this is the only animal, known at present, which belongs to it. Dr. Dessartz shewed that the small-pox, which then generally prevailed, would become less fatal, by preparing the children with jalap and certain mercurials.

Bougainville, the celebrated mathematician and circumnavigator, read an historical detail of ancient and modern voyages towards the north pole. He made a comparison between the situation of sailors in a naval engagement, and on a voyage of discovery. He touched on the voyage of La Pérouse, and the naval engagement on the coast of Egypt, with much elegance and patriotic zeal. The whole of his memoir was so exceedingly engaging, that I cannot  
do



do less than present the reader with the following quotation.

“ In modern times, the desire of discovering new countries has considerably increased. The immortal Cook has contributed more to nautical geography than all his predecessors, in this pursuit; and those who follow him every where find instructive remains of his steady and exact course. Cook and Magellan! Ah, why should the same fate envy you both, and deprive you of living to receive the gratitude and esteem of your fellow citizens!

“ On this occasion, I must be permitted to draw a comparison between the situation of a sailor in a sea-fight, and that in which he is placed when sailing in quest of new discoveries. In a sea engagement, the mariner is roused to action, and encouraged by many circumstances, by the necessary preparations, by the example of others, and by multitudes of spectators; and one day of impending danger is succeeded by hundreds of others which, through the flattering

ing

ing medium of self-love, afford a pleasing recollection of past dangers. Naval engagements happen in the midst of friends and acquaintances, and wreaths of laurel crown the urns, in which the ashes of the dead are piously deposited. The situation of a sailor who plows the main for new discoveries is totally different: in the midst of conflicting elements, he has to contend perpetually with the most serious dangers. He must at every instant, for days, and months, and years, possess himself with cool and unshaken resolution: and he is always sensible that, after a long series even of successful efforts, it may happen, that the particulars of his labours may be as little known as the track which his ship described in the ocean. Oh, that we knew whither to direct our course in quest of the famous La Pérouse!

*Nudus in ignota, Palinure, jacebis arena!*

“ But I cannot close this digression, on the comparative situations of mariners, without

without publicly expressing my esteem for your naval combatants, some of whom performed with me their first expedition ! 'Tis true, they have had to contend against an insulting superiority, and an inconceivable disadvantage of situation. By this proof, however, of their heroism and valour, they have acquitted themselves of their duty to their country, and they shall be avenged. They fell fighting, and by thus giving to their enemies a contested victory, though not till they had been mortally wounded, they have given us reason to believe that they only wanted a prolongation of life to have claimed the victory themselves."

These sentiments are all justly conceived, and well expressed. Bougainville's prelection was often interrupted and finally followed by general, loud and ardent plaudits, which were much more respectful to him than the trifling marks of approbation, often dictated by mere civility, which were given to the other speakers.

The learned Langlés read a memoir on the

the Arabian language and literature. It is known that the Arabians were men of science and zealous cultivators of the mathematics, particularly of astronomy, when all science was banished from Europe, and their literature is interesting and important. I have to express my concern that Langlé's voice was so low and indistinct, that a great part of his speech could not be understood.

Lacepede read a memoir on the comparative degrees of industry and sagacity observable in birds. He distinguished them into eight classes, according to the sagacity indicated by the construction of their nests, which was the criterion he adopted, and he named the birds, which he supposed should be referred to each of those classes. Lacepede, with the advantage of an excellent voice, possesses much eloquence, propriety, and dignity, and his memoir was received with general approbation and clapping of hands.

Daunou read a programma, written by  
Roederer,



Roederer, respecting the question proposed by the class of moral and political science : "What are the most proper principles on which the morals of a people can be established ?" Of sixteen answers given to this question the year before, not one obtained the premium. The same question was repeated, with new conditions and limitations, in order to give the authors an idea of the necessary reply, in which all the former candidates had failed.

The celebrated Fourcroy read an extract of a memoir on the analysis of human *calculi*, together with an account of some experiments made to solve them, after being extracted out of the bladder. The memoir was excellent, and admirably delivered.

Bitaubé was to have read an account of the opinions of the philosophers of the ancient republics, but was prevented by want of time, added to his great age and low voice.

Ducis delivered a beautiful poem, abounding

ing with enthusiastic encomiums on the fine arts, and the admirable performances of the French painters, Taillaffon, Vincent, Regnault, Vien, and David; and with this piece, concluded this truly great and interesting meeting.

I was also present at another general meeting on the 15th of Nivose, 7th year, or the 4th of January, 1799. Lainée then read an account of the labours of the moral and political class, and Andrieux of the class of literature, and the fine arts. After mentioning the conquest of Naples, he concluded with expressing a wish that it might not be long before the museums of Portici should be brought to Paris. Villars stated the reasons why the same class again proposed the prize essay: "On the means of causing the Latin and Greek languages to be more assiduously cultivated in France."

Lefevre-gineau read a report of the mathematical, and Laffas of the physical, labours of the class devoted to those pursuits.

They

They also gave an account of the National Institute at Cairo, and of their meetings and transactions, according to the notices which had been communicated to the National Institute at Paris. The transactions of the physical class were particularly interesting.

L'Heritier, who is acquainted with, and on many accounts highly esteems, the industrious Wiborg, presented a description of two new *genera* of plants, namely, the *Bruguiera*, and the parasitical plant, *Rhizodendrum*. The first was discovered at Madagascar by Bruguiera. Michaut has seen a tree named the *Robinia viscosa*, from North America, which has on its branches, when in vegetation, a black and strongly glutinous substance. Vauquelin has examined it, and found it altogether different from every vegetable production hitherto known; but it nevertheless approaches nearer to resin than to any other substance. Cels and Ventenat have shewn, that this tree belongs to a *genus*, described by Jussieu  
and

and Lamarck. Desfontaines has sent to the Institute a complete Flora of Mount Atlas. Broussonet, who has long resided in Africa, has particularly described the processes used at Fez and Tetuan, in preparing and dying Turkey leather, and has given an account of the plants employed for that purpose. Lamarck has formed a classification of shells, after a new system and characters. Linnæus had only sixty *genera*; but Lamarck has extended them to one hundred and seventeen, by which he supposes the classification of shells will be more certain and better determined than formerly. Fourcroy and Vauquelin, by some experiments on urine, have discovered a particular animal substance which gives it the property of very readily forming ammonia; yet they look upon their investigation of the properties of that fluid, as very far from being complete.

I now proceed to the memoirs which were read at this solemn meeting. Pallisot Beauvois read a memoir concerning serpents



pents in general, and mordaceous ones in particular. That gentleman has had nine such serpents in his hand, without receiving the least injury; and he assured us that they bite animals only when trodden upon.

Peyre, the architect, shewed the danger of fire to which the National Library was exposed, from its vicinity to the great French opera, the National Treasury, and many private houses in Rue de la Loi, formerly Richelieu, and other adjoining streets. He admitted that every possible precaution had been taken; but that the most proper and certain method would be, to remove, if possible, this incalculable treasure of literature to a building situated in an open and free space. Ducis read a poetical epistle, shewing that The Horrible and The Graceful should never be united the fine arts.

Buache, the geographer, described certain discoveries which still remain to be made in the ocean. He had taken extracts from all the old voyages hitherto published  
and

and known; and he had compared the old ones with those of more modern date, in which the latitudes and longitudes are accurately determined, as they are in the voyages of Anson, Byron, Carteret, Cook, Bougainville, Kerguelen, and La Pérouse. As the situations of the coasts, countries, and islands, described in the old voyages, do not agree with the modern ones, Buache has been led to suppose that they are still to be discovered. But against this opinion several objections may be made.

Tessier, the physician, read a memoir wherein he attempted to determine the various durations of pregnancy in certain animals; for example, in the bitch, the mare, and the cow. He was of opinion, that the pregnancy of women could not continue longer than ten months; a circumstance which deserves the attention both of the physician and the legislator.

Colin d'Harville closed the meeting with a very elegant poem on the travels of Melpomene and Thalia, or the history of tragedy.

gedy and comedy, among the Greeks, Romans, and French, from the earliest times. The only Englishmen he noticed were Shakespeare and Addison; but on the German, Spanish, and Italian dramatic writers, he was totally silent. The stile of his first canto, the subject of which was tragedy, was marked with appropriate grandeur and dignity, and that of the second on comedy, with suitable vivacity and ease. Both were delivered with masterly art, and received, especially by the ladies, with great approbation.

I have already mentioned, that the class of literature and the fine arts had proposed for the eighth year the following subject: "To point out the means of causing the Latin and Greek languages to be cultivated in France, more zealously than they are at present." The premium offered, is a medal of eight hectograms, or about twenty ounces, of gold. The same class have also proposed a premium, of the same value, for solving this question: "To in-

Q

quire,

quire, To what degree, the French language has acquired perspicuity and elegance, and lost its natural simplicity and energy, from the time of Amyot to the present day?"

The mathematical class have selected the important and very difficult problem of the comet of 1770, which may be considered as an astronomical enigma. The Academy of Sciences, in the year 1794, offered a premium for the calculation of this comet, and the astronomers have attempted to bring their observations to correspond with a parabolic curve.

Prosperin and Pingré have been particularly engaged on this subject, which has also been prosecuted by Du Séjour. But they could not bring a parabolic curve to agree with the observations nearer than within a degree, which is by far too wide of the truth. Lexell found that the observations could be represented with tolerable exactness by an ellipsis, which the comet might be supposed to describe in  
five



years and a half. But in this case, the same comet must have been often seen; yet it has not appeared either before or since 1770. In order to account for this remarkable phænomenon of our system, the National Institute have proposed to astronomers, 1. To examine all the observations which can be found respecting the comet of 1770. 2. To enquire minutely whether or not those observations can be reduced to a parabola, or any other curve, whose ordinates are referable to an immoveable axis. 3. If it be found that this is possible, then to determine the properties of the curve, which corresponds the nearest to the observations. Solutions must be sent in before the 15th Messidor, eighth year, or the 3d of July, 1800. The premium is a kilogram, or something more than 2lb. of gold. But the question is so very difficult, will require so much penetration and labour, and involves such an incredible number of calculations, that, upon the whole, it deserves a greater premium; suppose from

fix to seven hundred dollars, or from one hundred and fifty to one hundred and seventy-five pounds sterling.\*

The first volume of the Memoirs of the National Institute was published on the 1st Vendemiaire, 7th year, or the 21st of September 1798, and printed by Baudoin, under the title of “*Memoires de l’Institut Na-*

\* Certainly the last would be a very moderate, not to say an inadequate, reward for the *mere time and trouble*, which the solution of such a problem would require; even considering the superior value of money in France, and the small price of *scientific* labour in this country. I speak from some experience, having assisted my worthy friend, the truly learned and ingenious Mr. W. Cruickshank, formerly surgeon of the Naval Hospital, Barbadoes, now of the Artillery Hospital, Woolwich, in observing the path, and determining the orbit, of a comet, which appeared in the western hemisphere, in the year 1784. Though then in a climate and in situations very unfavourable to such pursuits, we brought our calculations and constructions to such satisfactory results, that we had thoughts of offering them for publication in the Philosophical Transactions. But, after our return to this country, in 1786. we found that our design had been anticipated, by an ingenious Frenchman, in the *Connoissance des Temps*. Translator.

*tional des Sciences et Arts. Sciences Mathématiques et Physiques, 1 tom.—Sciences Morales et Politiques, 1 tom.—Littérature et Beaux Arts, 1 tom.*" In all, three quarto volumes, with twenty-four plates; price on common paper, thirty-nine francs, on strong paper, sixty francs, and on vellum paper, seventy-two francs.

It is singular that Boudoin refuses to sell the memoirs of each class separately; but obliges the purchasers to take all the three volumes. I could not persuade him that he lost, instead of gaining, by this method. The volumes of the mathematical and physical classes are chiefly confined to natural history, chemistry, and medicine. There are only two mathematical memoirs, one by Laplace, and the other by Lalande; for the mathematical members of the National Institute publish their works themselves. Thus Lagrange has lately given the world two important works, namely, his "*Théorie des Fonctions Analytiques*," and "*Resolution des Equations Numériques*;" nor is it long since Laplace published, "*Exposition du*  
Q 3 *Système*

*Système du Monde.*" This work appears to be an introduction to his *Traité de Méchanique Celeste*, in two volumes, which contains the discoveries and opinions of this great mathematician, in the theoretic and higher parts of astronomy.

Newton laid the true foundation \* of  
our

\* Newton not only "laid the foundation," but so greatly advanced the noble superstructure, as to have left his successors little more to do than to follow his rules. "After all the cultivation of dynamics by the commentators and followers of Newton," says one of the ablest of them, "after the *Phoronomia* of Hermann, the *Mechanica* of Euler, the *Dynamique* of D'Alembert, and the *Méchanique Analytique* of De la Grange, which are undoubtedly works of transcendent merit and utility, the *Principia* of Newton still remain the most pleasing, perspicuous, and elegant specimen of the application of mathematics to the science of *Universal Mechanics*, or what we call *Dynamics*." *Encycl. Britann. Suppl. article Dynamics*, § 103. If this article came, as I believe it did, from the pen to which the *Encyclopædia Britannica* owes many of its best scientific articles, the weight of the opinion just cited, will be much increased; for the gentleman alluded to passed many years on the continent, in habits of intimacy with mathematicians and philosophers of the first order, and is not altogether free from a  
bias



our knowledge concerning the order and disposition of our system, and the motion of the planets in their respective orbits. Laplace has finished this beautiful fabric and, with infinite sagacity, has, by help of the higher analysis, in which he is so distinguished a master, clearly proved, that all the motions and phænomena in the planetary system can be explained, determined, and calculated by the principle of universal gravitation, which was not before, in every respect, completely effected.

Laplace is at present engaged on the mechanism of the planetary system, and I have seen about half of the first part already in print. Dr. Burchardt, of Gotha, who studied astronomy under Lalande, translates every sheet, as fast as it is printed, into German; so that the German translation will appear at the same time with the French original.

bias in their favour. Such at least was the general opinion, when I had the happiness to attend his admirable lectures in Edinburgh.

*Translator.*

Bossut,

Bossut, already well known for his mechanics, statics, hydrodynamics, &c. has lately published; "*Traité de Calcul différentiel, et de Calcul intégral, en 2 tom. 8vo.*"

Prony has just published in 4to. "*Exposition d'une Méthode pour construire les Equations indéterminées, qui se rapportent aux Sections coniques.*" He is besides occupied on a third volume of his very respectable work, "*Nouvelle Architecture Hydraulique,*" and on the elements of the mechanical sciences. Legendre, who formerly wrote "*Elémens de Géométrie; Memoire sur les transcendentes elliptiques; and Dissertation sur une Question de Balistique, couronné par l'Académie de Berlin,*" has lately published an excellent work in quarto, intitled, "*Essai sur la Théorie des Nombres.*"

Lalande is engaged on a complete *Bibliographie Astronomique*. Beside the profound and enlarged views of this gentleman in astronomy and its kindred sciences, he is a great literary character. His extensive reading and correspondence have furnished him with details from every country;

country ; so that a complete account of the astronomical writers and literature, of all nations, may be expected from his pen. I have communicated to him all that I could collect on this subject in Denmark.

Messier is continually occupied in discovering comets, and calculating their paths. Delambre and Mechain have measured nine degrees and a half of the meridian of the observatory of Paris, and which stretches quite through France, from Barcelona to Dunkirk. Delambre has been employed on an important work, which he laid before the Commission for weights and measures, under the title of "*Méthodes analytiques pour la Détermination d'un Arc du Méridien*," and which is now in the press.

Borda, though aged, infirm, and consumptive, still labours as much as his health will permit. He is now engaged on a manual of tables of logarithmic sines, after the new centesimal division. I saw at his house, several printed sheets of those tables ; but he complained that, on account of the want of good and uniform paper in France, the

the impression proceeds but slowly. The sines and tangents are to be found in the stereotypic edition of Callet's tables (Paris, 1795) but not divided into centesimal minutes. Borda's edition will be much more complete, and at the same time more useful. He has also discovered, this winter, some improvements, and new constructions of the barometer and dipping compass. Both these instruments are to be executed by that able maker Le Noir. The principal improvement in the dipping needle is, that its axis turns in a glass cylinder or tube. I had formed the same idea many years ago, and have since had a compass so constructed, which I have described in the *Memoirs of the Copenhagen Academy of Sciences*, fourth part of the new series, which contains a drawing of this instrument, and an account of the observations made with it.

As another probable cause of the paucity of mathematical memoirs in the first volume of the *Transactions of the National Institute*, it may be remarked, that most of the members of this class are lecturers in  
the



the Polytechnic and Mineral Schools, and other institutions, and that the journals published by those seminaries contain many of their memoirs, which is the case with Lagrange, Prony, Lefevre-gineau, Briffon, Haüy, and others.

The writings of the old Academy of Sciences were divided into two parts, *Histoire* and *Mémoires*. The first contained an historical account of its proceedings, and extracts from the minutes; and the other, the memoirs themselves. Since the organization of the present National Institute, no part of its history is admitted into its writings; but, in the general meeting at the close of the year, a particular account of its proceedings is delivered by the President of the Institute, to the Presidents of the Council of Five Hundred, and the Council of Ancients, who respectively reply to the speech made by the President of the Institute. One of these reports, or accounts of the Institute, is intitled, "*Compte rendu et présenté au Corps Législatif, le premier jour complémentaire l'an 4, par l'Institut National,*

*National, contenant l'analyse des travaux pendant l'année 4me.*" Similar accounts have been published, for the 5th and 6th years.

In all that I have said of the members of the National Institute, in this and the preceding letters, my readers will observe that I have always mentioned with warm commendation and becoming respect, those who are eminent in their respective pursuits, and that I consider the National Institute of France, as being one of the most important learned societies in Europe. If I should think or write otherwise, I should look upon myself as destitute of all understanding. Hence I was the more surprised, when, after my return home, I found it signified, in the *Décade Philosophique littéraire et politique*, An. viii. 30me. Pluviose, No. 15, p. 372, that in my letters to Copenhagen, I had uniformly reviled the Institute, held it up to ridicule, and depicted it in the darkest colours.

I need make no observation on the meanness of slanderously misrepresenting the  
corre-

correspondence of an individual with his friends, merely to find, or make, a pretence for complaint ; since success in persuading people to believe his aspersions ultimately fixes a stigma on the calumniator himself. But I do hereby deny my having ever written a syllable with which the members of the National Institute, either individually or collectively, could be offended ; and I challenge any person whatever to produce a letter from my hand having that tendency. In compliance with the advice of my friends at Paris, I have made no reply to any of those libellers. My friends know that their assertions are untrue, and those who are not acquainted with me will be convinced of their falshood by the publication of my travels. On this disagreeable subject I have been hitherto silent ; and have looked upon my puny assailants in the *Décade Philosophique*, with that contempt which they deserve.

## CHAP. XV.

THE AEROSTATIC SCHOOL IN MEUDON—  
FRENCH MONUMENTS.

*The Aerostatic School at Meudon—Establishment, Officers, Pupils—Design of this Institution—Conté, his Invention—Aerostatic Soldiers—Materials of which those Air Balloons are composed—Mode of filling them—French Monuments—Such as escaped the Fury of the Populace, ordered to be collected and deposited in the small Augustine Monastery—Saloons set apart for that Purpose—Classification, Taste and Industry of Lanoir—Monuments of Kings, Queens, Statesmen, Warriors, Men of Letters, &c.—Statues in Marble, Bronze, &c.—Names of the Artists who designed and executed them—Some of them the boldest and happiest Efforts of Genius—Inscrip-*



*—Inscriptions—Annealed Glafs—Painting on Glafs—Churches, &c. whence they were taken—Several mutilated Pieces of Art restored—Reflections on the Whole.*

THE Aeroſtatic School in Meudon was eſtabliſhed by a decree of the Committee of Public Safety, the 31ſt of October, 1794. This ſeminary conſiſts of a director, ſub-director, a ſecretary, a magazine-keeper, and ſixty pupils, who are inſtructed in all that relates to the aeroſtatic ſcience, eſpecially ſuch parts of it as may be directed to military operations. There are two rooms ſet apart in the old caſtle, for the conſtruction of the air balloons, with all the apparatus neceſſary for that purpoſe. The pupils, with Conté the director, lodge in the new caſtle. M. Conté is an able phyſician as well as a chemiſt: he cannot be too highly praiſed for his unremitting attention to the regulations and management of the School. He is well known

for his inventions, such as the aerostatic telegraph, and his factitious black lead pencils, which are brought to such a degree of perfection, as to rival the best in England: they are not prepared from the native ore, but a composition which consists, as far as I have learned, of iron and sulphur.

The balloons in Meudon are made of a peculiar kind of thick taffety, wove for that purpose. When sewed they are varnished over: so that the pores are closed in such a manner as to prevent the evaporation of the gas in a very considerable degree, which is the reason that those balloons hold the hydrogen, or inflammable air, many months; whilst others that are not prepared in the same manner are found to be exhausted in a few days. To the improvement of the gas, M. Conté has not a little contributed to the manner of filling the air balloons. The mode is to erect a small furnace, through which several large iron pipes pass (commonly from four to six,) which

which are filled with iron filings. The ends of these tubes extend out of the furnace, and are furnished with a cock, which may be opened or shut at pleasure. A smaller tube is joined to the end of these pipes, and is then inserted in the lid of the copper or vessel, half filled with water, and so air tight that the steam can only find its way through the red hot tubes in the furnace. From the opposite end of these red hot tubes, which run out of the furnace, a small tube goes into the vessel, which is filled with a solution of caustic lye, or alkali, and then it passes to the tube which conveys the hydrogen gas into the balloon.

The whole apparatus, cauldron, furnace, &c. may be erected and worked in two days. A balloon of about thirty feet diameter may be filled in two or three days. When a balloon of this size is newly filled, it will carry up a weight of 2000 pounds, and twenty men at least. In two months it loses so much by evaporation, that it will

only bear 500 pounds, and ten men. I have seen the experiment tried in the Champ de Mars on the feast of the New Year, in the seventh year of the Republic. Such balloons are always found ready filled on the terrace at Meudon, where they stand in the open air without receiving any apparent injury, in consequence of the peculiar texture of the taffety, and the excellence of the varnish. The upper part was covered with a coat or case of fine leather, from whence the ropes descended, to which the car was attached. All these military balloons are tied together, and aerostatic foldiers taught to manage them.

In mild or serene weather a number of these foldiers ascend, always accompanied by an officer or subaltern. Two companies of aerostatic foldiers are always quartered at Meudon. Each consists of one captain, two lieutenants, two serjeants, two corporals, one drummer, and forty privates.

The little Augustine monastery, now shut up,



up, contains a collection of French monuments. The decree of the National Convention to abolish every vestige of royalty, or any thing that might recal the days of feodality, was considered as the signal for desolation, plunder, and rapine over all the kingdom of France. The statues of kings and others without distinction were hewed down and levelled with the dust. The noblest and happiest efforts of the pencil were rent in pieces, and scattered in the air. Entire series of the most precious medals, the labour and research of ages, were stolen or consigned to the crucible. All the monuments and epitaphs within reach of the hand of fury, were broken to pieces. The greatest part of the labours of the first artists, collected in different parts of the world, shared the same fate. The Vandals and barbarians, who rather resembled the furies let loose from hell, than human beings, vented their ungovernable rage on the choicest productions of taste and ge-

gius. In the Convention and Revolutionary tribunals, the most profligate and abandoned boasted of the revenge which they took on the arts. The enlightened Gregoire ventured at length, at the risk of his life, (lest he should be accused of being attached to the old system) to stand forward as the advocate of the Muses. On the 31st of August, 1793, he addressed a letter to the Convention, in which he painted in the most natural and lively colours, the irruption of this vandalic horde into the sanctuaries of science, and the excesses which they committed on monuments that lent immortality to mortals. This eloquent epistle at first had little effect: at length, however, the Convention began to think of converting the public monuments to national property. For this purpose they ordered them to be collected and deposited in the small Augustine cloister. This injunction, however, was attended with little effect, as may be collected

lected from the commission of public instruction, decreed, the 20th of October, 1795, which enacted, 1st, that a museum should be erected for the conservation of the French monuments; 2dly, that no person should dare to carry away or destroy any of the public monuments; and, 3dly, that the proposal of Lanoir, inspector of the museum, respecting the erection of the said museum should be taken into immediate consideration.

The proposal of this ingenious gentleman was acceded to, and the sums necessary to carry the same into execution, were voted. Lanoir began without delay to arrange and repair the mutilated statues, &c. with unremitting industry, at as little expence to the public as possible. The general plan of classification is to arrange the statues, &c. in centuries in saloons decorated in the taste of each age. Three saloons are already devoted to this purpose, viz. the thirteenth, sixteenth, and seventeenth centuries. These saloons are ex-

tremely neat, some of the statues are raised on pedestals, and others placed against the wall. The monuments thus arranged, and erected in the three saloons, amount to upwards of two hundred.

I shall now give a short description of these monuments. The first collection is the Grecian antiques, twelve tomb-stones of fine marble, with Greek inscriptions and bas-reliefs, some statues taken from Richelieu's garden, and amongst the rest a highly finished Bacchus, as large as life, with his thyrsis in one hand, and a bunch of grapes in the other, and Meleæger in the chace. They are fine statues of Parian marble. Those antiques in all amount to twenty-six in number. Of Celtic monuments there are four altars, three sides are bas-reliefs, representing an offering, on the fourth side is the following inscription

Tib. Cæfare

Aug Jovi optumo

Maximo - - - M.

Nautae Parisiaci

Publice posierunt



This inscription probably means, that the Parisian seamen who had sailed down the Seine, raised this altar to the honour of Tiberius.

Of the monuments of the middle age there is a stone coffin, or sarcophagus, of greyish stone, rudely hewn, which contains the remains of King Dagobert, also a monument for Childebert, and another to the memory of Fredegunde, Chilperic's queen, and another to Mary, in wood.

The saloon set apart for the monuments of the thirteenth century is already completed. The dome is vaulted in the Gothic style, with a blue ground, studded with gilt stars, the sharp pointed bows or arches support each other, ornamented with roses according to the taste of the day. Two of them represent the Evangelists, which were taken from St. Victor's church. Sepulchral lamps are suspended from these roses, the doors and windows are rib formed, they are composed of the remains of a monument in St. Denis. The panes of the

windows are in the Gothic taste, and taken from a cemetery which Montreau, the famous architect, had raised to himself in 1250. This saloon, in my opinion, is very properly lighted with feeble rays.

In this repository, whose *tout ensemble* has a good effect, are contained twenty-eight monuments. Amongst others there are the cenotaphs brought from St. Denis for Clovis the First and Second. Martel, Pepin's father, Pepin and his queen Bertha, Charles the Bald, Hugh Capet, Philip the son of Louis the Sixth, the queen of Louis the Seventh. Figures are placed over all these cenotaphs. The son of Louis the Ninth, and a child a year old, have a monument of wood, covered with enamelled copper. There are different statues besides, such as that of Louis the Ninth, and Margaret his queen, Elizabeth, and some bas-reliefs. The rudeness of the age is visible in all these monuments; some indeed evince a greater progress in taste  
and

and execution than could be expected in those times.

In the saloon, sacred to the 14th century, there are thirty-eight monuments, most of which were erected in St. Denis to the memories of the Kings of France, such as Louis the Tenth, Philip the Fifth, Philip of Valois, Charles the Fifth. The figures are almost all of marble. On the monument of William Chanac, Bishop of Paris, taken from St. Victor's church, is the following inscription :

Hic situs est Dominus G. de Chanac, patriarcha  
Alexandrinus, juris dum viveret arca.  
Mores ornatos ad culmen pietatis  
Adjungens gratos actus habuit pietatis,  
Plebis et Ecclesiæ prælatus Parisiensis  
Cultor justitiæ perversorum fuit ensis  
Sancto die crucis in Majo moriens  
Anno milleno trecento quadrageno  
Octoque, centenos annos peragens quasi plenos  
Pro dilectoris anima tui dulciter ora  
Sancti Victoris conventus qualibet hora.

In the saloon for the fifteenth century there are fifteen monuments, consisting of Queens, Princes, Princesses, &c. taken from

from the royal cemeteries in St. Denis. I shall here transcribe a monumental inscription over Jean de la Porte, in what is called bouts-rimés.

Bonnes gens vous devés

penfer

Qvon doit son tems bien dis

Car la mort homme de

porte

Temoing maistre Jehan de la

Conciliatur pour le

roy

Au Chastelet et sous des

L'un des eschuiers en sa

cour

De Paris, sous d'autrui en

Le quel en terre cy

Devant

Gist comme la mort re

Et laissa ce monde hi

Deux

Mil quatrecent qvarante.

The saloon designed for the sixteenth century is finished with great taste. Two academic figures, executed by Barthelemy Prieur, are placed over the door. The joints of the door are of yellow streaked marble. The cieling is ornamented with arabesque, according to the taste of the times. This hall contains fifty-three monuments.



numents. The monument of Louis evinces that the arts already began to make a rapid progress towards perfection. The King's statue, as well as that of the Queen, (Anne) are of excellent workmanship. The twelve Apostles are arranged in twelve richly ornamented arcades, in which the artist has exhibited considerable taste in the style and representation. In the four corners there are the four cardinal virtues in a natural size, the whole rests on a pediment of black marble, on whose edges there are bas-reliefs, representing the victories of Louis the Twelfth. This fine historical monument has suffered much from jacobinic rage. The heads, nose, arms, and hands, are broken from the figures.

The monument of Renée d'Orleans Longueville has six bas reliefs of alabaster, finely executed. The monument to the memory of Louis Deponchier and his wife, is ornamented with the figures of both, with lesser ones representing the virtues. The whole is finely executed in alabaster.

The

The monument of Francis the First is erected in a particular chapel, set apart for that purpose. The King and his Queen Claudia are represented by two marble figures, somewhat larger than the natural size, extended as dead. The artist may be said to have disputed the prize with nature in the execution of this monument. The privation of life in the countenance and muscles is finely expressed. The pedestal on which these figures lie is adorned with a bas-relief, representing the victories of Francis, different genii with extinguished torches, allegoric figures, &c. The roof is supported by sixteen fluted columns. Francis and his Queen are grouped on the ceiling in their gala robes, together with the two Princes their sons, and their daughters, all of fine marble. The whole was designed by Primatice, and sculptured by Jean Gougeon. This costly monument, the first perhaps in France for design and execution, formerly stood in the church of St. Denis. It suffered very much in the paroxysm

paroxysm of popular tumult; but Lanoir has been very successful in re-inflating the fragments, according to the original design, which he had copied in his youth, whilst a student in works of this kind.

The monument over Henry the Second and his Queen, Catharine of Medicis, is on the eve of being restored in the same manner, with the addition of four fine figures in bronze, one in each corner, representing the four cardinal virtues. This fine monument is twelve feet and a half in length, ten in breadth, and fourteen in height. It was designed by Philibert de Lorme. Soon after the demise of the King, Catharine gave directions to Germain Pilon, her own sculptor, to execute it, which he did with great felicity, for it may be called the chef d'œuvre of all the fine works with which he has enriched the empire of sculpture.

The same artist also executed the three Graces, four feet three inches high. They stand on a triangular pedestal, and bear an urn, which contains the hearts of  
Henry

Henry and Catharine. The following inscriptions are cut in the three sides of the pedestal.

On the first side—

Cor junctum amborum longum testatu amorem.  
Ante homines, junctus spiritus ante Decem.

On the second side—

Cor quondam charitum sedem cor summa secutum  
Tres Charites summo vertice jure ferunt.

On the third side—

Hic Cor deposuit Regis Catharina mariti  
Id eupiens proprio condere posse sinu.

Those three figures breathe all the charms of immortal youth and gaiety. They are ranked amongst the happiest efforts of Pilon's chisel.

There are two statues at the feet of Henry the Fourth, both of marble. The first was executed by Franchville, and the second by Prieur. In the same apartment there are twelve bas-reliefs, two busts, some in marble, and some in bronze, with a Madonna in Mosaic work, and two very large



large and fine enamelled figures. These two exhibit the passion of Christ. The portraits of Francis the First and his Queen Claudia are added to the one, and those of Henry the Second and Diana of Poitiers to the other. They were executed in 1553, by Leonard Limoufin.

The monument over Giv de Faus is worthy of attention. He was President of the Parliament, and employed in many embassies under Charles the Second, and Henry the Third. A Latin epitaph sets forth the principal events of his life; at the end of which are to be seen four French strophes or quatrains, which have, as it were, miraculously escaped the fury of the Jacobins, when inscriptions less calculated to recal the days of royalty fell a sacrifice to their destructive rage. Curiosity on this very account induced me to transcribe them, and which I now present to the reader :

Il est permis souhaiter un bon Prince,  
Mais tel qu'il est, il le convient porter ;  
Car il vaut mieux un tyran supporter  
Que de troubler la paix de la province.

The saloon appropriated to the monuments of the sixteenth century is ready. It is ornamented in the taste of those days. It contains one hundred and three monuments. Cardinal Berulle's was executed by Jacob Sarrazin and Michael Anguier. This monument is justly admired, particularly the bas-reliefs.

The mausoleum of Cardinal Richelieu was designed by Lebrun, and executed by Girardon, and is considered as his masterpiece. The pedestal is fourteen feet long, and five feet nine inches broad. The Cardinal's figure is six feet high, placed betwixt two female figures, one representing Religion, the other History, with two Genii, each two feet and a half high. This mausoleum did not escape in the war that was waged against the productions of genius. Under the medallion of Descartes, suspended to a pyramid of black marble, there are two inscriptions, one in Latin and the other in French.

On Cardinal Mazarin's monument he is  
repre-

represented on his knees, with a genius behind him bearing several weapons of war. Three figures in bronze are raised on the pedestal, each six feet in height, one represents Faith, the second Prudence, and the third Plenty.

There are fourteen fine bas-reliefs on the monument of Henry of Bourbon Condé, they were modelled by Sarrazin, and executed by Perlan and Duval.

The monument of the famous Marshal Turenne, was executed after a design by Lebrun. The groupe in which the Marshal is represented in arms, was executed by Tuby; and the two erect figures, Wisdom and Courage, by Marfy. Underneath the figure of Turenne, in the centre of a cenotaph, is a bas-relief in bronze, representing the glorious and sanguinary battle of Turckhum, on the 5th of January 1675.

There are two very neat monuments raised to the memory of Colbert and Louvois ;

vois ; the two great ornaments and support of the reign of Louis the Fourteenth. These monuments were executed by Girardon, Coyzevox, Tuby, and Desjardins.

A bust of the celebrated painter Charles Lebrun is placed on a pyramid, with a figure representing Piety. There are two figures, one on each side, Piety and Painting : the first looks up to the painter, and the other in a dejected attitude deplores the loss of her favourite. Coyzevox, the faithful friend of Lebrun, who exhausted all his powers on these fine figures. An equestrian model in bronze of Louis the Fourteenth, by Girardon, has found a place in this collection. The statue from whence it was made stood in the Place de Vendôme, the left foot of it only now remains, which lies by the side of the model. Adjoining is a model in bronze, of the statue of Louis the Fourteenth, which stood in the Hôtel de Ville at Paris, executed by Coyzevox. There are two marble



ble statues at the foot of this, as large as life, one was executed by Coyzevox, and the other by Michael Anguier.

In addition to these, there are thirteen statues of Christ, and the Holy Family, of an extraordinary size, they were all collected from the pillaged churches in Paris, with sixteen bas reliefs, some in marble and some in bronze.

Of busts, a great number has been saved and erected, such as those of Henry the Third, Louis the Fourteenth, and Louis the Fifteenth. Of statesmen and warriors there are fifteen, and amongst others those of Sully, Mazarin, Richelieu, Colbert, Turenne, and the great Condé, &c. Of learned men, St. Peyrese, Regis, Quinault, Lafontaine, Moliere, Corneille, Racine, and Boileau. Of artists, Mignard Poussin, and Lesue, painters; Lenostre and Mansard, architects; and Sarrazin and Puget, the sculptors. A few of these busts are of bronze, and the rest marble. I also observed a small piece of Mosaic work, finely executed

executed, representing Saint Hieronymous in the desert.

There are thirteen monuments already collected, the works of the eighteenth century, excelled by none in correctness of design, and felicity of execution. Amongst these the following may be justly ranked as the finest. The monument of Cardinal Dubois; the figure is of marble; it is very fine, and sufficient of itself to immortalize the name of Conflou, the sculptor. An allegoric monument of the parish priest of St. Sulpice, Langnet de Gercy, claims attention; it was executed by Michael Angelo Slodtz.—Death is here represented as a skeleton in bronze. I cannot approve this mode of representing Death, either in bronze or marble; it is not, in my opinion, sanctioned by good taste. The Greeks and Romans never personified the King of Terrors in this frightful manner. Death is exhibited in this mode in an open coffin on the monument of Marshal Harcourt. The Marshal is endeavouring to cast his shroud aside,

in order to speak to his wife, who is on her knees by the side of his tomb. Her countenance is interesting, being filled with all that grief can inspire, brightened up however with the mild serenity and resignation of a pious Christian that looks for immortality, and the rewards of another life. This monument taken altogether is finely executed. The hand may be said to have embodied the thoughts of the sculptor with a fidelity beyond expression; nor can I paint the impression arising from the view of it, a pleasing melancholy accompanied by a religious and philosophic calm.

These monuments were all taken from the churches: they were executed by Coyzevox, Van Cleve, Coustou, Pigalle, Slodtz, Vassé, Lemoine, Falconet, and Monnot. There are thirteen bas reliefs in bronze, marble, and wood. The designs were taken from subjects in the scriptures. The busts and medallions consist of statesmen and generals; the Regent Philip, of Orleans,  
S Marshal

Marshal Asfeld, Count of Saxony, D'Argenson, and Montesquieu. In the learned class are Destouches, Fontenelle, Aüruc, Helvetius, Piron, Belloi, Voltaire, J. J. Rousseau, Buffon, Diderot, Gluck, Raynal, Bailly, the famous astronomer and historian, the first Mayor of Paris, Vaucanson, &c. Two neat pieces of mosaic work caught my eye; the smaller one represents a handful of flowers upon a ground of black marble. The larger is eleven feet long and seven broad, and is intended for the ground-floor of the saloon, which is not yet ready, but if finished according to the design of Lanoir, it will be an additional proof of his refined taste.

I found here what I little expected, the epitaph of the immortal Winslow, my countryman, which escaped the indiscriminate fury of the mob. I thought it worth translating:

D. O. M.



## D. O. M.

Hic jacet

in spem beatæ immortalitatis. JACOBUS BENIGNUS  
WINSLOW, patria Danus; commoratione Gallus, ortu  
et genere nobilis, nobilior virtute et doctrina, pa-  
rentibus lutheranis natus, hæresin, quam infans im-  
biberat, vir ejuravit, et adnitente ill. Episcopo Mel-  
densi Jacobo Benigno Bossuetio, cujus nomen Benig-  
ni in confirmatione suscepit, ad excelsiam catholi-  
cam evocatus, stetit in ejus fide, vixit sub ejus lege,  
obiit in ejus sinu; vir æqve verax et pius, in  
pauperis summe misericors, nullaque erroris aut  
vitii pravitate afflatus. Regius lingvarum teutonica-  
rum interpres saluberimæ facultatis Parisiensis Doc-  
tor Regens; illum mædicæ artis et præsertim anato-  
micæ doctorem et professorem peritissimum regia  
eruditorum societas Berolini, regi scientiarum aca-  
demizæ lutetiæ socium communi suffragio elegerunt.  
Vita excessit V Nonas Aprilis anno Salutis MDCCLX  
etatis XCI.

Pio Conjugi et Parenti

uxor et liberi hoc monumentum posuerunt.

I shall now give you a short account of  
the stained glass. In the depôt of the  
thirteenth century, there are three large  
church windows, with panes of painted  
I. glass, the work of that age. They were

taken from the abbey of St. Germaine des Près, and represent moral subjects, particularly those of domestic life.

In the saloon, sacred to the sixteenth century, there is a painting of Charles the Sixth, on his knees, upon a large pane encompassed with many smaller ones, on pious subjects.

In the saloon, dedicated to the fifteenth century, there are two very large paintings in glass representing passages in the apocalypse. They were painted by Johan Conins, and another with the portrait of Francis the First, by the same inimitable pencil, in the natural size. These fine pieces were taken from the chapel in Saint Vincennes: next follow the birth and circumcision of Christ, designed by Parmasons. An Ecce Homo painted by Albert Durer. In the windows of the gallery or corridor there are two and twenty paintings of glass, after the designs of Raphael, representing the fable of Psyche. The la

name

named five-and-twenty-pieces were taken from the Castle of Ecouen.

In the saloon set apart for the productions of the sixteenth century, there are two panes with designs founded on the history of Saint Gervais and Saint Prolais, Mary's flight to Egypt, two panes in morefque work. These pieces were executed by Perrin, from the designs of Lesuer, and were taken from Saint Gervais. The following paintings on glass were taken from the cloister of the Feuillants in the street Honoré. Don Jean de la Barriere, the founder of that cloister, in which a chapter was once held. A representation of De la Barriere, in prison; a precious sight for the superstitious. The entry of Henry the Fourth into Paris. These two pieces were executed by Simpy after the designs of Elgés.

The saloons, which are reduced to order, namely, those of the thirteenth, sixteenth and seventeenth centuries, are very neat and commodious; the fourteenth and eighteenth,

teenth, as yet lie neglected, unless we except those that are erected in the court, gardens, passages, and rooms of the afore-said Augustine cloister. This promiscuous heap of warriors, statesmen, knights, men of letters, saints, prelates, monks, and nuns, creates an agreeable surprize at first view; but the contemplative spectator finds himself immediately disposed to ask this question, What right has the present generation to destroy those monuments which their forefathers erected to perpetuate the memory of their relatives or friends. Have they not afforded maintenance and support to many artists, and fanned the sparks of genius and emulation? What must the living artists think when they see the precious works of their masters exposed to the caprice of a licentious mob? Have they not serious cause to be alarmed for the future fate of their own labours, and that a single day may destroy the labours of ages? What must be their feelings when they  
enter



enter any one of the churches which are still open in Paris, stripped of their ornaments, the naked walls disfigured with holes, and the floors on which those monuments stood covered with dirt and gravel; what an awful sensation, when Reason has resumed her throne, to behold the trophies of the arts thus scattered and annihilated!

The celebrated and indefatigable Millin, in the commencement of the year 1792, published a collection of monuments in four volumes. He had been at great pains and expence in travelling over France, to collect the most remarkable either for design or execution that the kingdom could boast. They were copied and engraved with great accuracy. He had also copied a great number of epitaphs and inscriptions, which he illustrated with many historical remarks, so as to render them very interesting to the historian and antiquary. In the month of November 1798, he published the fifth volume under the title of *Antiquités Nationales*.

Millin's house is the resort of all men of genius and taste. It is the only one in Paris where a traveller can form an immediate acquaintance with Frenchmen and strangers. Every seventh day in each decade he gives what is called his literary tea. The company begin to assemble about eight or nine o'clock. The table in the first room is covered with French and foreign journals, and new publications of merit. The inner chamber is occupied by ladies, who play on the *clavecin*, and accompany it with their voice, which has a pleasing effect, especially in filling up the pauses of conversation. About eleven the company is treated with tea, punch and cakes, his good mother pays the utmost attention to the guests, and seems highly gratified in rendering them every courtesy in her power. About twelve they all retire.

In those circles I have found thirty and forty persons at a time. Mr. Millin has a book, in which every traveller writes down his name  
to

to enable him to preserve the remembrance of each. I am glad of this opportunity to return Mr. Manthey, the Danish secretary of legation, my sincere thanks for having introduced me to M. Millin, in whose house I have passed many agreeable evenings, and where I had frequent opportunities of forming many valuable acquaintances, which rendered my stay in Paris at once amusing and instructive.

## CHAPTER XVI.

PRESENT STATE OF THE MANUFACTURES  
OF FRANCE.

*Exhibition of various French Manufactures, Arts, &c.—Watchwork—Artificial Black Lead Pencils—Files—Economic stoves—Locks—Chemical Productions—Woven and printed Tapestry—Earthenware—Steelwork—Silk, Cotton, Linen, Leather, Sealing-wax, Chrystal Glafs.—Weights and Measures—Stereotypic Printing—Porcelain—Spinning Machines—Mechanical Engravings, &c.*

THE two last of the complementary days of every year are devoted to an exhibition of the different specimens of French manufac-



manufactures, arts, and handicrafts, which are exposed to public inspection, in a large building raised on porticoes or arches, in the Champ de Mars, opposite to the directorial amphitheatre. On the evening of the third complementary day, the minister of the interior, with the officers of the central bureau, reported the names of a jury appointed to examine, select, and pronounce on the best specimens in manufactures, arts, &c. which are deposited in those arcades for that purpose. As I have enjoyed a great deal of pleasure in loitering through those arcades, I shall present a short account of their contents:

1st Arcade. A pendulum which strikes decimal seconds, and shews the new divisions of time; the days are divided into ten hours, the hours into a hundred minutes, and the minutes into a hundred seconds. This was executed by Conturier. On my return home, I chanced to alight on a watchmaker, in Colding, who had made a

watch according to this new division of time. In the same arcade I saw a group of figures in porcelain, representing Meleager and Atalante. I also saw several specimens of plated work, executed by Patoulet, Andre, and Lebeau, in the department of the Seine and Oise. I cannot say that I saw any thing in this arcade, that struck me as peculiarly excellent.

2d Arcade. Breguet, the famous watch-maker, has discovered a new *echapement* which is propelled by a constant and uniform force. This is a very lucky invention, and combines many advantages. Bruns, a carpenter, furnished many pieces of beautiful inlaid work in the cabinet line.

3d Arcade. Fine razors, forged of steel, made in Clouet's new manner.

4th Arcade. Black lead pencils of different kinds, for designing and drawing lines, by Conté. They were of a peculiar composition, and superior to those of England.

5th Arcade. Different kinds of files, coarse and fine: they appeared to be very well finished.

6th Arcade. Defarnod's healthy and economic stoves, which are formed so as to consume a small quantity of fuel, and yet warm the room sufficiently. The least class of those stoves or furnaces is twenty-four inches in height, twenty-one inches in breadth, eighteen inches long, and weigh four hundred and fifty pound each. The middle class is thirty inches in height, twenty-six in breadth, and twenty-one in length, and weigh eight hundred pounds each. The largest is thirty-six inches in height, thirty-one in breadth, twenty-four in length, and weigh thirteen hundred and fifty pounds each. They were all of cast iron.

7th Arcade. Different locks and scales made in Rock, Tague, and Pont Londry. I could not discover any peculiar excellence in them.

8th Arcade. Some of the chemical and mineralogical productions of De la Place.

A chemical

A chemical furnace by Boummaiel, foreman or melter to Salneuve ; neither appeared to be of any great value.

9th Arcade. Several planetariums by Ruelle and Fortier ; indifferent.

10th Arcade. Specimens of woven and printed tapestry, by Roby and Petit ; both very fine, as well with respect to designs as colours.

11th Arcade. White earthenware manufactured by Pattes, in the department of l'Oise ; extremely fine and good.

12th Arcade. The model of a monument by Fouquet. Imitation of painting in feathers, the composition of Bouillard ; neither remarkable.

13th Arcade. Fine specimens of cotton, carded and spun by the machines in Delaitre's manufactory in the department of Seine and Oise.

14th Arcade. Fine woven cotton, the produce of the manufactory of Fonfrede in the department of the Haute Garonne.

15th Arcade. Plain and printed cottons,  
the



the manufactory of Gremont and Bané; very fine.

16th Arcade. Different specimens of woven cotton, worth viewing.

17th and 18th Arcade. Excellent cloths of different colours, manufactured in Fere and Chateauroux.

19th Arcade. Pocket-handkerchiefs, the first specimen of the kind from a large manufactory, erected for that article in the department of Maine and Loire.

20th Arcade. All kind of smith-work, hatchets, spades, pickaxes, files, &c. Hardware, such as knives, scissors, snuffers, watch-chains; the polish fine.

21st Arcade. Specimens of woven cotton, the promise of improvement in that line.

22d, 23d, and 24th Arcades. Fine cloth called Draps de Louviers, manufactured in the department of d'Eure; not easy to determine which of the three should bear away the prize.

25th

25th Arcade. Silk and cotton stockings, manufactured in Besançon.

26th Arcade. Cottons from Pont Audeme. The colours and patterns not very fine.

27th Arcade. Very excellent linen cloths from the same place.

28th Arcade. The finest pistols, rifle-barrelled guns, sabres of the most costly workmanship, the pride of the national manufactory at Versailles. These fine specimens of taste, invention, and execution, derived additional lustre from the manner in which they were grouped or arranged.

29th Arcade. Very fine patterns of tiffany and gauze.

30th and 31st Arcade. Fine specimens of tanned leather, from two tanneries in Pont Audemer.

32d Arcade. Linen and pocket handkerchiefs from the same place.

33d Arcade. Cotton stockings, and muslins from a manufactory in Troyes.

34th Arcade. Coppersmith work, excellent

cellent, but still inferior to that of England.

35th, 36th, and 37th Arcades. Silk and cotton stockings, manufactured at Troyes.

38th Arcade. Sealing wax of different colours scented. The sticks were very fine, and diffused an agreeable smell without being burned. I bought twelve sticks for thirty sous, each six inches in length, and a quarter of an inch in thickness, of different colours, red white, green, blue, and brown.

39th Arcade. Glasses of different kinds, blown at Gorra, near Paris.

40th Arcade. A complete set of the new weights and measures, executed by order of the Minister of the Interior.

41st Arcade. The new weights and measures, executed by Ciceri, and in the 42d arcade, the machines by which the new weights and measures are divided, by Kuts; this artizan excels Ciceri in the execution of those articles.

43d Arcade. Books printed on vellum paper in the office of Didot, the younger; namely, Contrat Social, Juvenal, le Telemaque, Anacharfis, &c. They are all master-pieces in the typographic line.

44th, 45th, 46th, and 47th Arcades. Models of different machines. I could not find any marks of excellence in them, they were very clumsily executed. I was surprized to find that they should be offered as specimens of national ingenuity.

48th and 49th Arcade. Excellent specimens in general of cotten and woollen cloths, which did great credit to the manufactory in Beauvais.

50th Arcade. A large assortment of fabres, &c. manufactured in Provotiaus.

51st Arcade. Plates of horn for lanterns; very large, pure, and transparent.

52d Arcade. Several costly articles of dress sewed in such a manner, that the seam was not to be discerned. I had not the good fortune to see them, as they were soon taken away.



53d Arcade. Stoneware manufactured in Vauderanges in imitation of the English.

54th Arcade. Excellent tin work, such as ink-stands, flower-pots, &c. The form was beautiful, painted in different colours: some of the designs were very happily conceived and executed, they were done by Deharme.

55th Arcade. A handmill, well constructed, by Durand, which ground and sifted at the same time. He has invented several mills on different constructions: he is a mill-wright.

56th and 57th Arcades. Several specimens of porcelain, the produce of the national manufactory at Seve, such as tea urns, basons, coffee-pots, plates, tureens, and large and small vases of all colours, figures, and groupes, in biscuit, so white and fine, that they might be easily taken for gips. A round table of three feet in diameter, composed of many small pieces of blue ground, with white bas-relief, in imitation

imitation of Wedgewood ware; notwithstanding it was not free from blemishes, yet on the whole it was very neat and fine. On the porcelain there were two beautiful landscapes, fourteen inches in length, and ten in height. The form, designs, colours, and gilding of the porcelain at Seve are entitled to great praise.

In the mean time it may be proper to observe, that two kinds of porcelain are manufactured at Seve, soft and hard, the first is more showy, but the last approaches nearer to true and real porcelain.

58th Arcade. Pierre Didot, the printer, and Fermin Didot, and Louis Herhan, letter founders, or letter cutters, exhibited some of the newly invented stereotypic plates, in which each page of the book was cut or engraved, such as was used in the infancy of printing, but of a composition so hard, that it will serve to work off from eight to ten thousand copies. The expence is repaid in the number of copies, though they are sold at a low price. In this arcade

cade I saw an edition of Virgil in 12mo. which sells for fifteen sous, Phædrus for twelve sous, and Fables de Fontaine for fifteen sous. There was likewise a splendid edition of Virgil on vellum paper, with copper plates, printed in this manner. A stereotypic edition of Callet's tables of logarithms, &c. Some books have just issued from the same press, which do great honour to this new invention.

59th Arcade. All kinds of chrystal glass from Lebon's fabric in Creuzot, in the department of Saone and Loire. These glasses are very beautiful in matter, form, and polish.

60th Arcade. A complete service of porcelain and decorations, designed for the table of a sugar-baker in Paris.

61st Arcade. The model of a threshing machine, by a miller in Rouen, not equal to our threshing machines in Denmark.

62d, 63d, and 64th Arcades. Spinning machines from a fabric in Luat, in the department of Seine and Oise, together with  
some

some sweet-meats by a confectioner in Paris.

65th Arcade. Porcelain from Dehl's and Gerhard's manufactory, Rue de Temple, Paris. This porcelain is better, and more durable than that of Seve; it is called in general *Porcelaine d'Augoulême*. Amongst many other fine pieces, I saw upwards of twenty paintings on porcelain, the largest of which was twelve inches long, and ten broad. The subjects flower and fruit pieces, a scene by moonlight, a young woman sitting, two old heads, and different landscapes. The designs were correct and natural, the colouring fine, the light and shade happily blended, and the execution of the whole inimitable. All these fine pieces did not experience any cast or blemish in the burning, which is not the case in other fabrics. It must be observed, however, that Dehl and Gerhard excel in the colour line, and that their furnaces are constructed in such a manner, that the colours do not melt or run into each other.

The



The shades of the colours were much more delicate and clear than in those of Seve.

In this arcade I also found a number of things worthy of being named. A vase of three feet in height, two smaller ones, a foot in height each, two little, blue and grey vases of excellent workmanship.

Two groups of figures in biscuit, two table-clock cases, the biscuit was beautiful, and of the purest white.

66th Arcade. Many landscapes, designs in architecture, vases, and other figures engraved on copper plates by Defrance, which he calls *tableaux en creux, gravés autour*. This curious and excellent artist engraves the whole by a mechanical lathe, which imparts all the innumerable motions of the hand, and in many instances with greater success and perfection. With this instrument he can engrave plates after any design. He has also a manufactory of snuff-boxes of tortoise-shell, and other composition, for which he has found a very great demand. I expressed a wish to see his  
lathe,

lathe, which I suppose to be a master-piece in mechanism; he assured me that no one ever saw it, except his wife or children.

67th Arcade. Perrin's metallic linen and gauze, or linen interwoven with steel threads. The texture beautiful, and of different degrees of fineness.

I was very much pleased with this new effort of the shuttle, and am persuaded this metallic tissue will be found extremely useful in many branches of manufacture, such as sitting in the porcelain, glass, and fine earthenware. It may also be employed in the making of vellum paper, and paper of different kinds, so as to render the transverse lines scarce visible. It is only necessary to send the ingenious inventor the measure, which he executes to any length, breadth, or fineness, at a reasonable price. The only articles in this collection that merited, in my opinion, peculiar distinction were the following:

Brugnet's watch-work, particularly his echapement in the second arcade; Desarnod's

nad's economical stoves and boilers, in the sixth arcade; Berthier's steel-work in the twentieth arcade; fire-arms from Versailles, in the twenty-eighth arcade; Gre-mont's and Barre's printed cottons, in the fifteenth arcade; Patte's white earthen or stone-ware, in the eleventh arcade; specimens of the stereotype and stereotypic printing, by Pierre Didot, Fermin, Didot, and Louis Herhan, in the fifty-eighth arcade. DeFrance's mechanical engravings in the sixty-sixth arcade, and finally, Dehl's and Gerhard's porcelain, in the sixty-sixth arcade.

The whole exhibition, however, is very well worth viewing; besides, the idea is new. You there see many proofs of the industry and ingenuity of the nation. Whoever views them with an impartial eye must, however, acknowledge that they fall far short of that perfection of which they are capable; but when coupled with circumstances, such as when so many artists, manufacturers, &c. are enrolled as con-

T

scripts,

scripts, or sent to the armies, the general scarcity of money, the want of encouragement, in consequence of the total extinction of trade and local convulsion, it is matter of surprise that any thing worthy of public attention could be offered. Let France once enjoy the blessings of peace: let the husbandman steer the plough in quiet, and reap the fruits of his own industry, then manufacturers, handicrafts, commerce, and the fine arts, will daily gather strength, shoot forth, and expand into luxuriance. Peace, I know, is the general wish of the people, a wish that is founded on good sense, and patriotism and industry will then contribute more to their real happiness, than the splendid but illusive acquisition of states and provinces, and the folly of disseminating the seeds of republicanism in other countries.

On the fifth complementary day, about eight o'clock in the evening, there was a general discharge of artillery, and at nine another from the cannon planted before  
th.



the palace of the Directory, and along the banks of the Seine. This discharge was immediately followed by six hundred rockets from the Pont-neuf, which ascended to a considerable height, and formed a beautiful appearance in the air. The public offices and telegraphs were hung with lamps, lighted up with different colours, which had a very pleasing effect, as they were arranged to the best advantage. Glass lamps are not used in those illuminations, but flat lamps of potter's earth from three to four inches. They are not filled with oil, but a substance prepared from the offals of oxen, calves, and lambs, which are purchased in the slaughter-houses for that purpose. In serene weather they burn very clear, but wind or rain immediately extinguishes them.

The 22d of September, 1798, was a peculiar festival. There were rowing matches on the Seine, and wrestling in the Champ de Mars, for small prizes, such as ribbons,

&c. The victors were immediately invested with the prize, and sometimes carried off on the shoulders of the populace in triumph, particularly if the contest was long doubtful. In this list I saw fourteen or fifteen young men, well formed by nature for such athletic exercises.

This amusement was succeeded by the entrance of two chariots. Some of the victors of the 14th of July stood upright in one, and some of these of the 14th of August in the other. A party with lighted brands set fire to two figures of wood, the one representing Despotism, and the other Fanaticism, and then danced round the blaze.

In the afternoon the Directory, Ministers, &c. assembled in the Military School, from whence they moved in procession in the same order which I have already mentioned on the feast in commemoration of the foundation of the Republic. A group dressed in the costume of the ancient Gauls walked

walked before the Directory, with a banner containing the names of all the departments. The following lines were written on the back of this fane :

La République les a tous réunis,  
Ce n'est plus qu'un même peuple.

A trophy was borne on one side of the departmental ensign, formed of the shields of the Batavian, Cisalpine, Helvetic, and Roman Republics, with the following inscription :

Que leur alliance avec le peuple François  
soit éternelle.

As soon as the procession had reached the altar, raised to the genius of the country, the departmental ensign, and the trophy of the allied republics, were placed at the foot of it, with great ceremony, accompanied by a triumphal song. Treilhard, the president of the Directory, delivered a speech, in which he congratulated the French nation on the success of their arms, and the prospect of returning peace. An ode was then sung, composed for the oc-

caſion, the words by Chenier, and the muſic by Martin :

A notre cœur ſenſible et brave  
Rien ne peut inſpirer l'effroi :  
Ce qu'il hait le plus, c'eſt un Roi ;  
Après un Roi, c'eſt un eſclave  
Si nos aïeux furent long temps  
Sujets des rois, jouets des prêtres ;  
Nous vivrons, nous et nos enfans,  
Et ſans préjugés et ſans maîtres.

The preſident then read over the names of the citizens who had contributed to the ſtability or happineſs of the Republic in the courſe of the preceding year, either by their perſonal bravery, patriotic eſſays, inventions, induſtry, &c. All thoſe were diſtinctly repeated by a herald, who diſtributed printed liſts of the names to the circle around him.

Horſe and chariot racing followed next. Two horſes were remarkably fleet, one came from Normandy, and the other from Limoges. Thoſe two won the honours of the courſe.

The chariot races afforded the higheſt amuſement ; they were built in the manner



ner of the Roman triumphal cars, with two wheels, and open behind. The charioteer stood upright. Four started; but the contention only lay betwixt two. One of the charioteers met with an accident. Lagrange, formerly an officer in the Hussars, who had fought with great gallantry against the Prussians in Champagne, in attempting to reach the goal, he struck his wheel against his rival's, by which he was pitched to a considerable distance, and received so dangerous a wound in his head, that he was carried for dead out of the race ground. There were ten prizes distributed, the largest amounted to twelve hundred, and the least to eight hundred franks. Eight of those consisted of carabines, pistols, and swords from the manufactory of Versailles, one of porcelain manufactured in Seve, and the last a ring and watch.

The aerostatic corps of Meudon, claimed a share in the amusement of the day. An air balloon of thirty-one feet in diameter was launched, and ascended to the height  
of

of about one hundred and fifty feet in the air, an aerostatic officer sat in the boat or car, and directed its course. A kind of fort or redoubt, composed of wood, was raised in the middle of the field, the aerial navigator sailed for some time round it, and when he came directly over it, threw a globe filled with combustible matter into the fort, which instantly enveloped the whole in flames. A glass globe filled with phosphorus would be sufficient for this purpose.

The Directory now returned to the place from whence they set out.

The day was fine, and the novelty of the successive sports drew an immense crowd of spectators, not less, I am sure, than two hundred thousand, if not more. Government seems to know the Parisians well, and how easily they may be managed with spectacles of this kind, like the Romans, who only wished for bread and shows, (*panem et circenses*). Through the friendship of the Danish minister, Mr. Dreyers, I received

received a ticket, by which I was admitted to the inner room in the Military School; I had the good luck to get a place in one of the balconies where I found myself in company with the following ladies, Mesdames Reubel, Treilhard, Bonaparte and her daughter, Simon, and Recamier. The two last are bankers' wives, and justly famed for their beauty. Madame Bonaparte is very handsome, more so in my opinion than Madame Tallien. The accident which befel Lagrange affected Madame Tallien so much, that she almost fainted as they carried him by the balcony. At night the illuminations were very general, and the lamps were disposed in such symmetry, that the effect was charming beyond what I have either time or language to describe.

A NEW EDITION,

Corrected and revised, in two Volumes duodecimo,

Price 10s. in boards,

BIOGRAPHICAL MEMOIRS

OF TWO HUNDRED OF THE

*Founders of the French Republic*

AND OF

Other Persons the most distinguished  
in the

PROGRESS OF THE REVOLUTION.

*Critical Opinions of this Work.*

"We have only to observe on the present Volume, that it is generally written with an elegance and vivacity of style which are peculiarly pleasing; that the Anecdotes are mingled with many judicious and sensible reflections; that the politics are free, but temperate; that the estimate of characters is apparently impartial; and that it abounds with the most interesting and entertaining matter. About a hundred and thirty characters are sketched in this popular Volume, and a very useful chart is prefixed of the proscriptions of parties in France from that of the Brissotines in June, 1793, to that of the Royalists in September, 1797."

*Analytical Review.*

"We can promise to our readers, whatever their political principles may be, considerable amusement and information from this volume, which contains Anecdotes of above one hundred and thirty of the most eminent persons who have "strutted and fretted their day" upon the grand theatre of French politics. The author appears to have taken great pains to collect materials from the best sources."

*Critical Review.*

Printed by T. Gilett, Salisbury-square.