

THE
PHILOSOPHICAL MAGAZINE:

COMPREHENDING
THE VARIOUS BRANCHES OF SCIENCE,
THE LIBERAL AND FINE ARTS,
AGRICULTURE, MANUFACTURES,
AND
COMMERCE.

BY ALEXANDER TILLOCH,

MEMBER OF THE LONDON PHILOSOPHICAL SOCIETY.

“Nec araneorum fatis textus ideo melior, quia ex se fila gignunt. Nec nosset
vltior quia ex alienis libamus ut apes.” JUST. LIPS. *Monit. Polit.* lib. i. cap. 1.

VOL. IV.

LONDON:

PRINTED BY J. DAVIS, CHANCERY-LANE,
For ALEXANDER TILLOCH; and sold by Messrs. RICHARDSON,
Cornhill; CADELL and DAVIES, Strand; DEBRET, Piccadilly;
MURRAY and HIGHLEY, No. 32, Fleet-street; SYMONDS,
Paternoster-Row; BELL, No. 148, Oxford-street;
VERNOR and HOOD, Poultry; HARDING, No. 36,
St. James's-street; WESTLEY, No. 159, Strand;
J. REMNANT, High-street, Bloomsbury;
and W. REMNANT, Hamburgh.

CONTENTS

OF THE

FOURTH VOLUME.

| | |
|---|-------------|
| ON the Possibility of Casual Mutilations in the Bodies of Animals becoming in the Course of Time hereditary Marks of Distinction. By Professor BLUMENBACH | Page 1 |
| Report on the Travels of C. OLIVER and C. BRUGUIERE, undertaken by order of the French Government, through the Ottoman Empire, Egypt, and Persia, during the Years 1792, 93, 94, 95, 96 and 97 | 6 |
| Method of preparing the Dutch Turnsol Blue | 17 |
| On the apparent Conversion of Silver into Gold. By Professor HILDEBRANT, of Erlangen | 18 |
| History of Astronomy for the Year 1798. Read in the College de France, Nov. 20. By JEROME LALANDE, Inspector and Dean of the College, and formerly Director of the Observatory | 23 |
| Progress of Dr. MITCHILL's Mind in investigating the Cause of the Pestilential Distempers which visit the Cities of America in Summer and Autumn. Being a Development of his Theory of Pestilential Fluids, as published to the World in 1795, and the succeeding Years | 35 |
| On the Use of Calcareous Stones in the Manufacturing of Crude Iron. By Mr. DAVID MUSHET of the Clyde Iron Works. Communicated by the Author | 43 |
| Account of Bugs found in hollow Trees, with Observations on that Phenomenon. By S. OEDMAN | 57 |
| Observations on Animal Electricity; being the Substance of two Letters from A. VOLTA to Professor GREN | 59 |
| Agenda, or a Collection of Observations and Researches, the Results of which may serve as the Foundation for a Theory of the Earth. By M. DE SAUSSURE | 68 |
| Observations on the Manufacture of the Acetite of Copper or Verdigrise, Verdet, &c. By J. A. CHAPTAL | 71 |
| On the Method of preparing Tallow Candles with Wooden Wicks. By Professor MEDICUS of Heidelberg | 79 |
| Experiments on the Colouring Matter of Vegetable Juices with the Tungstic Acid. By Cit. GUYTON | 81 |
| A 2 | Description |

| | |
|--|---------|
| Description of an Apparatus in the Teylerian Museum for the Combustion of Phosphorus in Oxygen Gas; with Observations on the Shining of Phosphorus in Azot. By D. VAN MARUM of Haarlem | Page 83 |
| A simple Method of determining the Magnifying Power of Telescopes. By Mr. S. VARLEY. Communicated by the Author | 87 |
| Sixth Communication from Dr. THORNTON, Physician to the General Dispensary, &c. relative to Pneumatic Medicine | 95 |
| Biographical Memoirs of M. DE SAUSSURE. By A. P. DECANDOLLE | 96 |
| Letter from Dr. CARMICHAEL SMYTH to the Editor of the Philosophical Magazine | 102 |
| On the Longitudinal Vibrations of Strings and Rods, with Observations on the Conveyance of Sound through Solid Bodies. By Dr. CHLADNI of Wittemberg | 113 |
| Observations on the true Origin of the Gossamer. By J. M. BECHSTEIN | 119 |
| Remarks on Mr. SHELDRAKE's Dissertation on Painting in Oil in the Manner of the Venetians. By Mr. EDWARD DAYES. Communicated by the Author | 124 |
| Progress of Dr. MITCHILL's Mind in investigating the Cause of the Pestilential Distempers which visit the Cities of America in Summer and Autumn. Being a Development of his Theory of Pestilential Fluids, as published to the World in 1795, and the succeeding Years (concluded.) | 132 |
| Account of a Voyage to Spitsbergen in the Year 1780. By S. BACSTROM, M. D. Communicated by the Author | 139 |
| An Attempt to arrange the Crystals of Oxidated Tin Ore, according to their supposed Structure. By Mr. WILLIAM DAY, Leicester Place. Communicated by the Author | 152 |
| Experiments respecting the Effects of Quicksilver on Vegetable Life. By VON DEIMANN, PAATS VAN TROSTWYK, and LAUWERENBURGH | 161 |
| Observations on Animal Electricity; being the Substance of two Letters from A. VOLTA to Professor GREN | 163 |
| On the Method of manufacturing Acetat of Copper, Crystals of Venus, or Crystallised Verdigrise. By J. A. CHAPTAL | 171 |
| An Attempt to determine the true Form and necessary Angles of Weather that ought to be given to Vanes of a Vertical Windmill as they recede from the Centre, left undetermined by Mr. Smeaton. By RICHARD HALL GOWER, in the Sea Service of the Honourable East India Company | 174 |
| On the Assaying of Iron Ores and Iron-Stones by Fusion. By Mr. | |

CONTENTS.

| | |
|---|----------|
| Mr. DAVID MUSHET of the Clyde Iron Works. Communicated by the Author | Page 178 |
| Agenda, or a Collection of Observations and Researches, the Results of which may serve as the Foundation for a Theory of the Earth. By M. DE SAUSSURE (continued.) | 188 |
| On the Cure of Persons bitten by Snakes in India. By JOHN WILLIAMS, Esq. | 191 |
| On the Metallic Particles contained in the Ashes of Vegetables. By M. DE LA METHERIE | 196 |
| Observations on Native Iron found in Strawberries | 198 |
| Seventh Communication from Dr. THORNTON, Physician to the General Dispensary, &c. relative to Pneumatic Medicine | 201 |
| On the Glazing of Earthen Vessels without Lead | 203 |
| Geographical Description of the Isles of France and Bourbon | 204 |
| Observations on the Property ascribed to Oil, of calming the Waves of the Sea. By I. F. W. OTTO | 225 |
| Communication from Dr. MITCHILL, of New-York, shewing the Utility of constructing the Houses and paving the Streets of Cities with calcareous in preference to siliceous and argillaceous Materials | 233 |
| An Account of Mr. BROWN'S Travels through Egypt and Syria, &c. | 239 |
| Means proposed for saving the Crews of Vessels shipwrecked near the Coast. By an anonymous Author | 247 |
| On the different Kinds of Cadmia, and particularly those of Zinc and Cobalt. By I. I. BINDHEIM of Moscow | 250 |
| Description of an Assay-furnace, with an Apparatus for measuring the Degree of Heat employed. By Mr. DAVID MUSHET of the Clyde Iron Works. Communicated by the Author | 255 |
| Agenda, or a Collection of Observations and Researches, the Results of which may serve as the Foundation for a Theory of the Earth. By M. DE SAUSSURE (continued.) | 259 |
| Observations on the different Inducements to the Eating of Human Flesh. By J. DE LOUREIRO | 265 |
| Description of an improved Discharging Electrometer. Read before the Royal Society of Copenhagen. By A. W. VON HAUCH, Marshal of the Court, &c. to his Danish Majesty | 267 |
| Observations on the Tones produced by an Organ-pipe in different Kinds of Gas. By C. F. F. CHLADNI | 275 |
| Letter from E. PEROLLE of the Academy of Turin, formerly Professor of Anatomy and the Practice of Medicine at Toulouse, to J. C. DE LA METHERIE, on the Acoustic Experiments of Chladni | 283 |
| | On |

| | |
|--|-------------|
| <i>On a Submarine Forest on the East Coast of England.</i> By JOSEPH CORREA DE SERRA, LL.D. F.R.S. and A.S. | Page 287 |
| <i>On an Epidemical Disease among Cats.</i> By J. F. BLU- MENBACH | 297 |
| <i>On the Preparation of Crayons used for Drawing, from the Paste of Reddle.</i> By C. F. LOMET | 299 |
| <i>Description of HUMBOLT'S New Portable Barometer</i> | 304 |
| <i>Postscript to VOLTA'S Letters on Animal Electricity</i> | 306 |
| <i>A Statement of the Progress in the Vaccine Inoculation, and Experiments to determine some important Facts belonging to the Vaccine Disease.</i> By GEORGE PEARSON, M.D. F.R.S. Physician to St. George's Hospital, &c. Com- municated by the Author | 312 |
| <i>Query respecting the natural Boundaries between Europe and Asia</i> | 327 |
| <i>On the gradual Changes in Temperature and Soil which take place in different Climates, with an Enquiry into the Cause of those Changes.</i> By the Abbé MANN | 337 |
| <i>Observations on the Vibration Nodes of Musical Strings.</i> By J. G. VOIGT of Halle | 347 |
| <i>Agenda, or a Collection of Observations and Researches, the Results of which may serve as the Foundation for a Theory of the Earth.</i> By M. DE SAUSSURE (continued.) | 351 |
| <i>Account of a large Tree in India.</i> By Col. IRONSIDE | 359 |
| <i>Account of a Banian Tree in the Province of Bahar.</i> By Colonel IRONSIDE | 360 |
| <i>On the different Kinds of Cadmia, and particularly those of Zinc and Cobalt.</i> By I. I. BINDHEIM of Moscow (con- cluded.) | 362 |
| <i>Singular Cure of a young Woman, effected by expelling from the Stomach, &c. the Larvæ of certain Insects.</i> By M. ODHELIUS | 366 |
| <i>On the Signs exhibited by Animals which indicate Changes of the Weather, with Remarks on other Prognostications.</i> By M. TOALDO | 367 |
| <i>On the Effects of Oil in Cases of the Bite of Serpents; re- published from the Charlestown (South-Carolina) City Gazette</i> | 375 |
| <i>Thoughts on Deafness; with a new Mode of making Deaf People hear.</i> Written 15th December 1798, by D. WHYTE, M.D. | 378 |
| <i>On the Assaying of Ores by Fusion.</i> By Mr. DAVID MUSHET of the Clyde Iron Works. Communicated by the Author | 380 |
| <i>On the Comparative Height of the Mountains of the Earth, the Moon, and Venus</i> | 393 |
| | Description |

CONTENTS.

vii

| | | |
|--|--------------------|----------|
| <i>Description and Use of a new Portable Instrument for ascertaining the Comparative Strength of Gunpowder. By C. REGNIER</i> | - - - | Page 394 |
| <i>Account of a Red Substance observed on the Surface of a Fish-Pond in Norway. By Professor H. STROM</i> | | 397 |
| <i>Observations on the singular Sagacity of the Rock or Ice Fox</i> | | 402 |
| <i>An Account of Mr. BROWN's Travels through Egypt and Syria, &c. (continued.)</i> | - - - | 405 |
| <i>On the Disappearance of Swallows in Autumn; in a Letter from Mr. PETER COLE to Dr. MITCHILL, dated New-York, September 25, 1798</i> | - - - | 414 |
| <i>Meteorological Observations made at Padua in the Month of June 1783, with a Dissertation on the extraordinary Fog which prevailed about that Time. By M. TOALDO</i> | | 417 |
| <i>Observations on Pumice Stone, and the Places where found. By Professor BECKMANN</i> | - - - | 423 |
| <i>Eighth Communication from Dr. THORNTON, Physician to the General Dispensary, &c. relative to Pneumatic Medicine</i> | | 429 |
| <i>New Publications</i> | - - - | 207 |
| <i>Intelligence and Miscellaneous Articles</i> | 103, 211, 329, 431 | |

THE
PHILOSOPHICAL MAGAZINE.

JUNE 1799.

I. *On the Possibility of Casual Mutilations in the Bodies of Animals becoming in the Course of Time hereditary Marks of Distinction.* By Professor BLUMENBACH *.

THAT it is possible for mutilations produced in the bodies of animals, either by accident or by artificial means, especially when repeated through a whole series of generations, to degenerate in the course of time into hereditary marks of distinction, seems *à priori* to be incontrovertible. At any rate, I should be glad to see the physiologist who can assign a reason why this should not be as possible as the transmission of hereditary organic diseases, or hereditary monstrosities †,
or

* From *Magazin für das Neueste aus der Physik*. Vol. VI.

† Of the numerous and partly well known instances of this kind I shall quote only a recent one, mentioned by M. Schulz in his *Observations on a monstrous canary bird*, p. 17. "A Spanish bitch," says he, "which had been in my possession for several years, was not only brought forth without a tail, but at various times produced puppies some of whom were destitute of tails also. As often as this bitch brought forth more than one puppy, one of them perhaps was quite perfect; the greater part, however, had half tails or tails still shorter, and one at least had no tail at all. The most singular thing was, that the young almost always had a resemblance

or the most individual traits in family likenesses, such as a thick under lip, strong eye-brows, and so on, which certainly did not all descend from Adam; but which have first appeared at a certain generation, and since that period have been continued, with more or less constancy, by hereditary transmission.

I. Instances among Animals.

We are told by Sir Kenelm Digby*, that the tail of a cat having been cut off when young, some of the kittens, which she afterwards brought forth, were always without tails. Nath. Highmore†, who in explaining the nature of generation differs so much from Sir Kenelm, says that he saw a bitch which wanted almost the whole tail from the rump, and that the half of her young were brought into the world with tails, and the other half without. Buffon‡ asserts that he saw dogs, the ears and tails of which had been cropped for many generations, and which transferred this mutilation, either totally or in part, to their posterity.

M. R. Masch, of New Strelitz, gives an account, in the *Naturforscher* §, of a butcher's dog, the tail of which, according to custom, had been cut off, and which having copulated with a she-wolf, that had been caught, the latter produced three bastards. Among these was a male, half grey like the father, and born with a cropped tail; so that the casual mutilation of the dog, as the author says, was transferred to this bastard.

We are told by D. Forster ||, that it has been remarked in to the father, whether grey-hound, spaniel, &c. in regard to colour and bodily conformation; and derived nothing more from their mother, the Spanish bitch, than the singularity of having only the third part of a tail, or no tail at all."

* On the Nature of Bodies, p. 214.

† History of Generation, p. 31.

‡ Histoire Naturelle, vol. xiv.

§ Part xv.

|| Beiträge zur Völker-und Lander-Kunde, Part 1.

England, that when horses are continually docked, and both stallions and mares kept so for many generations, the foals, at last, come into the world with some articulations fewer in the tail. Buffon * has enlarged pretty fully on this subject, and endeavoured to prove, by the help of anatomy, that the callosities on the breast-bone and knees of the camel are merely the consequence of their subjection, and the force by which these animals of burden, as is well known, are obliged to kneel down; and as the young camels, when brought forth, have callosities of the like kind, he gives this as a proof of the hereditary transmission of such variations produced by art.

II. Instances among the Human Species.

Cardan † speaks of the well known ancient custom of the Peruvians of *Puerto Viego*, who pressed between boards the heads of their new-born children. This custom, however, became afterwards like a second nature; so that, in the course of time, children were brought into the world with heads formed in that singular manner: and Cardan expressly says, that this flatness of the head was originally the work of art, and not of nature. *Constat igitur*, to use his own expressions, *humanam formam multis modis variari, tum arte, tum diuturna successione*. Hippocrates, in his work upon air, water and climate, mentions something of the like kind in regard to the *Macrocephali*, a people on the borders of the Black Sea, who pressed the heads of their new-born children; and this practice repeated, through many generations, produced at length an hereditary distinction; so that the children were born with heads of a particular form. "At first," says he ‡, "the practice of the country seems to have been the cause of this conformation; but custom afterwards be-

* Histoire Naturelle, vol. xi.

† Vol. iii. p. 162 of Spon's edition of his works.

‡ This passage is translated from the original in Chartier's edition, vol. vi. p. 206.

came nature. Those who had the largest heads were considered as the noblest; and for this reason the *Macrocephali* pressed the yet pliable tender heads of their children with their hands, and forced them to extend in length by bandages and other means. This artificial process gave occasion to the subsequent increase of size in the head among these people, so that artificial means were no longer requisite for that purpose." Hippocrates, however, adds in a short section: "That in his time their heads had no longer that singular form completely, because they had entirely neglected the above artificial means of formation." But that this very little contradicts his preceding account and opinion is shewn by the intermediate passages, where he endeavours to explain the phenomenon from his well known theory of generation. "The generative matter," says he, "is collected from all parts of the body. From sound bodies it comes sound, and from diseased bodies diseased. Now, as bald heads, blue eyes, and overgrown bodies are transmitted in families, and the like rule takes place in other circumstances of conformation, why should not children with great heads be produced by great headed parents?" Hippocrates, therefore, evidently meant only that in the course of time Nature sometimes abandons forms she has assumed, and returns again to the original.

Aristotle, in his work on the generation of animals, speaking of the grounds on which the theory of Hippocrates respecting generation is founded, says: "It is very probable for this reason, besides others, that children not only resemble their parents in internal and innate properties, but even in external marks which are merely casual; for there are instances of moles being transmitted from parents to their children, and on the very same parts of the body. He himself quotes a Chaldean, who, having a mole on his arm, transmitted it to his son, though in the latter it was not so apparent as in the father. Pliny also, where he treats of marks, moles, and the like, being sometimes inherited by children,

adds,

adds, by way of example: *Quarto partu Dacorum originis nota in brachio redditur.* In my opinion, this passage alludes to the hereditary transmission of moles among the Dacians, Illyrians, &c. who, according to the testimony of many of the Ancients, were distinguished by this singularity.

The late M. Osann once came to me, full of astonishment, and told me that he had met with a similar instance in the family of a staff-officer, who lived in the neighbourhood. The father in his younger days had received a wound in the little finger of his right hand, which had been rendered crooked during the cure; and his son and daughter were born each with the little finger of the same hand crooked. I have since seen both the father and daughter, and have been convinced, by inspecting their hands, of the truth of the above information.

A literary man of very great acuteness, when conversing with me on this subject, started the following objection: "If artificial mutilations can become hereditary, children born of circumcised parents must often be born without the foreskin, which does not appear to be the case." At that time I was acquainted with only one instance of this kind in Steph. Gerlach's Journal; but one example did not appear to me to be of any peculiar weight. I, however, once happened to ask a Jew of this place, a man not destitute of learning, and well acquainted with the ritual of his nation respecting this circumstance, and was told that it frequently happened that the children of the Jews were brought into the world with so short a foreskin that it required an experienced and careful hand to circumcise them. This innate deficiency is distinguished by a particular Hebrew appellation, *nauld mohl*, or born circumcised. His own father, who had circumcised above 700 boys, and who was celebrated on account of his expertness in this case, not at all uncommon, often spoke of the difficulty of performing the operation under such circumstances. In a word, what had appeared to me an argument against the hereditary transmis-

sion of artificial mutilations, became unexpectedly an important argument in its favour. I will, however, readily acknowledge, that all the cases above mentioned may not be of equal authenticity, and equally incontrovertible; but even though the least improbable should be rejected, there will still remain, to support the probability of the thing, as many as could be desired for a proposition which cannot well be proved by direct experiments made for the purpose.

II. *Report on the Travels of C. OLIVIER and C. BRUGIERE, undertaken by order of the French Government, through the Ottoman Empire, Egypt and Persia, during the Years 1792, 93, 94, 95, 96 and 97*.*

[Concluded from the last Volume, p. 347.]

THIS journey was extremely interesting; for, besides the great number of objects which we collected, and the observations we had occasion to make, we were surprised to see a country exceedingly fertile, yet almost a desert, and often volcanic, exhibiting, at every step, vestiges of ancient cities. We crossed the Euphrates and the Tigris on wretched wooden boats; and two rivers, which flow from the mountains of Curdistan, on boats formed of a number of inflated skins joined together. I shall describe, with some minuteness, this simple method of crossing rivers, because it might be employed with advantage in Europe, on account of the facility and trifling expence of transporting a great number of skins; of inflating them in a moment, and uniting them firmly together by means of the branches of trees; and of conveying, in this manner, over the largest rivers, a whole army without any danger.

When we arrived at Bagdad, the pacha was so ill that two Persian physicians, who attended him, had given over all

* Read in the Sitting of the National Institute, February 14th. By C. Olivier.