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PHILOSOPHICAL JOURNAL,

EXHIBITING A VIEW OF

THE PROGRESS OF DISCOVERY IN NATURAL PHILOSOPHY, CHEMISTRY, NATURAL HISTORY, PRACTICAL MECHANICS, GEOGRAPHY, NAVIGATION, STATISTICS, AND THE FINE AND USEFUL ARTS,

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DR BREWSTER AND PROFESSOR JAMESON.

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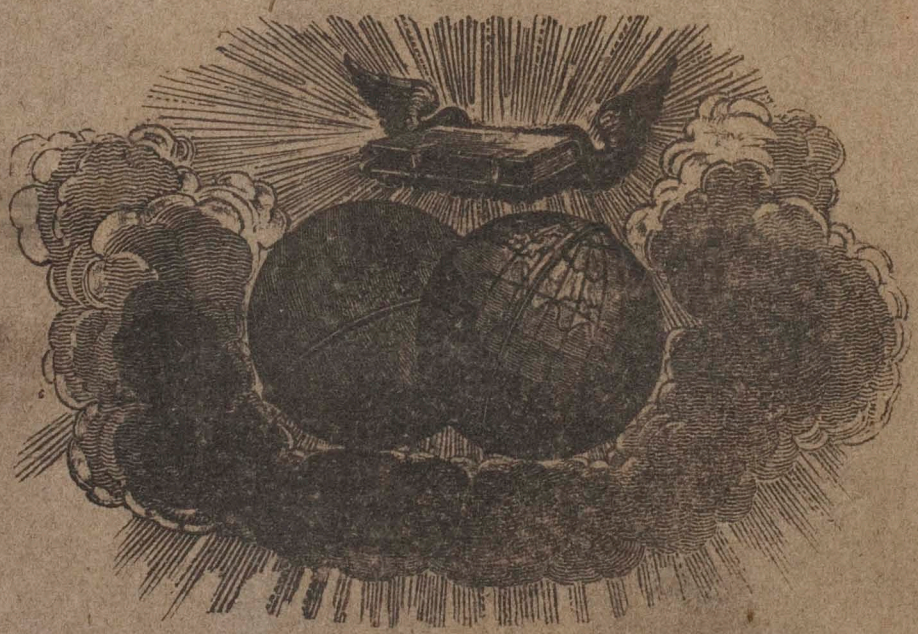

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ART. VI.—*Miscellaneous Notices in Natural History, by* Professor BLUMENBACH, *viz.* 1. *Account of the Snow Ophthalmia, with the Methods employed in preventing it; 2. Remarkable Irritability of the Tongue; 3. The Xanthoöpia of Jaundiced Persons; 4. On the Prickle of the Extremity of the Tail of the Lion; 5. Domestic Sheep again become wild; 6. The Genuine Opsian Stone.*

1. *Account of the Snow Ophthalmia, with the methods employed for preventing it.*

XENOPHON, in his account of the expedition of the younger Cyrus, relates, that when the Grecian army was crossing the snowy mountains of Armenia, between the Euphrates and Phasis, in the middle of winter (which answers to the beginning of January according to our present mode of dividing time), many of the soldiers were blinded by the insupportable brightness of the snow; and that, with the intention of preventing or curing this annoying affection, they bound something black (μελαν τι) before their eyes *.

It appears that this snow ophthalmia, of which we sometimes see examples even among ourselves in the winter season, is endemic in alpine and northern countries; so that the Laplanders, when returning from the chase of the wild rein-deer, are for some days almost entirely destitute of sight †. The Greenlanders are affected with this disease of the eyes chiefly in the months of May and June, and if it continue longer, they attempt its cure by making an incision in the skin of the upper eyelid ‡. The Esquimaux labour under this ophthalmia more especially when the surface of the snow, which covers the ground on all sides, has been partially melted, and again, by the action of frost, converted into a solid crust. To the incapability of bearing light, there is at first joined a disagreeable sensation, as if grains of sand had fallen into the eyes, which, as the disease advances, increases so as to resemble the effect of the strongest

* iv. 5. p. 294. 4th ed. of Hutchinson, Cambr. 1785.

† Kaud Leem *on the Laplanders of Finmark*, p. 52.

‡ Crantz, *Histoire von Groenland*, i. 297.

sternutatory powder, and they are seized, at the same time, with a very violent tonic blepharospasmus. These affections sometimes, though rarely, disappear in ten days, but not unfrequently they remain for four weeks*.

Of the mechanical remedies used by the savages to prevent this blindness, which results from an intense glare of light reflected from the snow, I may mention two which happen to be at hand; one of them is of the same kind as that mentioned by Xenophon, and is at the present day much in use in those northern countries,—*something black*, which is stretched before the eyes; that is, a sort of net-work or gauze, made of horse-hair, a little convex anteriorly, lest it should impede the free motion of the eyelids. There is a specimen of this preventive machine among the curiosities of our academic museum, presented by M. De Asch, to whom I am indebted for innumerable articles supplied to my collection of natural objects, with a note attached, signifying that it is in use among the Tartars, especially when hunting or travelling in winter, and that it is called in their language *Kaar-yoeslik*, which means *eye-bandage* †.

The other of these machines is constructed on a very different plan by the Esquimaux, on the coast of Labrador. Although we find many things related by Ellis, Crantz, and other authors, who have visited those eastern shores of America, regarding the wonderful sagacity with which the Greenlanders and Esquimaux construct their snow spectacles, or *snow eyes*, as they call them; yet, as they seemed to be neither very accurate nor clear, I applied to one of the missionaries that he might give me a more correct account of the matter, in as far as regarded the part of the country in which the colonies of his brethren had been established. This benevolent man afforded me the necessary information, and moreover sent me a specimen of those spectacles, made by the Esquimaux themselves of the colony of Hoffenthal, on the Labrador coast, and which, both

* Cartwright's *Journal during a Residence of nearly Sixteen Years on the Coast of Labrador*, vol. i. p. 102.

† Concerning a similar apparatus used by the Persians for preventing the snow ophthalmia, see Chardin's *Travels*, vol. i. p. 211.; and Bell of Antermony's *Travels*, vol. i. p. 84.

with respect to simplicity of design, and accuracy of adaptation to the end in view, testifies the great ingenuity and acuteness of these savages in alleviating the inconveniences of their mode of life.

A few words will suffice to illustrate the figures by which this machine is represented. It is made of a very smooth wooden substance, like poplar, of that remarkable, and, in as far as regards its origin, as yet enigmatical, kind, which is driven upon the northern shores of the globe. The posterior surface, which covers the nose, is pretty deeply cut, to prevent it obstructing the free motion of the eye. There is a notch cut on each side, at the lower margin, which is applied to the cheeks, and which is scarcely subservient to any other purpose than to afford a passage to the tears, which are rapidly secreted in an inflamed eye. The upper margin of the fore side, is more prominent than the under, so as to protect the eye from the snow, or act as a shade in keeping off the sun's rays. The other side is blackened with soot, so as to absorb a part of the dazzling light. Lastly, the apertures made for vision are in the form of narrow slits, and so placed as to correspond with the eye, having the lids nearly closed. I have of late, unfortunately, had occasion to try this machine, being troubled with a severe and obstinate tonic blepharospasmus, which has continued for several months; and when it was necessary for me to look minutely at anatomical preparations, or other natural objects, in a clear light, I have found nothing of equal assistance, or so convenient, as these Esquimaux spectacles of which we speak. Moreover, what all have testified, who, seeing this machine in my museum, have made trial of it, —it answers the purpose of a telescope; and Ellis says, that the savages just mentioned, although they are less dazzled by the brightness of the snow, apply it to their eyes only with the view of observing remote objects more distinctly *.

2. *Remarkable Irritability of the Tongue.*

We shall begin with Ovid's description of the very lively irritability in a tongue that had been newly cut out, when he re-

* Page 143. Gottingen edition.

lates the cruel deed of Tereus King of Thrace, perpetrated upon Philomela the sister of his wife Procne *.

——————— "Compressam forcipe linguam,
Abstulit ense fero. Radix micat ultima linguæ,
Ipsa jacet, terræque tremens immurmurat atræ,
Utque salire solet mutilatæ cauda colubræ,
Palpitat, et moriens dominæ vestigia quærit."

Which, in truth, I had been accustomed, as often as I read it, to refer to the well known licence of poets, who assume an equal power with painters in matters of this kind, until my own ocular experience taught me, that the description was in no way inconsistent with truth.

For when, contrary to the opinion which I had hitherto held, concerning the remarkable irritability of the tongue of men, and of other mammalia, I saw that Sir Everard Home, who has distinguished himself by his physiological investigations, so much diminished the *vis insita* of the organ in question, as to pronounce its muscular fibres to possess a smaller degree of irritability than almost any other part of the body †, I determined to satisfy myself regarding this point, as well by instituting experiments myself, as by consulting the observations of others.

And nowhere did I expect to find a richer harvest of observations upon this point, than in the numerous writings on the subject of the Hallerian irritability, in which innumerable experiments, instituted with the view of supporting or of subverting the doctrine of muscular excitement, are described.

But as it not unfrequently happens, with regard to disquisitions of this kind, that one may find among them every thing but just what he wants, this I found to be the case here also; and I was not a little surprised, that nothing occurred, either in the writings of the first President of our University, on the subject of his celebrated discovery, the heads of which are contained in the commentaries of the Royal Society, or in the works of others, whether his supporters or adversaries, in the way of experiment or observation upon the irritability of the tongue.

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* Metamorphos. vi.

† *Philosophical Transactions* for 1803, p. 211. Observations on the structure of the Tongue. "The internal structure of the tongue is less irritable than almost any other organised part of the body."

Nor was I more fortunate in searching the writers upon Galvanism, as it is commonly termed, in which also I found myself baffled in the hopes which I had cherished.

In the great and immortal physiological work of Haller, which may be considered as forming the pandect of that study, all that is said upon the subject is contained within the short limit of a remark of three words, namely, "*irritabilitate lingua gaudet*,"—the tongue possesses irritability *.

As nothing, therefore, was to be gained by consulting authors, I began the more diligently to observe for myself, and, whenever an opportunity presented, cut out the tongues of warm-blooded animals, which had been killed for other purposes, of dogs, cats, goats, sheep and rabbits, and in all these, although there was a considerable difference in different individuals, even of the same species, I was struck with the irritability of the yet warm tongue, under the excitement of chemical as well as mechanical stimuli; of which experiment I may adduce one in the present place, as exactly corresponding with the description of Ovid.

I had the tongue of a four-year-old ox, which had been killed in the common way, by opening the large vessels of the neck, cut out in my presence, while yet warm, and at the same time the heart, in order that I might compare the oscillatory motion of this organ, which is by far the most irritable that we are acquainted with, with the motion of the tongue. And when I excited both viscera at the same time by the same mechanical stimuli, namely incisions of a knife, and pricks of a needle, the divided tongue appeared to all the bystanders to survive the heart, by more than seven minutes, and to retain the oscillations of its fibres altogether for a quarter of an hour; and so vivid were the movements, when I cut across the fore part of the tongue, that the butcher's wife compared them to those of an eel in a similar condition, quite in the way that Ovid has compared them to the motions of the tail of a mutilated snake.

To these observations made upon animals, I may add here a similar one made upon the human tongue itself, the knowledge of which I owe to my excellent friend and much respected colleague, Reimar.

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* De corporis humani Fabricâ et Functionibus, t. vii. p. 310.

A boy in Hamburgh, who was severely affected with epilepsy, bit the fore part of his tongue in a violent paroxysm, in such a manner that it adhered only by a thin slip. This segment, therefore, as being not only useless, but very inconvenient to the patient, it was immediately judged necessary to cut off: And when the physician, the illustrious Chaupefié, placed it upon his hand, he was surprised to see it palpitate strongly. In order, however, to guard against all deception, as the motion might have depended upon the action of the muscles of his hand, he placed the bit of tongue in the bottom of a window, and even then it continued to move for several minutes, insomuch that it even seemed, as all the bystanders testified with one accord, to change place a little, and creep forward. External stimuli, the prick of a needle, or the application of salt, also excited similar motion; scarcely, however, differing in any way from the spontaneous ones.

I am therefore much mistaken, if the muscular substance of the tongue is not possessed of a remarkable degree of irritability; and Ovid has described its phenomena with exquisite precision.

3. *The Xanthoöpia of Jaundiced Persons.*

The opinion that objects are seen by people affected with jaundice of a yellow colour, has been so generally prevalent, for nearly two thousand years, that it has metaphorically passed into a saying. More particularly known is the passage of Lucretius on this subject:

> Lurida — fiunt quæcunque tuentur
> Arquati, quia luroris de corpore eorum
> Semina multa fiunt simulacris obvia rerum;
> Multaque sunt oculis in eorum denique mixta,
> Quæ contage sua palloribus omnia pingunt *.

In the same manner his cotemporary Varro says, that jaundiced and lethargic people see things, which are not in reality yellow, just as if they were so; and after these Galen †, and his numberless followers, down to Boerhaave ‡, and his adherents.

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* Lib. iv. v. 333. et. seq.

† De Causis Symptomatum, vol. i. p. 2. and elsewhere.

‡ Prælect. in Institut. sects. 544. and 840.

Mercurialis * was the first, in as far as I know, who called this assertion, regarding the yellowish vision of those who labour under icterus, in doubt; and in later times Haller †, and Morgagni ‡, among others, have been similarly inclined.

Lastly, a middle opinion between the two has been held by many after Hoffmann §, Durazzini, Buzzi, and Percival ||, who acknowledged, that the yellow vision in question does indeed occur in some cases of icterus, though rarely, and who placed the fact beyond dispute by accurate investigation, as well as occasionally by the anatomical dissection of the eyes of patients who died of jaundice.

But, on consulting all these opinions with care, that rarer Xanthoöpia (as it may be called) of jaundiced persons, seems to be in this condition, that it supposes at first a yellowish tinge in the pellucid media which transmit the rays of light, especially of the aqueous humour and crystalline lens; then a not so gentle, but more sudden attack or increase of the disease; and, lastly, both a vivid perception in the sensorium and application of the mind. But as these seldom happen at once in icterus, we can easily comprehend why very few patients in that disease complain of the yellow tint of objects. On the contrary, I knew a lady of excellent talents and accomplishments, who, on a sudden and severe attack of icterus, saw at first linen of all kinds, towels, &c. of a livid or dusky hue, and as if they had been ill washed, or not properly bleached. But those, upon whom the disease seizes slowly, advancing as it were step by step, no more experience this yellow hue of objects than old people do, in whom we have known the crystalline lens become livid in very advanced age. Should this tinge take place in one eye only, the other remaining uncontaminated, that diversity of colour in white and shining objects, would be no less easy of observation, than in

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* Variar. Lection. l. vi. p. 357. of the Paris ed. of 1585.

† Ad Boerhaav. Prælect. t. vi. l. c., and his Element. Physiol., and v. p. 488.

‡ De Sed. et Caus. Morbor. &c. ep. xxxvii. art. 8. vol. ii. p. 74. of the Venice ed. of 1761.

§ See his Works, v. iii. p. 302.

|| See his Works, Literary, Moral and Philosophical, ed. of 1807. v. ii. p. 228.

patients, who, after depression of cataract, see the objects, from the use of sulphate of copper applied to the diseased eye, on which they look with it, of a colour sometimes verging towards blue *. And a somewhat similar vitiation of sight is known to take place in those who have, for a long time, kept one eye applied to dioptrical instruments. Thus the celebrated philosopher, James Rohault, after looking, without interruption, for twelve hours, at a distant battle, by means of a telescope, from that time forth saw every object with his right eye, which he had here fatigued so much, of a different colour from what it had when viewed with the left. And the same circumstance happened to myself, after being assiduously employed, for several days, in making observations with a compound microscope.

But what is commonly told of the two celebrated painters, J. Jouvenet † and Gavin Hamilton ‡, does not appear at all likely, viz. that they did not apply the colours with great precision in their paintings, because they both laboured under a similar organic disease of the eyes, and so could not depict the colours of objects with the accuracy of nature. For although we allow a disease of this kind, yet we cannot but think that they saw their own paints in the same way that they saw the objects which they painted, so that they ought to appear to the spectators tempered in an equal manner, and so as to correspond with nature.

4. *On the Prickle at the extremity of the Tail of the Lion.*

Homer §, and many other ancient poets, both Greek and Latin, when they describe an enraged lion, relate that, as Lucan says ||, he stimulates himself with blows of his tail. And Pliny, indeed, calls the tail the index of the lion's mind; for, says he, "when the tail is at rest, the animal is quiet, gentle, and seems pleased, which is seldom, however, the case; and anger is much more frequent with him, in the commencement of which he lashes the ground, but as it increases, his sides, as if with the

* Jos. Mohrenheim in Wiener. Beytr. zur Practishen Arzneykunde, vol. I.

† Voltaire, in his Siecle de Louis XIV.

‡ According to the opinion of his illustrious friends Winckelmann and Mengs.

§ Iliad. Book xx. || Pharsalia, lib. i. 208.

view of rousing it to a higher pitch*." Again, Alexander Aphrodisiensis has among his problemata the following: "Why, since the moving of the tail is, in most animals, a sign of their recognition of friends, does the lion lash his sides when enraged, and the bull in the same manner?" †

But the ancient commentator of Homer, who commonly goes by the name of Didymus Alexandrinus, asserts, with reference to the place of the Iliad, which we have cited, "that the lion has a black prickle in its tail among the hair, like a horn, when punctured, with which it is still more irritated by the pain ‡." This opinion, however, which has been noticed also by late commentators §, we were the more disposed to take for a mere fiction, that no anatomist, who had possessed an opportunity of dissecting a lion, had hitherto made mention of any prickle of this kind ||.

I had the good fortune, however, when, through the munificence of a friend, to whom I owe so many splendid ornaments of my cabinet, I was presented with a lioness, which had died very soon before, to find, in consequence of an anxious search which I had made, in order to satisfy myself regarding the assertion of the Greek scholiast, a very small dark-coloured prickle in the very tip of the tail, as hard as a piece of horn, and surrounded at its base with an annular fold of the skin; and when I cautiously dissected the hide in this place, I found a singular follicle of a glandular appearance, to which the prickle firmly adhered. (See Plate IV. Fig. 8. in last Number.) All these parts, however, were so minute, and the little horny apex so buried among the tufted hairs of the tail, that the use attributed by the ancient scholiasts cannot be regarded

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* Lib. viii. † Problema cxlviii.

‡ Εχει δε τι εν τῃ ουρᾳ αναμεσον τῶν τριχῶν κεντριον μελαν, ὡς κερατιον, ὑφ' ὃ νυττομενος (some read τυπτομενος) πλεον αγριοῦται. p. 596. Oxf. Ed. 1695.

The same is more concisely repeated by *Eustathius*, at this place, and under the words ὠρα and ἀραιος.

§ See, for example, *Heyne* Observat. in Iliadem, Vol. ii. part 3. P. 43.

|| Even *Franc. Serao*, who gives an accurate description of the lion's tail, makes no mention of it.—See his *Considerazioni anat. fatte sopra un leone*, in the 69th page of his *Opus coli di fisico argumento*.

as any thing else than imaginary; but the structure of the organ is so elegant, and its form so regular, that it cannot possibly be considered as fortuitous, or what is commonly called a *lusus naturæ*. I leave to others, who may have an opportunity, to inquire whether any variety be observable in its conformation and size, as connected with a difference of age or sex *.

5. *Domestic Sheep again become Wild.*

As some kinds of domestic animals, hogs, for example, cats, rabbits, &c., are evidently referable to their original stocks, so, on the other hand, there are many others which seem so much altered from their original state, that they are now nowhere to be seen in nature, that is, in a wild state, nor can we pronounce with certainty what was their native country. Thus, it is impossible to say with precision, what was the original country of the horse or dog, provided care be taken not to confound the offspring of tame individuals, which have got loose and retired to uncultivated places, with truly wild animals, which have been so all along from their origin. For, to mention an example, whole herds of wild horses are now found in the woods of Paraguay, although, as is well known, no animals of the species existed in the New World, before the first arrival of the Spaniards there. In the same way, the classic Oviedo, one of the first writers on the New World, mentions that other species of domestic animals, dogs, cats, oxen and hogs, which had been brought to America by those Europeans who first took possession of it, had afterwards become wild by chance, and had propagated †.

In the same manner, numerous cases have been observed in Europe, of dogs, cats, goats, oxen and horses. Only of the sheep no example had hitherto occurred to me ‡, until, perusing

* We have observed a similar prickle at the extremity of the tail of the leopard. —Ed.

† On the subject of European dogs run wild in America, consult our noble friend Alex. de Humboldt, *Ansichten der Natur*. Part i. p. 87.

‡ For what Olendorf says of sheep, which have become wild in the lofty mountains of the West India island Santa Cruz, does not appear to rest upon a very firm foundation.—See his *Gerchiche der Mission der Evangelischen Brüder*, &c. vol. i. p. 84.

the very learned work of Vincentius, I fell upon the remarkable place where Nearchus, in his description of a sea voyage, relates, regarding the island Cataia, which was desert, and consecrated to Mercury and Venus, situated on the coast of Carmania, that the inhabitants of the neighbouring islands carried thither *sheep* and goats yearly, and sacrificed them to the god and goddess, and that these animals, in course of time, became wild in the deserts *. Concerning the wild sheep in Phrygia, of which Varro † mentions that many flocks are seen there, I cannot presume to decide. In the mean time, however, even these may be considered as domestic sheep run wild, with greater probability, than as being of the Capra Ammon species, as was the opinion of Pennant.

6. *The Genuine Opsian Stone.*

Not to leave Mineralogy altogether untouched in these miscellaneous notices, we embrace the opportunity of adding a few words regarding the Opsian Stone, afforded by the Periplus Maris Erythræi, which accurately points out the native place in which this fossil occurs on the coast of the Arabian Sea ‡. And, as I learned from the classical commentaries of the Dean of Westminster on the subject §, that the illustrious Salt, so celebrated for his travels in Ethiopia as well as in Arabia and the Indian Peninsula, had visited that place, found the opsian stone there, and brought it to England, and being desirous of seeing this hitherto problematical fossil, I was presented by our accomplished colleague with two of his specimens, which the above celebrated traveller had gathered on the sandy shores of the Ethiopian Gulph Howakih, North Lat. 15° 10′, in the month of January 1809 ‖; and which I was convinced would, at first sight, settle the various dissensions regarding the opsian and op-

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* Ες ταυτην (νησον) ὁσα ετη αφιεται εκ των περιοικων προβατα και αιγες, ἱερα τῳ Ἑρμῆ και τῆ Αφροδιτῃ. Και ταῦτα απηγριωμενα ἠν ὁρᾶν ὑπο χρονου τε και ερημιης. (p. 59.)

† Page 238. Gesner's Edition.

‡ *Commerce and Navigation of the Ancients in the Indian Ocean*, in two volumes, London, 1807, to which are added the *Voyage of Nearchus*, and the *Periplus of the Erythean Sea*, Oxford, 1809, by William Vincent.

§ Ibid. ‖ Salt's *Voyage to Abyssinia*, London, 1814, p. 192.

sidian stone *, as will appear from the oryctognostic description, made up from the specimens which I have in my possession.

The colour of this stone was raven-black; but on one surface of polished specimens there was an appearance of parallel streaks, of a somewhat paler colour.

The form in which it occurs is subglobular, obtusely angular, which is compared by Vincent to that of a potato.

The size of the specimens is that of some inches in diameter.

Lustre intermediate between pitchy and glassy.

Fracture small conchoidal.

Opaque, unless in very thin plates, which, in the light of a candle, are somewhat translucent, passing from grey to deep leek-green.

Hardness very great, admitting a high polish.

Specific gravity, 2.410.

All these circumstances, in short, demonstrate, that the genuine Æthiopic opsian stone, again discovered of late years, but hitherto seen by very few mineralogists, is identically the same with the common *Obsidian*, which used formerly to go by the improper name of Iceland Agate.

ART. VII.—*Account of the Methods employed for Examining the Population Returns of Plymouth for the year* 1821, *and the consequent discovery of the Registered Seamen having been included in the Census of* 1811, *contrary to the terms of the Act of Parliament relating to the Population of the United Kingdom.* By GEORGE HARVEY, Esq. M.A.S., M.G.S., &c. &c.

IN a note attached to the first part of my Essay on the American Population, printed in the preceding Number of the Edinburgh Philosophical Journal, I briefly alluded to a plan which was successfully carried into execution at Plymouth, in the year 1821, for ascertaining the population of that place,

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* c. f. Inprimis Andr. Libanii Singularium, p. iii. p. 796.—Salmasius in Solinum, p. 91. 204.—C. de Caylus in Mém. de l'Acad. des Inscriptions, vol. xxx. p. 457.—Ad. Fabroni in Opuscoli scelti sulle scienze e sulle arte, t. xi. p. 369.—Andr. I. Retrii, Observ. de lapide obsidiano, Lund. 1799, 4.; et Chr. Aug. Schwarze de Theophrasti Leparaco lapide, Gorlit. 1801, fol.

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P. Neill, Printer.