

**Observations on marine vermes, insects, &c.; Fasciculus I / by Matthew Martin ; with notes and quotations from different authors.**

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*Tracts B. 234.*

O B S E R V A T I O N S

O N

Marine Vermes, Insects, &c.

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By M A T T H E W M A R T I N,

Member of the BATH philosophical Society.

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With NOTES and QUOTATIONS from different Authors.

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FASCICULUS I.

*Let Heaven and Earth praise the Lord:  
The Sea, and all that moveth therein.*

v. Psalm 69.

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E X E T E R :

Printed for the AUTHOR by R. TREWMAN.

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Price ONE SHILLING and SIX-PENCE.

M,DCC,LXXXVI.

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O B E R V A T I O N S

1831

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Number of the ...

With Notes and Quotations from ...

P R E F A C E

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P R I N T E R

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T O

SIR JOSEPH BANKS, BARONET,

PRESIDENT OF THE ROYAL SOCIETY;

BY WHOSE ACTIVE EXERTIONS,

AND UNDER WHOSE PATRONAGE,

THE SCIENCE OF NATURAL HISTORY

HAS BEEN SO LARGELY AUGMENTED,

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## P R E F A C E.

**I** HAVE for some years pursued a practice of entering notes on various subjects of natural History, which have fallen within the verge of my observation; and have made drawings of several, to which for various reasons I have been induced to give this preference.

It has been my usual method to connect my Notes and Drawings by correspondent Numbers, but with the great variety of matters which I have had in hand, and my attention divided between collecting materials for the systematic arrangement of some, the acquisition, feeding, enquiry into the metamorphosis, propagation, or curious and interesting manners of others, besides the calls which my Family, and other important avocations have made on my leisure; it has occasionally happened that the marks of their connexion have been omitted, and the validity of such notes consequently lessened.

These I might probably have suppressed, if upon revision I had found general reason to be satisfied with the accuracy of the rest; but the truth is, that many of them having been written in a cursory and interrupted manner, they fall short of their primary intention, and if I was carefully to discard the imperfect, I am persuaded none would remain.

Besides it has so happened that I have been sometimes more than ordinary remiss, where I should have particularly wished to have been otherwise; but as I thank God I am blessed with a good recollection, I hope I shall not materially mislead my Readers by trusting to it in certain instances, in which I may be induced to call in its assistance to supply the deficiencies of my Notes, either with respect to their substance or their connection.

And as it is probable I may find frequent occasion so to do, I have thought proper to give this general warning of such my intentions.



P R I N T E D A T C . E .

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# INTRODUCTION.

**A**MONGST the numerous Authors who have variously engaged their pens and pencils in the service of natural History; few I should suppose if any have so entirely failed in their design, as not to have in some degree advanced this favorite Science.

The imperfection or want of method which may be ascribed to some of the best, is in my opinion the less to be regretted, if we find reason to suppose that too strict an attention to regular arrangement, would have absorbed much of that time, which has been employed in preparing a greater quantity of materials, in favor of further progress.

Had it not been for the works of Petiver, Goedart, and other promiscuous Writers, the World would hardly have been at this time favored with the systematic productions of Linnæus, Scopoli, Fabricius, &c.

Nor are the Writers of lesser note to be utterly disregarded; for tho' the labors and faculties of such may appear confined, they may however be found competent to furnish many useful hints, to more able Enquirers.

Encouraged with these persuasions, and convinced that the rage for system has in this Age, prematurely obtruded hasty productions on the World; I am bold to submit the following observations to the candor of the public eye.

If all who have leisure and genius would liberally communicate the result of their researches, how greatly would the progress of this science be advanced! what a fund of new materials would be acquired, for the entertainment and instruction not only of young beginners, but of Proficients also; who by just attention to the characters exhibited in such an aggregate, might thence derive considerable assistance in subdividing superabundant, or connecting scanty Genera; in correcting errors, resolving doubts, and establishing proprieties in former systems.

The science of natural History is not as yet arrived at that pinnacle of perfection, not to be improvable even by the weak efforts of humble Admirers.

In the animal kingdom, the Vermes for instance, a numerous and complex race, are very imperfectly known by us.

Linnæus

## I N T R O D U C T I O N.

Linnaeus has attempted to subjugate them to certain rules of his system; I say attempted, for that he did not constantly succeed, will I apprehend be readily granted, and his failure may probably be imputed to the want of that previous acquaintance with them, which was necessary to the better success of such an attempt.

For my own part, I should rather suppose, that our knowledge of these Animals is not as yet mature for system, and that therefore it is advisable to give many of these a particular attention, rather than hastily to decide on their general connections.

Insects, probably from being more obvious and inviting, have been more generally attended to; yet even amongst these, it is likely many characters are concealed, which, if detected, would occasion strange revolutions in modern systems: The publications of Fabricius may lead us to suppose this.

In pursuing the history of these little Animals, the attention is agreeably directed to their various modes of feeding, and of breeding; from the knowledge of which we may gather hints, for guarding against the depredations, or lessening the numbers of the noxious; or for procuring, preserving, and encouraging the increase, of more pleasing and inoffensive kinds.

On the former of these points, the ingenious Author above named has thrown a considerable light; and appears to have paid a very minute attention to the different constructions of their mouths: The characters hence derived, may be regarded amongst the most natural; and the Pygmy race are aggrandized in the idea of their being distinguishable in a manner so similar to that, by which larger Animals have been already discriminated; their resemblance to which appears the stronger, in the consideration that they are also variously adapted to the habitation of Earth, Air, or Water; and diversly endued with dispositions for rapine, or more placid life.

From some similarity of manners, we may proceed to compare certain of the Spider race with Lions or Wolves; others of the same race which insidiously creep and spring upon their prey by surprise, with Tigers; the great Libellæ in the aquatic state of Larva, with Alligators; the same insects in the Fly state, Hornets, and others of the larger rapacious winged tribe, with Eagles, Wasps with Hawks; and the Ichneumon with the Cuckoo.\*

And as to external characters, the attention to these, besides the pleasure it affords in the contemplation of varied beauties; may moreover be considered as a proper prelude, to a more close observation and comparison of their several manners and customs; since amongst these externals, we are taught to seek for those marks, according to which, the subjects have been distinguished by different Systematists: and altho' the labors that these Authors have severally bestowed, would be ill requited with cavil at every slight imperfection, which eyes less engaged may find leisure to detect; and that  
an

\* The generality of Ichneumons admit of some comparison with these subtle Birds; but I here mean to allude particularly to those Species, which deposit their eggs in the eggs of other Insects, thus supplanting the proper offspring by the introduction of their own.

z. Lin. Svst. Nat. T. 2. p. 940 No. 73. Ichneumon Ovulorum. & Lin. Faun. succ. No. 1644.

## I N T R O D U C T I O N.

an attempt to render these labors uselefs, by a total subverfion of their productions, might juftly be deemed an illiberal attack; yet I apprehend it cannot be denied, but that even in the beft of our fyftems, there are errors of that magnitude as to require correction, difficulties which plead for folution, and chafms which demand fupplies.

Observations fomewhat fimilar to thefe, may be found to hold good with refpect to Vegetables, efppecially the *cryptogamia*; and to other Subjects of nature.

Is it not then a time to call on thofe who have leifure and genius for thefe purfuits to lend an affifting hand? and by a difplay of fuch marks as each may refpectively prefer, to fubfcribe to a general fund, for the gradual abatement of the imperfections complained of?

I wifh my endeavors may tend to elucidate, and intereft others † to purfue thefe investigations; that in the courfe of thefe they may be bleffed with tranquility; fecluded from the carking cares, and galling paffions of the World, and gently conducted thro' paths of prefent content and peace, towards the permanent enjoyment of Truth and Happinefs.

Feeble as my efforts may be found, yet whilft under the influence of fuch defires, I trust I may rely on a favorable reception from the british Public.

† In a fmall work (the Aurelian's vade mecum) lately published, I have taken occafion to invite the Ladies to engage in the pleafing ftudy of natural Hiftory, I here wifh to enforce the invitation, perfuaded that the fcience might derive confiderable advantage, and themfelves much gratification, from the exertion of their kind endeavors to promote its progrefs.





OBSERVATIONS

ON

MARINE VERMES, INSECTS, &c.

No. I. v. TAB. I. FIG. 1.

\* § ACTINIA.

CARYOPHYLLUS. — A. dianthoides, rubro-fusca; flore pleno.

An Dianthi Varietas?

SEA-FLOWER.

CLOVE.— S.-F. Like the Dianthus, red-brown: with a double flower.

Is it a variety of the Dianthus?

As many who have not visited the Sea Coasts, are unacquainted with this race of Animals, it may not be amiss to mention a few particulars concerning them.

I suppose the name ACTINIA is derived from the Greek word 'AKTĪN, which signifies a ray; and has been given to them, on account of their numerous divergent tentacula; and that their strong resemblance to a flower, when these

B tentacula

\* v. Apology in Preface.

§ The ACTINIÆ are ranked in the *linnaean* System, in the VIth Class of Animals, viz. VERMES, and in the IIId. Order, MOLLUSCA.

CLASSIS VI.  
VERMES.

TARDIGRADA, mollia, pendentia, vivacissima, redintegranda, humidi Animantia, *acephala, apoda, androgyna, Tentaculis dignoscenda.*

IMPERFECTA veteribus, nec inepte, dicta animantia, destituuntur Capite, Auribus, Naso, Oculis pleraque, Pedibus, ab Insectis itaque diversissima, a quibus dudum remota naturæ cryptogama: sunt *Intestina, Mollusca, Testacea, Lithophyta, Zoophyta.*

II. MOLLUSCA.

CLASS VI.  
WORMS.

Slow of motion, soft, expansive, tenacious of life, from parts becoming whole, Enliveners of moist places, without head, without feet, androgynous, distinguishable by their tentacula.

By the Ancients, not without some (*tho' false*) appearance of grounds, reputed imperfect Animals; being destitute of Head, Nose, and mostly of Eyes, and Feet; very different therefore from Insects, from which I have lately distinguished these subjects of secret, mysterious generation. They are, *I. Gut-shaped, II. Soft, III. Shell-worms, IV. Lithophytes, V. Zoophytes.*

II. SOFT.

tentacula are extended, and themselves expanded, has obtained them the *eng. Lish* title of Sea Anemone.

From this ambiguity of their appearance, seems to have arisen a diversity of opinions respecting their nature; some having supposed them Vegetables: but their locomotive power, method of feeding, and other circumstances, sufficiently evince the contrary persuasion, that they are real Animals.

Their tentacula serve them (if not with eyes to discover, which I suspect they may; yet) as hands to retain their food, and direct it to their central mouth.

They have been frequently mentioned as partaking of the extraordinary faculty of increasing by cuttings, like fresh water Polypi; it is however probable all are not equally endued with it, for in an experiment tried, tho' I recollect that the pieces continued a long time, I suppose 8 or 10 weeks or more, in separate existence, yet neither in this instance nor in any other, do I remember them to have attained perfection: at the same time I confess my own experiments have not qualified me to speak much to this point of their history.

They differ in shape, size, color, and even in disposition: some seem to prefer a situation near the shores, others in the more distant deeps: some in part concealed in the sand, or crevices of the rocks; others more exposed.

The

#### H. MOLLUSCA.

*Animalia simplicia nuda, (absque Testa inhabitata), artubus instructa, vagantur pleraque per maria. cœlo resplendentia, tanquam totidem lucernis tenebricosum illuminant abyssum Phosphorea, ut quod est inferius, sit tanquam superius.*

#### ACTINIA.

*Corpus se affigens basi, oblongum. teres apice dilatabili intus tentaculato.*

*Os terminale dentibus incurvis; Rostrum cylindrico radiato.*

(Apertura præter os nulla.)

v. Lin. Syst. Nat. T. I. p. 1069. 1081. & 1088.

Fauces hæc Animalia, subtus sacci instar penitus clausa, superne habent pro libitu tam patulas, ut mytilos satis magnos aliasve conchas ingurgitent, e quibus modo nos fugiente, pisces extrahere, & evacuatas testas per eandem aperturam, ejicere rursus valent. Quæ testæ si majores sint & ægre per fauces transiturae essent, --- non solum fauces late expandit, sed easdem ut solemus tibialia, quasi invertit, quo spatium brevius & apertura fit latior. Eundem in aquæ dulcis Polypis motum observavimus.

v. Bast. opusc. subsec. p. 122.

#### H. SOFT.

*Simple, naked (without testaceous habitation), furnished with Limbs, mostly inhabitants of the Seas, and glittering with light, with their phosphoreous quality illuminating the dark Abyss, so that what is there below, may be as if above.*

#### SEA-FLOWER.

*Body affixing itself at the base, oblong, round; Top dilatable, internally tentaculated:*

*Mouth terminal with incurved teeth; Rostrum cylindrical, radiated.*

(No Aperture except the Mouth).

These Animals, imperforate at the base, have at top such extensible Mouths, as to take in pretty large Mussels, or other Shell-worms; from which, in a manner unperceived by us, they have the power to extract the Animals, and return the vacant Shells through the same Aperture: which Shells, if of so large a size as hardly to be passed through the mouth, the Animal not only dilates its mouth, but as it were turns it inside out, somewhat in the manner that we do stockings; by which means the space becomes shorter, and the Aperture wider. We have observed the same circumstance in fresh water Polypi.

The colors of some are vivid and beautiful to a degree; rose color, blue, purple, green, yellow, &c, variously adorn the different Species. Their tentacula, from which no insignificant part of their beauty is derived, vary also considerably.

Mr. \* Ellis long since described a particular Species, under the titles *Actinia dianthus*, or Sea carnation, titles admirably adapted to distinguish those kinds, whose lacinated edges, give them a strong resemblance to the flowers of that Genus.

I have pursued the Idea, and denominated mine *CARYOPHYLLUS*; and have in the short description, compared it to the *DIANTHUS*.

I recollect three different kinds of *ACTINIÆ*, which may be considered as of this Family; the *CARYOPHYLLUS* just mentioned; a large white Species, which I take to be the true *ACTINIA dianthus* of Ellis, and another of a pink color: the latter very plentiful under shelter of the rocks near the Dawlish shore, not very distant from this place; whereas of the two former, I recollect few if any, that have not either been dredged from the deeps, or perhaps cast on shore by very tempestuous Seas.

Muller would probably have considered all these as varieties of the § *plumosa*; but if this was the case, they would I should suppose be found in more promiscuous society.

In Animals so little known, it is difficult to preserve the due medium, between treating Varieties as distinct Species, or distinct Species as Varieties; and perhaps he has run into the latter error.

To determine the real specific characters, would require a very close attention; and I should think considerable assistance may be gained, by observing the various forms, proportions, numbers, and dispositions, of the tentacula; and as these curious Animals are generally possessed of attractive novelty and beauty, I hope some of my Readers in their visits to the Sea-coasts, will be induced to examine and compare them; and that at some future time, I shall myself be enabled to throw further lights on the subject.

B 2

No. II.

\* v. Ph. Tr. 1767. p. 436. tab. XIX. fig. 8.

† *DIANTHUS* in Botany is the generic title of Pinks and Carnations.

§ 2791. *ACTINIA plumosa* tentaculis parvis, margine penicillis cirrata.

Variat colore castaneo, luteo-fusco, luteo-virenti, & albo; maxime pellucida & opaca; lacinia: faucis quoque variant albæ, rufæ, aurantiæ.

- - - - veras Actiniarum notas differentiales auctores nondum affecti sunt.

v. Mull. Verm. Moll. Hydra. Actin.

SEA-FLOWER *plumous*, the margin fringed with clusters of small tentacula.

Varies in color, chestnut, yellow-brown, yellow-green, and white, and in being very-transparent or opaque; the fringes also vary in being white, red, and orange colored.

Authors have not as yet discovered the true specific distinctions of Sea-Flowers.



No. II. v. Tab. I. Fig. 2. a. 2. b. & 2. c.

\* SIPHUNCULUS. *Corpus teres.*  
*Cauda tumescens.*  
*Collum extensile.*  
*Os laciniatum.*  
 § *Anus?* (Animalis quiescentis contracti,) anterior.  
 NUDUS. S. flavescens; *Cauda pallidâ,* *Collo-que pallidior*  
*fusco punctatis; Ano? vix conspicuo.*

§ *Apertura lateralis* Lin?  
 v. Fig. 2. b-b. b.

\* TUBE-WORM. *Body long and round.*  
*Tail frequently swelling.*  
*Mouth fringed.*  
 § *Anus?* (when the Animal is quiet and contracted,) anterior.  
 NAKED T. yellowish; at each end pallid, and dotted with fuscus;  
*Anus?* hardly conspicuous.

§ the lateral *Apertura* of Linnaeus?  
 v. Fig. 2. b-b. b.

UPON handling this Animal it became turgid; v. f. 2. c I observed on it a small rising, obliquely cross-barred, v. f. 2 c. c. c this was probably a blister on the skin, (which it seems as if this Genus have a power of raising), and

\* SIPHUNCULUS, anglice little Tube.

\* The Siphunculi are ranked in the *linnaean* System in the 6th Class of Animals, viz. VERMES, and the 1st Order MOLLUSCA.

ANIMALIA  
 CLASSIS VI.

VERMES.

INTESTINA Animalia nuda (*simplicia, absque artubus,*) terrena quondam dicta, ob summam simplicitatem corporis, terebrant omnia; perforat *Gordius* Argillam, ut aqua tranet; *Lumbricus* Humum ne situ corrumpatur; *Myxine* Cadavera ut liquecant; *Teredo* Ligna, ut destruantur; quemadmodum *Pholades,* & *Mytili lithophagi* Petras, ut solvantur.

-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

279. SIPUNCULUS. *Corpus teres, elongatum.*  
*Os anticum, attenuatum, cylindricum.*  
*Apertura lateralis corporis, verruciformis.*

nudus. 1. S. corpore nudo.

*Habitat in Oceano Europæo, sub lapidibus.*  
 v. Lin. Syst. Nat. T. 1. p. 1069. 1075. 1078. &c.

† In

ANIMALS  
 CLASS VI.

WORMS.

Div. I. GUT-SHAPED. *Simple* Animals, naked, and without limbs. Formerly reckoned with Earthworms, on account of the great simplicity of their bodies; they pierce all things; the *Gordius* (*Hairworm*) the Clay, that the water may pass through; the *Lumbricus* (*Earthworm*) the Ground, lest it should become mouldy and corrupt; The *Myxine* (*Hag*) Carcasses, that they may dissolve; The *Teredo* (*Piercer, or Auger-worm?*) Logs of Wood, that they may be destroyed; even as the *Pholades* (*Dactyls*); and the Stone-consuming *Mytili*, perforate the rocks, that these also may perish.

TUBE-WORM. *Body long and round.*  
*Mouth anterior, attenuated, cylindric.*  
*A pustular Apertura on the side of the body.*

naked T. Body naked.

*Inhabits the europæan Ocean, under stones.*

† We

and not the Apertura lateralis mentioned by Linnæus, which I have rather considered as the Anus. v. f. 2 b—b. b—I recollect however to have seen a Siphunculus cast out an excrementitious matter through that part, which I still consider as the Mouth: It is possible that like the Actiniæ, it may receive its food and return its *Fæces* through the same Passage, and that what Linnæus has called Apertura lateralis, if really perforated, is adapted to some other purpose.

From the Sea Side near Teingmouth.

Though one should not suppose this Species very uncommon, as having been noticed by several Authors; yet I do not recollect to have observed it in these parts before last year; nor although I have had opportunities of noticing several to have ever known it much if at all exceed the length of the figures 2 a, 2. b, and 2. c, notwithstanding the great size ascribed to it by Rondeletius.†

The figures are designed to represent it under different appearances; 2. a. with the Mouth concealed; 2. b. the Mouth extruded;—the Tail appearing more swollen and bearded—2. c, in a turgid state the appearance of the tail altered; the point not simple.

B 3

No. III.

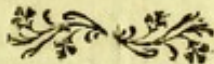
† In luto Maris & marinorum stagnorum vivere comperimus eum Vermem ---- qui ----- aliquando duorum cubitorum magnitudinem æquat pollicisque crassitudinem. Farciminis longi figuram refert. rostro est ---- longiore, - - - - simili Hippocampi rostro, unde μακρορρυγχότερον nuncupavimus.

Intus longum duntaxat Ventriculi, vel intestini ductum habet, aqua & luto pleni: unde perspicuum est his tantum vesci -----

v. Rondel. de Insectis & Zooph. liber p. 110.

† We have found that this Worm, which sometimes attains the length of two Cubits, and the thickness of one's thumb, lives in the mud of the Sea, and of salt water Lakes. In figure it resembles a long sausage; the beak long, resembling that of the Hippocampus, on account of which we have named it μακρορρυγχότερον, (which with the insertion of a π, may be understood long-quill-snouted, or having a long tubular snout:.)

Internally it has only a ventricular or intestinal duct, full of mud and water: whence it manifestly fed on these alone.



No. III.

## No. III. v. Tab. 1. Fig. 3.

## \* SIPHUNCULUS.

RETICU-  
LATUS. S. pallide fuscus, fulcis annulari-  
facca- bus, Striisque longitudinalibus  
tus Lin? reticulatus; æneo viridi splen-  
didus, et ad utramque extre-  
mitatem cinereus; *Cauda* ni-  
tida:  
§ *Ano?* conspicuo, radiato.

## \* TUBE - W O R M.

RETICU-  
LATED. T. pale brown, reticulated by an-  
nular furrows and longitudi-  
nal streaks; and shining with  
reflections of brassy-green; at  
each extremity ash-colored:  
Tail highly glossy.  
§ *Anus?* conspicuous, radiated.

\* For generic characters, &c. v. No. II.  
§ v. Tab. I. Fig. 3. a. a.

**I**T is probable that few, contemplating this Animal in a state of Health only, would suppose it the Species, to which the *linnæan* name and description refer. §

Though I have frequently and closely observed it, I was long persuaded of the contrary, and inclined to consider it as undescribed by that Author, had accordingly given in the title *reticulatus*, from characters more readily conspicuous than that, on which the *linnæan* title *faccatus* is founded.

That the epithet *laxa*, *loose* or *slack*, should be applied to a covering so nicely fitted, so precisely accommodated to the Animal, in the various shapes which it assumes; may I apprehend be accounted for, by supposing the imperfect preservation of perhaps the only specimen that Linnæus ever saw; to which the description

§ *faccatus* 2. S. corpore tunica laxa induto.  
*Habitat in Oceano Indico.*  
*Structura refert antecedentem, præter*  
*cutim membranaceam laxam, diapha-*  
*nam, qua animal includitur.*  
v. Lin. Syft. Nat. T. I. 1078. 279. 2.

Cloaked T. the body cloathed with a loose covering.  
Inhabits the indian Ocean.  
It resembles the preceding, (*nudus*) but  
inclosed in a loose, membranaceous,  
transparent pellicle.

description and figure in the *Amœnitates academicae* † refer: the figure favors the suspicion, by representing the pellicle as if torn.

In such as I have kept, I have frequently observed blisters, which I have before || supposed usual in Animals of this Genus; I suspect these were increased by the putridity of the water.

It was in a state of disease or dissolution, that I particularly remarked a more than ordinary detachment of this covering; which upon trial easily separated from the creature, tho' more adhesive towards the tail, and not without expence of some liquid, diffused in its separation. The appearance of the anterior part of the worm after the loss, was so much the same as before, that I think common observation would hardly have missed it.

In the *Amœnitates academicae* † this creature is numbered with *chinese* rarities, and I believe few Authors have hitherto acknowledged it as an inhabitant of our own Seas.—I have however frequently met with it after rough weather, in the neighbourhood of this Place, where, according to my Observation it is constantly a larger Species than the *nudus*.

It is a noisome Animal; the frequent offensive smell which it emits in confinement, being no certain sign of its being dead, but rather seeming to arise from its natural tendency to corrupt the water, and to retain the putrid stench, even after its removal out of it.

It will survive a considerable degree of putridity in the water if not too long continued; for though it may blister, and protruding its mouth exhibit its lacinated Fauces; yet it is much but the very offensive exhalations suggest the convenience of changing the water in due time for the preservation of the Animal's life.

Should not this Worm and the *S. nudus*, on account of the lacinia about the head, be rather ranked with the *Mollusca* than with the *Intestina*? If their Gut-like

† CHINENSIA LAGERSTRÖMIANA.

39. NEREIS (saculo induta.) Fig. 5.

Hoc animal maxime singulare, quasi medium inter Hirudinem & Nereiden caeruleam, nitidum, altera extremitate attenuatum tubo cylindrico, brevi. Corpus constat cylindro crassiore, induto membranae pellucidæ, laxæ nec adhærenti, decussatim striato; Hujus membranae altera extremitas, animali interiori longior, ventricosa, longitudinaliter striata.

v. *Amœn. academ.* Vol. 4. p. 254, Tab. III. 5.

|| v. No. II. p. 4.

† CHINESE LAGERSTRÖM'S COLLECTION.

39. NEREIS (cloathed with a little bag). Fig. 5.

This very singular Animal, as it were the connecting Link between the Leech and the blue Nereis, is splendid; and tapering at one end into a short cylindrical Tube: The body is likewise cylindric but thicker; cloathed with a loose transparent membrane, not adhering, streaked crosswise; at the further end longer than the Animal inclosed, swollen, and streaked lengthwise.

Gut-like shape be objected, would not the same objection remove the *HOLOTHURIA inbærens* from its present place (No. 2811) in Muller's arrangement ?||

cute molli contegitur, tota incisuris constante os vel rostrum obtusum est, parumque prominet, unde μικρορυγχότερον cognominavimus.

Aliis rostrum deest, sed foramē tantū habent, capessendi cibi gratia. Totus Vermis digitali est magnitudine minimique digiti crassitudine.

v. Rondel de Insect. & Zooph. Lib. 109.

It is covered with a soft skin, marked with numerous incisures. The Mouth or Beak is obtuse, and juts out but little, whence we have called it μικρορυγχότερον, which with the insertion of a π, as before, may be understood small-quill-snouted, or having a small tubular snout.

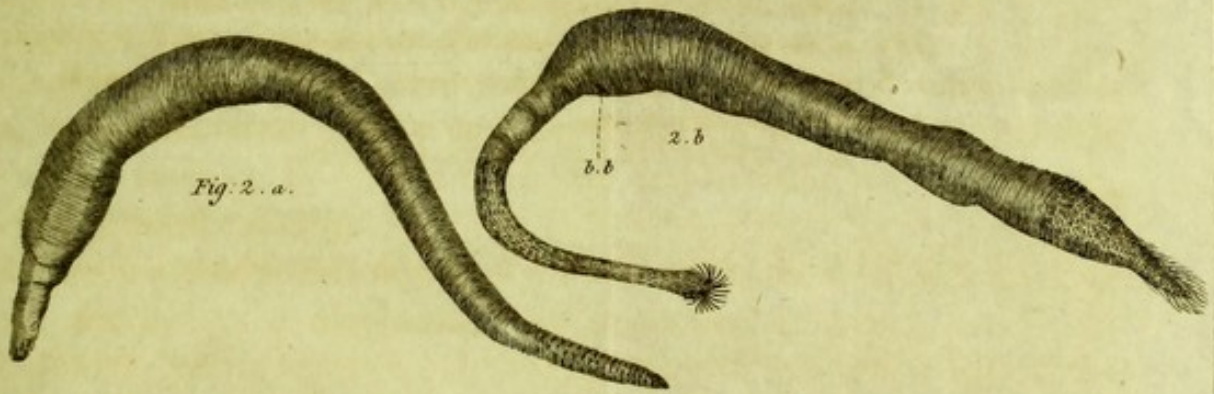
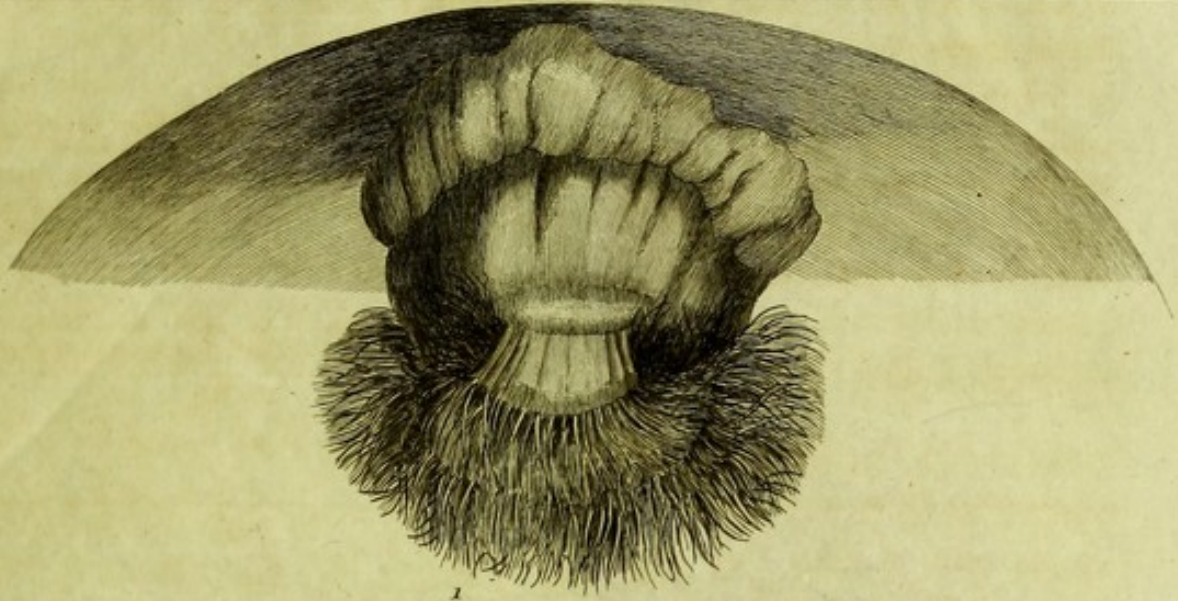
Others, wanting the beak, have only the hollow passage whereby to receive their food. The whole Worm is of a Finger's length, and of the thickness of a little finger.

|| v. Muller Zool. dan. Prod. No. 2811. T. XXXI. f. 1-4.

T A B. I.

- Fig. 1. of the *ACTINIA Caryophyllus* fixed to the side of the Bason.  
 2. a of the *SIPHUNCULUS nudus* with the Mouth concealed.  
 2. b of ditto with the mouth extruded, the tail more swollen, and bearded.  
 2. c of ditto in a turgid state.  
 3. of the *SIPHUNCULUS reticulatus—saccatus* Lin.





c. c.





THE slight discussion of the *Subjects* in the few preceding pages, may assist in awakening our surprise, that two races of Animals, as distinct as those of INSECTS\* and WORMS, should have been so much confounded by the reciprocal misapplication of their titles; to which the appearance of certain Insects in the Larva, and our too general neglect of things which we inadvertently consider as beneath our notice, have probably contributed.

But in fact nothing created *is* beneath our notice; for whether we contemplate the ethereal regions, and from the Spheres therein revolving, derive an accreted conviction that doubtless there is a Supreme Being who governs the Universe; or from the nearer survey of things more immediately about us, increase our proper confidence in his particular Providence, which the much neglected Lillies of the Field, are if duly considered abundantly sufficient to testify; we are benefited in either case.

And as with the help of glasses, we proceed in investigating more minutely, we receive reiterated assurances of these universally attested truths; we learn to lay aside our prejudices, and to admire what we before despised.

The advantages which have in this age accrued to natural history, from the attention that has been paid to minute characters, give encouragement to our perseverance.

The Antennæ of INSECTS, complicated, various, and exquisite in structure, have largely contributed to the method, which at present illumines their history; but our curiosity with respect to the particular uses of these delicate instruments, remains unsatisfied.

C

The

\* I N S E C T A.

ANIMALCULA polypoda, *Spiraculis* lateralibus respirantia, *Cute* ossæ cataphracta;

CORPUS horum dividitur in *Caput*, *Truncum*, *Abdomen*, *Artus*;

CAPUT plerisque distinctum, *instruitur* Oculis, *Antenis*, sæpiusque Ore;

v. *Lin. Syst. Nat. Tom. i. p. 533, &c.*

\* I N S E C T S.

ANIMALS of a small size furnished with several feet, breathing thro' lateral Spiracula, and defended with a hard skin like a Coat of Mail.

Their Body divided into Head, Trunk, Abdomen, and Limbs:

The Head in most is distinct, and furnished with Eyes, Antennæ, and most commonly with a Mouth.

Compare with the linnæan account of VERMES.



The pectinated Antennæ which distinguish some kinds of Moths, especially the Males, are doubtless adapted to their peculiar exigencies: Now if we may be allowed to conjecture that the branches of these by communication with, and through the common Stem, convey to the Sensorium, the vibration of sounds, or perception of smells, which in their various inclinations multiplied by the general inflections given by the Insect to the whole, they may be supposed capable of receiving; what an idea does this encourage, of their acute and extensive sensibility.

I recollect a Moth of this kind flying into the house, and as it continued fluttering about, I soon suspected its visit might be owing to another of the same Species, being recently emerged from a chrysalis which I had shut up in a box: on examining the box I found the Moth which I expected; and on introducing them to each other, had reason to think my suspicions as to the occasion of the visit, well founded. Mr. Harris's explanation of the curious art of sembling, a method of decoying male Moths with a female confined, § favors the credibility of this account.

By what sense can we conceive these Moths thus directed, so likely as by that of smell? where then may we trace the organs of this sense? in the Antennæ? in the Palpi? or where?

That the Insects just mentioned which appear to possess this sense in so eminent a degree, have also such remarkable Antennæ seems in favor of the former supposition; But as in many Species, these instruments are so delicately extended, must not the tremulous motion of the air occasioned by sounds, necessarily affect them? And if so shall we suppose them the compound vehicles of two distinct Senses, and attribute none to the Palpi? for the idea of the latter being *Feelers*, I confess I do not rightly understand. I have frequently amused myself with observing, and sometimes with drawing the Antennæ of dipterous Insects; and should think that in their great variety, some good characters for the better division of this Class, might be found.

For the examination of these, and such like minutia, a pocket magnifier for the fields, and a microscope at home, are ready Assistants; and in order to draw them more easily, I would recommend a small Camera to be used with the solar Microscope, constructed somewhat in the following manner.

A small oblong box, of proportionate width and breadth,\* open at one end; towards the other end place a piece of looking-glass at an angle of 45, over  
which

§ v. Har. p. 53.

\* The size or proportion of the box may be varied according to the intended use; or as the materials are cheap and obvious, it may be still more convenient to have two or three of different sizes: mine is about six inches long, upwards of three inches wide, and above two inches high in the clear.

which lay a piece of plain glass and upon this a piece of thin oiled paper, all which should be so exactly fitted as for the oiled paper to lie just level with the edges of the box, and to be kept steady by the hinder part of the cover, when shut and fastened down : this hinder part of the cover for a little more than half the length, being made to turn back on a hinge towards the front ; and having a circular hole about the middle of it, an inch or more in diameter.

In using this box at about two or three feet distance from the microscope, more or less according to the size of the object, or otherwise at discretion, and adjusting the Focus accordingly ; place it so, as that the shadow of the object may be received through the open end, reflected by the speculum through the piece of plain glass, and appear on the oiled paper within the circle : then trace the outline with a pencil, and express it as exactly as may be on a piece of proper paper ; after which finish shading, &c. by imitation from the common microscope.

By due regard to natural characters, we may hope to increase our knowledge of natural subjects ; and if we desire to preserve, and communicate clear ideas of things, we should cautiously guard against misnomers : Insects therefore should no longer in any state be called Worms, nor Worms Insects ; neither should Lobsters, Crabs, Shrimps, Oysters, Cockles, Muscles, &c. be confounded with Fish ; since the three first are acknowledged as INSECTS, and the latter more properly included amongst the WORMS.



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