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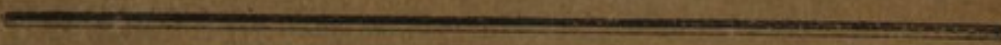
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*P. W. Schmitt*



**ANALYTICAL TABLE**

OF A

**SYSTEMATICAL COURSE OF LECTURES**

**ON ZOOLOGY,**

**INCLUDING COMPARATIVE ANATOMY,**

*Illustrated by Drawings and Natural Objects.*

---

BY B. JÆGER, A. M.

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and Literature in the New-Jersey College at Princeton; Member of the Imper.  
Academy Naturæ Curiosorum at Moscow; of the Albany Institut. &c. &c. &c.*



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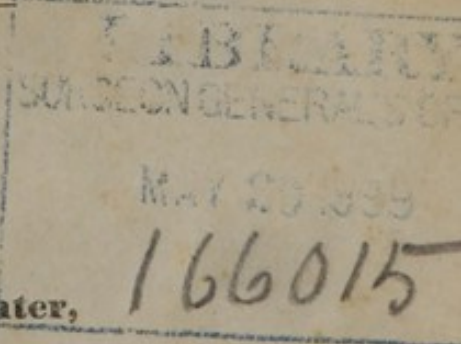
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PRINCETON, N. J.

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## LECTURE I.

(INTRODUCTORY.)

Objects of Natural History.—Importance of this science to Natural Theology.—Definition of a Naturalist.—Natural History, the basis of commerce, rural and domestic economy, horticulture and metallurgy.—Means furnished by this study to make many useful discoveries for rural and domestic purposes.—Natural productions created for the use of one another.—Examples.—Importance of this knowledge to Clergymen, Statesmen, Physicians, Merchants, Horticulturists, Farmers, Missionaries and Travellers.—Benefit of it to the youth of both sexes.—Influence of it on the mind and moral character.—Natural History, one of the most important branches of education.—Innocent amusement in collecting and preserving natural objects.—This occupation furnishes a continual matter of useful conversation.—It accustoms the youth to be industrious, punctual and regular.—It is a principal study in all the literary institutions of Europe.—Usefulness and necessity of introducing it in all the literary institutions of the United States. Wisdom of the members of the new established county Lyceums in Pennsylvania, in introducing Natural History even into common schools.—History of the science.—Aristotle.—Theophrastus.—Pliny.—Linnæus.—Cuvier.—Modern state of this science in France, Germany, England, Russia, Italy, Spain, and the United States.—North American Naturalists.—North American Societies of Natural History.—Their transactions.

## LECTURE II.

Division of Natural Objects into three kingdoms.—Zoology the Natural History of the animal kingdom.—Similarity and difference of animals with plants.—Generation.—Viviparous and oviparous.—Embryo.—Growth and duration of organical bodies.—Reproduction.—Faculties of animals.—Memory.—



Imagination.—Knowledge of their corporeal powers.—Their docility, friendship and fidelity.—Instinct.—Utility of Mammalia, Birds, Reptiles, Fishes, Insects and Worms.—Carnivorous, herbivorous and omnivorous animals.—Distribution of the animal kingdom.—Linnæus' division into six classes.—Cuvier's division into fourteen classes.—Division of Zoology into six sciences.—1. Mammalogy.—2. Ornithology.—3. Amphibiology.—4. Ichthyology.—5. Entomology.—6. Helminthology.

### LECTURE III.

Internal construction of animals.—Description of the veins and arteries.—Of the heart of mammalia and birds,—of reptiles and fishes,—of insects and worms.—Circulation of the blood.—Respiration.—Lungs.—Gills.—Spiracles.—Red color of the blood.—Cause of it.—Warm and cold blood.—Production of sound.—Larynx.—Glottis.—Trachea.—Nerves.—Organs of sense.—Organs of sight.—Anatomy of the eye.—Organ of hearing.—Anatomy of the ear.—Organ of smell, nervus olfactorius.—Organ of taste.—Organ of touch.—Anatomy of the brain of several animals.—Sensation.—Irritability.—Sleep.—The bony frame and its principal parts.—Caput.—Collum.—Thorax.—Artus.—Ventriculus.—Abdomen.—Scapula.—Brachium.—Antibrachium.—Femur.—Crus.—Tibia, Fibula.—Ungues.—Feet of water and cetaceous animals.—Teeth, Incisores, Canini, Molares.

### LECTURE IV.

Necessity and usefulness of collecting and preparing animals.—Manner of skinning and stuffing quadrupeds, birds, reptiles and fishes.—Arsenical soap.—Collecting of insects.—Preservation of beetles,—of bugs,—of butterflies, &c.

### LECTURE V.

(MAMMALOGY.)

I. CLASS—Mammalia.—Definition of mammalia.—Use of mammalia.—Division of them into nine Orders.—1. Bimanus.



--2. Quadrumana.--3. Carnivora.--4. Glires.--5. Solidungula.  
6. Bisulca.--7. Multungula.--8. Edentata.--9. Cetacea.--Gene-  
ra.--Species.--Varieties. 1. *Order*--Bimanus.--Origin of man-  
kind.--One single species.--Evidence of the Deluge.--Sacred  
Scriptures.--Moses.--Profane History.--Plato.--Berosus.--Jose-  
phus Flavius.--Religious books of the Chinese and Hindoos.--  
Tradition of a deluge among the American Indians.--Geologi-  
cal argument.--Secondary strata, with organic remains.--Asia,  
the cradle of mankind.--Migrations from Asia, according to  
traditions, ancient Mythology, and various writers.--Philologi-  
cal arguments.--The aborigines of America emigrated from  
Asia.--Arguments for this opinion.--Geographical,--physical.

#### LECTURE VI.

Causes of the various features and colors of mankind,--  
Education,--Occupation,--Affections of mind,--Nourishment,  
--Climate.--Varieties of animals and plants as a consequence  
of education and climate.--Faculties of mind of the negro.--  
The learned negro, Madi Make.--Abbé Gregoire's Biographies  
des Noirs et des hommes de couleur, qui se sont rendus cele-  
bres.--Some distinguished negroes in the republic of Hayti.--  
Can negroes become white?--Varieties of mankind, according  
to Blumenbach.--1. Caucasian; 2. Mongolian; 3. Ethiopian;  
4. American; 5. Malay.

#### LECTURE VII.

2. *Order*--Quadrumana.--Definition of them.--Whether  
man is only a more perfect kind of monkey?--Whether the  
negro is a connecting link between the superior races of man-  
kind and the ourang-outang?--Arguments against this opinion.  
--Hind hands,--pelvis,--flat nose,--muzzle,--want of speech.--  
J. J. Rousseau's opinion that man is designed by nature to go  
on all four.--Examples of wild men.--History of Peter, the wild  
boy, illustrated by Blumenbach.--Natural History of the ourang-  
outang,--of long-tailed apes,--of baboons,--of monkeys,--of  
lemurs.



## LECTURE VIII.

3. *Order*---Carnivora.---Definition of them.--Division of them into five families.---(a.) Chiroptera, bats or hand-winged animals.---Their difference from birds.---Aristotle and Pliny's definition of them.---Natural History of the

*Vespertilio caninus*, flying dog.

" *auritus*, long eared bat.

" *Spectrum*, vampyre.

" *Carolinensis*, Carolina bat, of the United States.

" *Noveboracensis*, New York bat. do

" *pruinus*, hoary bat. do

" *arcuatus*, arcuated bat. do

" *subulatus*, subulate bat. do

(b.) *Insectivora*, Insect-eaters.---Natural History of the

*Sorex parvus*, small shrew, of the United States.

" *brevicaudus*, short tail shrew. do

*Scalops Canadensis*, shrew mole. do

*Condylura cristata*, star-nose mole. do

(c.) *Carnivora*, flesh-eaters.---Natural History of the

*Procyon Lotor*, racoon.

*Ursus Americanus*, black bear. of the United States.

" *horribilis*, grizzly bear. do

" *maritimus*, polar bear. do

*Gulo luscus*, wolverenne. do

*Meles Labradoria*, American badger. do

*Canis familiaris*, Dog.---Varieties of them. Whether he is a different species from the common wolf. Experiments of Buffon.---Godman's arguments.---Hydrophobia.---Cause of it.---The various remedies used for it in Europe and America.

*Canis Lupus*, common wolf. of the United States.

" *latrans* Prairie wolf. do

" *nubilus*, dusky wolf. do

" *Lycaon*, black wolf. do

" *lagopus*, arctic fox. do

" *argentatus*, silver fox. do

" *fulvus*, red fox. do

Canis cinereo-argentatus, gray fox. of the U. States.  
 " velox, swift fox. do

## LECTURE IX.

*Continuation.*—Natural History of the  
 Mustela erminea, ermine weasel. of the United States  
 " Martes, pine marten. do  
 " Pennanti, fisher. do  
 " lutreola, mink. do  
 " zibellina, sable. do  
 Mephitis Americana, skunk. do  
 Lutra Brasiliensis, American otter. do  
 " marina, sea otter. do  
 Felis Catus, common cat.  
 " Leo, lion.  
 " Tigris, tiger.  
 " Pardus, panther.  
 " concolor, cougar. of the United States.  
 " Canadensis, Northern lynx. do

(d.) Amphibia Carnivora, amphibious flesheaters.—Natural History of the

Phoca vitulina, common seal. of the United States.  
 " cristata, hooded seal. do  
 " barbata, great seal. do  
 " Groenlandica, harp seal. do  
 " fœtida, fetid seal. do  
 " ursina, ursine seal. do  
 Trichecus Rosmarus, walrus. do

(e.) Marsupialia, pouched carnivorous animals.—Natural History of the

Didelphis Virginiana, opossum. of the United States.  
 " Petaurus, flying opossum.  
 " gigantea, kangaroo.

## LECTURE X.

4. *Order*---Glires (Rodentia), gnawers.—Character of this



order.--Castor fiber, the beaver --Fabulous history of it.--Castor zibethicus, the musk-rat.--Natural History of the

Arvicola xanthognatus, meadow mouse.	of the U. States-
“ riparius, marsh campagnol.	do
“ hispidus, cotton rat.	do
“ Floridanus, wood rat.	do
Lemmus Hudsonius, Hudson's Bay lemming.	do
Mus decumanus, Norway rat.	do
“ Rattus, black rat.	do
“ musculus, common mouse.	do
“ agrarius, rustic mouse.	do
Pseudostoma bursarium, pouched rat.	do
Sciurus vulpinus, fox squirrel.	do
“ cinereus, cat squirrel.	do
“ Carolinensis, common grey squirrel.	do
“ niger, black squirrel.	do
“ macrourus, great tailed squirrel.	do
“ grammurus, line tail squirrel.	do
“ quadrivittatus, four lined squirrel.	do
“ Hudsonius, Hudson's Bay squirrel.	do
“ rufiventer, red bellied squirrel.	do
“ striatus, ground squirrel.	do
“ lateralis, Rocky-mountain ground squirrel.	do
“ volucella, flying squirrel.	do
Arctomys Monax, Maryland marmot.	do
“ Empetra, Quebec marmot.	do
“ Franklinü, Franklin's marmot.	do
“ Richardsonü, tawny American marmot.	do
“ tridecemlineatus, striped marmot.	do
“ Ludovicianus, prairie marmot.	do
“ Paryü, Parry's marmot.	do
Hystrix dorsata, Canada porcupine.	do
Cavia Aguti, long nosed cavy.	
“ Paca, spotted cavy.	
“ Cobaya, Guinea pig.	
Lepus timidus, common hare.	

Lepus Americanus,	American hare.	of the U. States.
“	glacialis, polar hare.	do
Dipus Jaculus,	common jerboa.	
“	Sagitta, Arabian jerboa.	
“	Cafer, cape jerboa.	
Gerbillus Canadensis,	jumping mouse.	of the U. States.
“	Labradorius Labrador jumping mouse.	do

## LECTURE XI.

5. *Order*—Solidungula, one hoofed animals.—Essential character.—Teeth.—Age of the horse, according to the condition of its teeth.—Duration of life.—History of the wild horses in Paraguay.—Use,—species.

Equus Caballus, common horse.

“ Asinus, ass.

“ Zebra, zebra.

6. *Order*—Bisulca (Ruminantia, Pecora), cloven hoofed animals.—Essential character of this order.—Teeth,—Rumination,—Food,—Use.—Natural History of the

Camelus Bactrianus, camel.

“ Dromedarius, dromedary.

“ Llama, lama.

“ Vicunna, vicunna.

Moschus moschiferus, musk goat.

Cervus Alces, moose. of the U. States.

“ Tarandus, rein-deer. do

“ Canadensis, elk. do

“ Macrotys, black tail deer. do

“ Viginianus, common deer. do

Giraffa Camelopardalis, Giraffa.

Antilope Rupicapra, shamoy.

“ Cervicapra, common antelope.

“ Gnou, Cape antelope.

“ Americana, Prong-horned antelope. of the U. S.

Capra Ovis, common sheep. do

“ Hircus, common goat. do



Capra montana,	Rocky Mountain goat.	of the U. States.
“	Ammon, Argali.	do
“	Ibex, wild goat.	do
Bos Taurus,	common ox.	of the U. States.
“	Americanus, bison.	do
“	moschatus, musk ox.	do

7. *Order*—Multungula, animals with more than two hoofs.—Essential character of this order.—Sus Scrofa, the wild Boar.—It is the original stock of the domestic hog.—Arguments for it.—Raising of it.—Opinions of the Israelites, Mahomedans and Chinese.—Duration of its life.

Sus Babyrussa,  
“ Ethiopicus.

Natural History of the Tapirus Americanus,  
Hippopotamus amphibius, river-horse.  
Elephas maximus, elephant.

His praised intelligence inferior to that of many other animals.—Ridiculous opinions of the ancients and East Indians, concerning the elephant,—duration of life,—food.—First elephants in Europe.—Elephantiasis (leprosy),—Cause of it,—remedies used.—Natural History of the

Rhinoceros Asiaticus.  
“ Africanus.

## LECTURE XII.

8. *Order*—Edentata, Toothless animals.—Essential character of this order.—Natural History of the Bradypus tridactylus, three-toed sloth.

“ didactylus, two-toed sloth.

Difference between these two species.—Their great number of ribs, in comparison with larger animals.—Their bony frame.—Singularity of their stomach.—Similarity with birds, as it respects the abdominal aperture.—Natural History of the Myrmecophaga jubata, great ant-eater.

“ didactyla, two-toed ant-eater.  
“ Tamandua.



- Ornithorhynchus paradoxus, duck-bill.  
 Manis pentadactyla, short-tailed manis.  
 " tetradactyla, long-tailed manis.  
 Dasypus novemcinctus, nine banded armadillo.

Difficulty to ascertain the species according to the number of bands.—Azzara's opinion.

9. *Order*—Cetacea, animals of the whale kind.—Essential character of them.—Arguments for their being mammiferous.—Their internal construction.—Heart,—Lungs,—Breasts,—Warm blood.—Viviparous.—Similarity to fishes.—Natural History of the Genera.

- |                                 |                   |
|---------------------------------|-------------------|
| Monodon Monoceros, narwhal.     | of the U. States. |
| Balæna Mysticetus, black whale. | do                |
| " Physalis, razor back.         | do                |
| " Musculus, broad-nosed whale.  | do                |
| " Boops, finner.                | do                |
| " rostrata, beaked whale.       | do                |

Description of the Black Whale.—Mouth,—Beard,—Whale bones,—Blow-holes,—Eyes,—Fins,—Tail,—Paps,—Milk,—Skin,—Color,—Blubber,—Use,—Size.—Exaggeration concerning it.—Flesh,—Ribs,—Brain,—Food,—Gestation,—Young.—Physeter macrocephalus, Spermaceti.—Cachalot.—Description of it.—Head,—Teeth,—Produce of spermaceti,—Size,—Bulls and Cows,—Mode of killing it.—Sperm whale fishery in the United States.—Natural history of the

- |  |                   |
|--|-------------------|
| Delphinus Delphis, true dolphin.       | of the U. States. |
| " Gladiator, gladiator dolphin.        | do                |
| " Phocæna, sea swine.                  | do                |
| Manatus Americanus, American lamantin. | do                |
| Stellerus borealis, boreal steller.    | do                |

### LECTURE XIII.

(ORNITHOLOGY.)

II. CLASS—Aves, Definition of Birds.—Their difference from the animals of the other classes.—Their air-cavities.—Alimentary instruments.—Different manner of building nests.—



Number of eggs.—Formation of the birds' embryo.—Duration of life.—Their utility.—Explanation of the different parts of their body,—Penna,—Shaft,—Vane,—Rachis,—Rays,—Pileus,—Frons,—Vertex,—Occiput,—Capistrum,—Lora,—Orbita,—Supercilia,—Tempora,—Genæ,—Nucha,—Cervix,—Gula,—Jugulum,—Pars prona et supina,—Dorsum,—Interscapulium,—Tergum,—Uropygium,—Pectus,—Abdomen,—Crissum,—Humeri,—Axillæ,—Hypochondria,—Maxillæ,—Cera,—Capistrum reversum,—Vibrissæ,—Crista,—Caruncula,—Palaria,—Alæ,—Brachium,—Cubitus,—Carpus,—Metacarpus,—Remiges,—Primores,—Secundariæ,—Ala spuria,—Avis impennis,—Rectrices,—Tectrices,—Speculum,—Femur,—Tibia,—Digiti,—Calcar,—Pedes ambulatorü,—P. gressorü,—P. cursorü,—P. scansorü,—P. lobati,—P. pinnati,—P. semipalmati,—P. palmati,—Ungues.—Cuvier's division of Birds into six orders.—Explanation of—1. Accipitres.—2. Passeres.—3. Scansores.—4. Gallinæ.—5. Grallæ.—6. Anseres.

1. *Order*—Accipitres, Birds of prey.—Remarks on them.—Singularities in their size and changing their color.—Monogamy.—Difference of color in the same species.—3 Genera of birds of prey.—Natural History of the

Vultur Gryphus,	the condor.	of the U. States
“	Aura, turkey vulture.	do
“	atratus, black vulture.	do
Falco columbarius,	pigeon hawk.	do
“	Sparverius, sparrow hawk.	do
“	Mississippiensis, Mississippi kite.	do
“	Lagopus, rough-legged hawk.	do
“	hyemalis, winter hawk.	do
“	leucocephalus, white-headed eagle.	do
“	Haliæetus, fish hawk.	do
“	velox, sharp-shinned hawk.	do
“	Pennsylvanicus, slate-colored hawk.	do
“	uliginosus, marsh hawk.	do
“	farcatus, swallow-tailed hawk.	do
“	borealis, red-tailed hawk.	do



<i>Falco atricapillus</i> ,	ash-colored hawk.	of the United States.
“ <i>niger</i> ,	black hawk.	do
“ <i>lineatus</i> ,	red-shouldered hawk.	do
“ <i>latissimus</i> ,	broad-winged hawk.	do
“ <i>fulvus</i> ,	ring-tailed eagle.	do
“ <i>peregrinus</i> ,	great-footed hawk.	do
<i>Strix nævia</i> ,	mottled owl.	do
“ <i>nebulosa</i> ,	barred owl.	do
“ <i>passerina</i> ,	little owl.	do
“ <i>nyctea</i> ,	snow owl.	do
“ <i>brachyotos</i> ,	short-eared owl.	do
“ <i>asio</i> ,	red owl.	do
“ <i>Virginiana</i> ,	great-horned owl.	do
“ <i>flammea</i> ,	barn owl.	do
“ <i>Hudsonia</i> ,	hawk owl.	do
“ <i>Otus</i> ,	long-eared owl.	do
“ <i>canicularia</i> ,	Coquimbo.	do

## LECTURE XIV.

2. *Order*.—Passeres, Warbling Birds.—Essential character of this order.—Remarks on them.—Division into four families, viz., *a*. Dentirostres; *b*. Fissirostres; *c*. Conirostres; *d*. Tenuirostres.—Natural History of the genera and species of the (*a*.) Dentirostres.

<i>Lanius Excubitor</i> ,	great American shrike.	of the U. States.
“ <i>Carolinensis</i> ,	loggerhead shrike.	do
<i>Tanagra æstiva</i> ,	summer red bird.	do
“ <i>rubra</i> ,	scarlet tanager.	do
“ <i>Ludoviciana</i> ,	Louisiana tanager.	do
<i>Muscicapa ruticilla</i> ,	American redstart.	do
“ <i>sylvicola</i> ,	yellow-throated flycatcher.	do
“ <i>olivacea</i> ,	red-eyed flycatcher.	do
“ <i>Tyrannus</i> ,	tyrant flycatcher.	do
“ <i>crinita</i> ,	great crested flycatcher.	do
“ <i>querula</i> ,	small green flycatcher.	do
“ <i>nunciola</i> ,	pewee flycatcher.	do
“ <i>rapax</i> ,	wood-pewee flycatcher.	do



<i>Muscicapa solitaria</i> ,	solitary flycatcher.	of the U. States.
"	<i>cærulea</i> ,	blue-gray flycatcher. do
"	<i>Cantatrix</i> ,	white-eyed flycatcher. do
"	<i>Canadensis</i> ,	Canada flycatcher. do
"	<i>cucullata</i> ,	hooded flycatcher. do
"	<i>pusilla</i> ,	green black-capt flycatcher. do
"	<i>melodia</i> ,	warbling flycatcher. do
"	<i>minuta</i> ,	small headed flycatcher. do
"	<i>savana</i> ,	fork-tailed flycatcher. do
"	<i>Saya</i> ,	Say's flycatcher. do
"	<i>forficata</i> ,	swallow-tailed flycatcher. do
"	<i>ventricularis</i> ,	Arkansas flycatcher. do
<i>Ampelis Americana</i> ,	cedar bird.	do
<i>Turdus melodus</i> ,	wood thrush.	do
"	<i>migratorius</i> ,	red-breasted thrush. do
"	<i>polyglottus</i> ,	mocking-bird. do
"	<i>rufus</i> ,	ferruginous thrush. do
"	<i>aurocapillus</i> ,	golden-crowned thrush. do
"	<i>lividus</i> ,	cat thrush. do
"	<i>aquaticus</i> ,	water thrush. do
"	<i>solitarius</i> ,	hermit thrush. do
"	<i>mustelinus</i> ,	tawny thrush. do
<i>Pipra polyglotta</i> ,	yellow-breasted chat.	do
<i>Sylvia sialis</i> ,	blue bird.	do
"	<i>calendula</i> ,	ruby crowned wren. do
"	<i>Marylandica</i> ,	Maryland yellow-throat. do
"	<i>Regulus</i> ,	golden-crested wren. do
"	<i>domestica</i> ,	house wren. do
"	<i>Troglodytes</i> ,	winter wren. do
"	<i>flavicollis</i> ,	yellow-throated warbler. do
"	<i>castanea</i> ,	bay-breasted wren, do
"	<i>Pennsylvanica</i> ,	chestnut-sided wren. do
"	<i>Philadelphia</i> ,	mourning wren. do
"	<i>solitaria</i> ,	blue-winged yellow wren. do
"	<i>citrinella</i> ,	blue-eyed wren. do
"	<i>chrysoptera</i> ,	golden-winged wren. do

<i>Sylvia Canadensis</i> ,	black-throated blue wren.	of the U. S.
"	<i>virens</i> , black-throated green wren.	do
"	<i>coronata</i> , yellow-rump wren.	do
"	<i>cærulea</i> , curalean wren.	do
"	<i>Pinus</i> , pine-creeping wren.	do
"	<i>Magnolia</i> , black and yellow wren.	do
"	<i>Blackburniæ</i> , Blackburnian wren.	do
"	<i>autumnalis</i> , autumnal warbler.	do
"	<i>Protonotarius</i> , protonotary warbler.	do
"	<i>Vermivora</i> , worm-eating warbler.	do
"	<i>peregrina</i> , Tennessee warbler.	do
"	<i>formosa</i> , Kentucky warbler.	do
"	<i>minuta</i> , prairie warbler.	do
"	<i>rara</i> , blue-green warbler.	do
"	<i>rubricapilla</i> , Nashville warbler.	do
"	<i>petechia</i> , yellow red-poll warbler.	do
"	<i>striata</i> , black-poll warbler.	do
"	<i>agilis</i> , Connecticut warbler.	do
"	<i>leucoptera</i> , pine-swamp warbler.	do
"	<i>montana</i> , blue-mountain warbler.	do
"	<i>Parus</i> , hemlock warbler.	do
"	<i>maritima</i> , Cape May warbler.	do
"	<i>celata</i> , orange-crowned warbler.	do

Natural History of the genera and species of (b.) *Fissirostres*.

<i>Hirundo Americana</i> ,	barn swallow.	of the U. States.
"	<i>viridis</i> , green white-beilled swallow.	do
"	<i>riparia</i> , bank swallow,	do
"	<i>pelasgia</i> , chimney swallow.	do
"	<i>purpurea</i> , purple martin.	do
"	<i>fulva</i> , cliff swallow.	do
<i>Caprimulgus Americanus</i> ,	night-hawk.	do
"	<i>vociferus</i> , whip-poor-will.	do
"	<i>Carolinensis</i> , Chuck-will's widow.	do

Natural History of the genera and species of (c.) *Conirostres*.

<i>Emberizza Americana</i> ,	black-throated bunting.	do
"	<i>erythroptalma</i> , Towhee bunting,	do



<i>Emberizza oryzivora</i> ,	rice bunting,	of the U. States.
“	<i>Pecoris</i> , cow bunting.	do
“	<i>nivalis</i> , snow bunting.	do
“	<i>Ciris</i> , painted bunting.	do
“	<i>leucophris</i> , white-crowned bunting.	do
“	<i>graminea</i> , bay-winged bunting.	do
<i>Loxia Enuclator</i> ,	pine grosbeak.	do
“	<i>cardinalis</i> , Cardinal grosbeak.	do
“	<i>Ludoviciana</i> , rose-breasted grosbeak.	do
“	<i>cærulea</i> , blue grosbeak.	do
<i>Curvivostra Americana</i> ,	American cross-bill.	do
“	<i>leucoptera</i> , white-winged cross-bill.	do
<i>Fringilla tristis</i> ,	goldfinch.	do
“	<i>cyanea</i> , indigo bird.	do
“	<i>purpurea</i> , purple finch.	do
“	<i>pusilla</i> , field sparrow.	do
“	<i>arborea</i> , tree sparrow.	do
“	<i>melodia</i> , song sparrow.	do
“	<i>socialis</i> , chipping sparrow.	do
“	<i>Hudsonia</i> , snow-bird.	do
“	<i>Pinus</i> , pine finch,	do
“	<i>palustris</i> , swamp sparrow.	do
“	<i>albicollis</i> , white-throated sparrow.	do
“	<i>Savanna</i> , Savanna sparrow.	do
“	<i>ferruginea</i> , fox-colored sparrow.	do
“	<i>passerina</i> , yellow-winged sparrow.	do
“	<i>linaria</i> , lesser red-poll.	do
“	<i>maritima</i> , sea-side finch.	do
“	<i>caudacuta</i> , sharp-tailed finch.	do
“	<i>purpurea</i> , purple finch.	do
“	<i>grammæa</i> , lark finch.	do
“	<i>psaltria</i> , Arkansas siskin.	do
“	<i>amœna</i> , Lazuli finch.	do
<i>Oriolus Baltimorus</i> ,	hanging-bird.	do
“	<i>mutatus</i> , orchard oriole.	do
<i>Icterus icterocephalus</i> ,	yellow-headed troopial.	do

<i>Sturnus prædatorius</i> , red-winged starling.	of the U. States.
<i>Alauda alpestris</i> , shore-lark.	do
“ <i>magna</i> , meadow-lark.	do
“ <i>rufa</i> , brown lark.	do
<i>Corvus cristatus</i> , blue jay.	do
“ <i>columbianus</i> , Clark's crow.	do
“ <i>Canadensis</i> , Canada jay.	do
“ <i>Pica</i> , magpie.	do
“ <i>Corone</i> , common crow.	do
“ <i>ossifragus</i> , fish crow.	do
“ <i>Corax</i> , raven.	do
<i>Gracula feruginosa</i> , rusty grakle.	do
“ <i>quiscala</i> , purple grakle.	do
<i>Quiscalus major</i> , great crow-blackbird.	do
“ <i>versicolor</i> , common crow-blackbird.	do
<i>Sitta Carolinensis</i> , white breasted nuthache.	do
“ <i>varia</i> , red-bellied nuthache.	do
“ <i>pusilla</i> , brown-headed nuthache.	do
Natural History of the genera and species of ( <i>c.</i> ) <i>Tenuirostres</i> .	
<i>Certhia familiaris</i> , brown creeper.	of the U. States
“ <i>palustris</i> , marsh wren.	do
“ <i>Caroliniana</i> , great Carolina wren.	do
“ <i>maculata</i> , black and white creeper.	do
<i>Trochilus Colubris</i> , ruby-throated humming-bird.	do
<i>Alcedo Alcyon</i> , belted kingfisher.	do

## LECTURE XV.

3. *Order*—Scansores, Climbers.—Essential character of them.  
 —Remarks.—Natural History of the genera and species of this order.

<i>Picus auratus</i> , gold-winged woodpecker.	of the U. States.
“ <i>Carolinus</i> , red-bellied woodpecker.	do
“ <i>erythrocephalus</i> , red-headed woodpecker.	do
“ <i>varius</i> , yellow-bellied woodpecker.	do
“ <i>villosus</i> , hairy woodpecker.	do
“ <i>pubescens</i> , downy woodpecker.	do



<i>Picus quærulus</i> ,	red-cockaded woodpecker.	of the U. States.
“ <i>torquatus</i> ,	Lewis’s woodpecker.	do
“ <i>principalis</i> ,	ivory-billed woodpecker.	do
“ <i>pileatus</i> ,	pileated woodpecker.	do
<i>Cuculus Carolinensis</i> ,	yellow-billed cuckoo.	do
“ <i>Erythrothalma</i> ,	black-billed cuckoo.	do
<i>Psittacus Carolinensis</i> ,	Carolina parrot.	do
<i>Ramphastos Tucanus</i> ,	yellow-breasted toucan.	do

4. *Order*—Gallinæ, Henlike birds.—Essential character.—  
Use.—Natural History of the genera and species of this order.  
*Pavo cristatus*, peacock.

<i>Meleagris Gallopavoo</i> ,	wild turkey.	of the U. States.
<i>Tetrao Cupido</i> ,	pinnated grouse.	do
“ <i>Umbellus</i> ,	ruffed grouse.	do
<i>Perdix Virginianus</i> ,	quail.	do
<i>Columba Oenas</i> ,	common pigeon.	do
“ <i>Carolinensis</i> ,	Carolina pigeon.	do
“ <i>migratoria</i> ,	passenger pigeon.	do
“ <i>passerina</i> ,	ground dove.	do
“ <i>fasciata</i> ,	band-tailed pigeon.	do
<i>Numida Meleagris</i> ,	Guinea hen.	do
<i>Phasianus Gallus</i> ,	common cock.	do

#### LECTURE XVI.

5. *Order*—Grallæ, Long-legged Birds.—Essential character.  
—Remarks.—Use.—Natural History of the genera and species.

<i>Strathio Camelus</i> ,	Ostrich.	
<i>Ardea virescens</i> ,	green heron.	of the U. States.
“ <i>nycticorax</i> ,	night heron.	do
“ <i>Egretta</i> ,	great white heron.	do
“ <i>cærulea</i> ,	blue crane.	do
“ <i>candidissima</i> ,	snowy heron.	do
“ <i>Ludoviciana</i> ,	Louisiana heron.	do
“ <i>Americana</i> ,	whooping crane.	do
“ <i>violacea</i> ,	yellow-crowned heron.	do
“ <i>Herodias</i> ,	great heron.	do



<i>Ardea minor</i> , American bittern.	of the U. States.
“ <i>exilis</i> , lesser bittern.	do
<i>Tantalus Loculator</i> , wood ibis.	do
“ <i>ruber</i> , scarlet ibis.	do
“ <i>albus</i> , white ibis.	do
<i>Numenius longirostra</i> , long-billed curlew.	do
<i>Scolopax Gallinago</i> , English snipe.	do
“ <i>minor</i> , woodcock.	do
“ <i>borealis</i> , Esquimaux curlew.	do
“ <i>semipalmata</i> , semipalmated snipe.	do
“ <i>Fedoa</i> , great marbled godwit.	do
“ <i>Noveboracensis</i> , red-breasted snipe.	do
“ <i>Flavipes</i> , yellow-shanked snipe.	do
“ <i>vociferus</i> , tell-tale godwit.	do
<i>Tringa pusilla</i> , little sandpiper.	do
“ <i>alpina</i> , red-backed sandpiper.	do
“ <i>Interpres</i> , turn-stone.	do
“ <i>cinerea</i> , ash-colored sandpiper.	do
“ <i>Cinclus</i> , purre.	do
“ <i>rufa</i> , red-breasted sandpiper.	do
“ <i>solitaria</i> , solitary sandpiper.	do
“ <i>macularia</i> , spotted sandpiper.	do
“ <i>Bartramia</i> , Bartram's sandpiper.	do
“ <i>hiaticula</i> , ring plover.	do
“ <i>semipalmata</i> , semipalmated sandpiper.	do
<i>Charadrius hiaticula</i> , ringed plover.	do
“ <i>apricarius</i> , black-bellied plover.	do
“ <i>calidris</i> , sanderling plover.	do
“ <i>pluvialis</i> , golden plover.	do
“ <i>vociferus</i> , killdeer plover.	do
“ <i>rubidus</i> , ruddy plover.	do
“ <i>Wilsonia</i> , Wilson's plover.	do
<i>Hæmatopus Ostrolegus</i> , pied oyster-catcher.	do
<i>Rallus Carolinianus</i> , common rail.	do
“ <i>Virginianus</i> , Virginian rail.	do
“ <i>crepitans</i> , slapper rail.	do



<i>Gallinula Porphyrio</i> ,	purple gallinule.	of the U. States.
<i>Phalaropus lobata</i> ,	gray phalarope.	do
“	<i>hyperborea</i> , red phalarope.	do
<i>Fulica atra</i> ,	common coot.	do
<i>Recurvirostra Himantopus</i> ,	long-legged avoset.	do
“	<i>Americana</i> , American avoset.	do
<i>Phœnicopterus ruber</i> ,	red flamingo.	do
<i>Platalea Ajaja</i> ,	spoonbill.	do
<i>Alca Alle</i> ,	little auk.	do

## LECTURE XVII.

6. *Order*—Anseres, Swimming birds.—Essential character.—Remarks.—Use.—Natural History of the genera and species of this order.

<i>Colymbus glacialis</i> ,	great northern diver.	of the U. States.
<i>Rhynchops nigra</i> ,	black skimmer.	do
<i>Sterna Hirundo</i> ,	great tern.	do
“	<i>minuta</i> , lesser tern.	do
“	<i>plumbea</i> , short-tailed tern.	do
“	<i>aranea</i> , marsh tern.	do
“	<i>fuliginosa</i> , sooty tern.	do
<i>Larus ridibundus</i> ,	black-headed gull.	do
<i>Procellaria pelagica</i> ,	stormy petrel.	do
<i>Mergus Merganser</i> ,	goosander.	do
“	<i>caucallatus</i> , hooded merganser.	do
“	<i>Serrator</i> , red-breasted merganser.	do
“	<i>albellus</i> , white nun.	do
<i>Pelicanus Onocratalus</i> ,	pelican.	do
<i>Anas perspicillata</i> ,	surf duck.	do
“	<i>albeola</i> , buffel-headed duck.	do
“	<i>Canadensis</i> , Canada goose.	do
“	<i>fuligula</i> , tufted duck.	do
“	<i>clangula</i> , golden eye.	do
“	<i>clypeata</i> , shoveller.	do
“	<i>acuta</i> , pintail duck.	do
“	<i>discors</i> , blue-winged teal.	do



<i>Anas hyperborea</i> , snow goose.	of the U. States.
“ <i>marila</i> , scaup duck.	do
“ <i>Americana</i> , American widgeon.	do
“ <i>Labradora</i> , pied duck.	do
“ <i>glacialis</i> , long-tailed duck.	do
“ <i>sponsa</i> , summer duck.	do
“ <i>crecca</i> , green-winged teal.	do
“ <i>valisneria</i> , canvas-back duck.	do
“ <i>ferina</i> , red-headed duck.	do
“ <i>Boschas</i> , mallard.	do
“ <i>strepera</i> , gadwall.	do
“ <i>molissima</i> , eider duck.	do
“ <i>Rubidus</i> , ruddy duck.	do
“ <i>Bernicla</i> , brant.	do
“ <i>nigra</i> , scroter duck.	do
“ <i>fusca</i> , velvet duck.	do
“ <i>histrionica</i> , harlequin duck.	do
“ <i>obscura</i> , dusky duck.	do
<i>Plotus Melanogaster</i> , black-bellied darter.	do

## LECTURE XVIII.

## (AMPHIBIOLOGY.)

III. CLASS—Amphibia, Reptiles.—Definition of them.—Brogniard's division of them into four orders.—1. Chelonia, Tortoises.—2. Sauria, Lizards.—3. Ophidia, Snakes.—4. Batrachia, Frogs.—Etymology and definition of the orders.—Rank of the reptiles among animated beings.—Remarks on their organs of sensation.—Large eyes.—Small opening of the ears.—Scarcely visible organ of smell.—Weak organ of taste.—Indistinct organ of touch.—Their various abodes.—Their extraordinary reproduction.—Tenacity of life.—Abstinence from food.—Cause of it.—Their nourishment.—Societies of reptiles.—Their generation.—Some singularities of them.—1. *Order*—Chelonia.—Anatomy of a Tortoise.—Natural History of the genera and species of the Chelonia.



Testudo clausa,	closing turtle.	of the U. States.
“	Pennsylvanica, Pennsylvania closing turtle.	do
Emys picta,	painted turtle.	do
“	punctata, spotted turtle.	do
“	serpentina, snapping turtle.	do
Chelonia Midas,	green turtle.	
“	imbricata, imbricated turtle.	
“	coriacea, coriaceous turtle.	
Chely's fimbria,	fimbriated turtle.	
Trionix ferox,	soft-shelled turtle.	of the U. States.

2. *Order*—Sauria.—Essential character of the Sauria.—Anatomy of a Lizard.—Natural History of the genera and species of them.

Crocodylus acutus, alligator.

Iguana cornuta, horned guana.

Agama muricata, American galeate.

Lazerta Umbra, umbre lizard.

“ Chamæleon, chameleon.

“ quadrilineata, four-lined lizard.

“ fasciata, fasciated lizard.

“ Scincus, officinal scink.

Draco volans, flying dragon.

### LECTURE XIX.

3. *Order*—Essential character of the Ophidia.—Similarity of them with fishes.—Construction of their skeleton.—How they move.—Muscles and scales.—Different size of snakes.—Their native country.—Oviparous and viviparous.—Torpidness during the winter.—Casting of the skin.—Symbol of eternity.—Duration of life.—Character of venomous and innoxious snakes.—Fontana's innumerable experiments on venomous snakes.—Various remedies used by him against the bite of venomous snakes, — Alkali, — Turpentine, — Salt, — Cutting and burning the wound.—Remedies used in America.—Plantago major.—Micania Guaco.—Hodysarum rotundifolium.—Distinction of poisonous snakes.—Fangs.—How they can be discover-



ed.—Additional teeth.—Poisonous snakes are viviparous.—Innoxious snakes are oviparous.—Scuta.—Squamæ subscaudales.—Linnæus's genera of snakes.—Natural History of the *Crotalus horridus*, banded rattle-snake.—Size and color.—Rattle.—Experiments made by Capt. Hall.—The number of the joints of the rattle cannot be considered as a proper test of the age.—Extraordinary mode of the rattle-snake of preserving its young from danger.—Remarks on its charming power.—Dr. Mead's opinion.—Dr. Barton's opinion.—Rattle-snake as food.—*Crotalus Durissus*.—*C. Dryinas*.—Natural history of the *Boa Constrictor*,—generic character,—native country,—Size.—Livy's narrative of it.—*Boa Contortrix*, grey boa of North America.—Generic character of the genus *Coluber*, viper.—Natural History of *Coluber Berus*, common viper of Europe.—Its color,—length,—fangs,—venom.—Dr. Mead's experiment in analysing it.—Fontana's opinions.—Olive oil used as a remedy for the bite of the viper.—Medical use of the viper's flesh in leprosy and elephantiasis.—*Coluber Naja*, spectacle snake or Cobra de Capello of India and South America. Its color and length.—Its powerful venom.—Dr. Russell's experiments with it.—*Coluber Cerastes*, horned snake of Africa. Its color, length, horns and venom.—It is the *Aspis* of Cleopatra.—Natural History of the

*Coluber Cacodæmon*, American black viper. of the U. States,

“ <i>Tisiphone</i> , brown viper,	do
“ <i>aquaticus</i> , water viper,	do
“ <i>Leberis</i> , Canada snake.	do
“ <i>carinatus</i> , carinated snake.	do
“ <i>Erythrogaster</i> , copper-bellied snake.	do
“ <i>Carolinianus</i> , corn snake.	do
“ <i>fasciatus</i> , blue snake.	do
“ <i>Constrictor</i> , black snake.	do
“ <i>Getulus</i> , chain snake.	do
“ <i>fulvus</i> , fulvous snake.	do
“ <i>Flagellum</i> , coach-whip snake.	do
“ <i>doliatus</i> , milk-white snake.	do



Coluber Sipedon,	water-snake.	of the U. States.
“	ordinatus, green spotted snake.	do
“	guttatus, red bead snake.	do
“	Saurita, riband snake.	do
“	sirtalis, garter snake.	do
“	mycterizans, long-snouted snake.	do
“	æstivus, summer snake.	do
“	torquatus, collared snake.	do
“	striatulus.	do
“	punctatus.	do
“	eximus, house snake.	do
“	vernalis, green snake.	do

Generic character of the Hydrus, properly called Water-snake.—Probability of the existence of the gigantic sea serpent.—The Leviathan of the Holy Scripture.—Pontoppidan's sea serpent in Norway.—Narratives of the inhabitants of Norway.—Narrative of the Rev. Nic. Gramius.—Description of the sea serpent by Olaus Magnus,—by Paul Egede.—Report of the Bishop of Bergen.—Letter of Capt. Laurent de Ferry, of Bergen, on the same subject.—Report of the Linnean Society of North America on the same subject.—Latest reports from Boston.—Natural History of the

Hydrus colubrinus,	colubrin hydrus.	
Langaya nasuta,	snouted langaya.	of the U. States.
Acrochordus Javanicus,	Javan Acrochordus.	
Anguis ventralis,	glass slow-worm.	of the U. States.
Amphisbæna alba,	white amphisbæna.	
Cæcilia tentaculata,	bell-shaped Cæcilia.	

4. *Order*—Batrachia.—Essential character of them.—Genera.—Rana and Hyla, Frog.—Bufo, Toad.—Salamandra, Water-lizard.—Anatomy of the frog and toad.—Their spawn.—Tadpoles.—Singularity of their body.—Metamorphose.—Full size after five years.—Duration of life.—Tenacity of life.—Natural History of the

Rana esculenta,	green frog.	of the U. States.
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<i>Rana pipiens</i> ,	olive-colored frog.	of the U. States.
“	<i>ocellata</i> , bull-frog.	do
“	<i>Virginica</i> , lineated frog.	do
“	<i>clamata</i> , bawling frog.	do
“	<i>flavi-viridis</i> , spring frog.	do
“	<i>sylvatica</i> , wood frog.	do
“	<i>palustris</i> , leopard.	do
<i>Hyla versicolor</i> ,	common tree-toad.	do
“	<i>Zebra</i> , zebra frog.	do
“	<i>lactea</i> , white frog.	do
“	<i>bilineata</i> , tree frog.	do
<i>Bufo musiceus</i> ,	toad,	do
“	<i>lentiginosa</i> , gray toad.	do

Abode of toads in summer and winter.---Whether toads are poisonous.---Their food.---Longevity of them, illustrated by examples.---Living toads enclosed in stones during centuries.---Impossibility of it.---Experiments made by Herrissart.---Use of toads as insect-eaters.---Cancer cured in consequence of being sucked by toads.---Several examples of it related by Bishop Littleton.---Natural History of the Salamanders.---Their metamorphose.

<i>Salamandra Alleghanensis</i> ,	water lizard.	of the U. States.
“	<i>subviolacea</i> ,	do
“	<i>fasciata</i> ,	do
“	<i>erythronata</i> ,	do

## LECTURE XX.

(ICHTHYOLOGY.)

IV. CLASS—Pisces, Fishes.—Definition of them.—Difference between the preceding and following classes.—Anatomy of a fish.—Parts of the body.—Pinnæ dorsales.—P. pectorales.—P. ventrales.—P. caudalis.---Squamæ.---Branchiæ.---Offensive and defensive arms of fishes---Teeth,---Bristles,---Sword,---Saw,---Crust.---Their organs of sensation.---Strong power of smelling. Anatomy of the eye.---Organ of hearing.---Tongue.—Organ of touching.—Use of the Vesica aërea.—Proof that it effects the



ascending and descending of the fish.—Analysis of the air in the swimming-bladder.—Lactes.—Ovarium.—Innumerable quantity of their eggs.—Mode of laying them.—Experiments with roe for economical purposes.—How fish-ponds should be established.—Development of the fish-eggs.—Viviparous fishes.—Fructification of them.—Different food of fishes.—Some of them are able to subsist without food.—Cause of it.—Remarks on carnivorous fishes.—Whether there is any fish poisonous.—Poisonous flesh of some of them.—Duration of their life.—Their reproduction and vitality.—Utility of fishes.—Cuvier's division of them.—Blumenbach's division into six orders.—1. Chondropterygü.—2. Branchiostegi.—3. Apodes.—4. Jugulares.—5. Thoracici.—6. Abdominales.—Etymology and definition of the orders.

1. *Order*—Chondropterygü.—Essential character of them.—Natural History of the  
 Petromyzon marinus, lamprey. of the U. States.  
 “ fluviatilis, lamprey. do  
 “ branchialis, pride.  
 Gastrobranchus cæcus, fish-worm, do  
 “ Dombeyi.

Generic character of the Raya, Ray.—Size.—Singular form of their eggs.—Their native country.—Their food.—Their use.—Natural History of the  
 Raja Diabolus, Dæmon ray.  
 “ clavata, Thornback. of the U. States.  
 “ undulata, skate. do

Raja Torpedo, Torpedo.—Its native country.—Size.—Stupefying quality.—Aristotle's and Pliny's acquaintance with it.—Situation and description of its electric quality.—Experiments of Redi and Reaumur.—Explanation of the experiment of Walsh.—Natural History of the Raja Rhinobatos, long-nosed Ray.—Similarity of it with a shark.—Generic character of the Genus Squalus, Shark.—Size of them.—Their voracity.—Teeth.—Cause of this voracity.—Their power of smelling.—History related by Pennant concerning it.—Description of



their singular eggs.—Similarity with snakes and the opossum with respect to their young.—Use of the shark.—Its native country.—Natural History of the different species.

- Squalus glaucus*, blue shark. of the U. States.  
 “ *Squatina*, angel-fish.  
 “ *Zygæna*, hammer-headed fish. of the U. States.  
 “ *Catulus*, spotted dog-fish. do  
 “ *Zebra*, zebra shark.  
 “ *Spatula*. of the U. States.  
 “ *Pristis*, saw-fish. do

Description of its saw.—Its size and boldness.—Native country.—Color.

2. *Order*—Branchiostegi.—Essential character of them.—Natural History of the Acipenser, Sturgeon.—Its generic character.—Size.—food.—Native country.—Generation.—Use of the roe and isinglass.—Species.

*Acipenser Sturio*, sturgeon.

“ *Ruthenus*, sterlet.

Natural History of the

*Chimæra monstrosa*, sea monster.

“ *Callorhynchus*.

*Ostracion turrinus*, trunk-fish.

“ *triqueter*, three-sided trunk-fish.

“ *Nasus*, snouted trunk-fish.

“ *bicaudalis*, bicaudate trunk-fish.

“ *quadricornis*, four-horned trunk-fish.

“ *cornutus*, horned trunk-fish.

*Tetrodon hispidus*, hispid swell-fish.

“ *ocellatus*, spotted swell-fish.

“ *lineatus*, lineated swell-fish.

“ *lagocephalus*, hare swell-fish.

*Diodon Hystrix*, sea porcupine.

“ *orbicularis*. round diodon.

*Cyclopterus Lumpus*, lump-fish.

“ *Liparis*, unctuous sucker.

*Lophius piscatorius*, toad-fish.



- Syngnatus foliatus, foliated sea-horse.  
 " — Acus, pipe-fish.  
 " Hippocampus, sea-horse.  
 Pegasus Draco, little pegasus.  
 " natans, common pegasus.  
 Centriscus scutatus, mailed contriscus.  
 Balistes Vetula, old wife.  
 " maculatus, spotted old wife.  
 " aculeatus, prickly old wife.  
 " Monoceros, one horned wife.

## LECTURE XXI.

3. *Order*—Apodes.—Their essential character.—Generic character of the Muræna, Eel.—Etymology of this name.—Native country of the eel.—Its size.—Longevity.—Rapid growth.—Their surprising abundance.—Their utility.—Generation.—Food.—Muræna Anguilla, common eel.—Natural History of the

- Synbranchus marmoratus, marbled synbranchus.  
 Sphagebranchus rostratus, snouted sphagebranchus.

Gymnotus electricus, Cramp-fish.—Its native country.—Size and color.—Explanation of its electric power, and of the experiments made by the most celebrated philosophers.—Natural History of the

- Gymnothorax Muræna, eel gymnothorax.  
 " catenatus, chain gymnothorax.  
 Stromateus cinereus, ash-colored stromateus.  
 " niger, black stromateus.

Stylephorus chordatus.

Trichiurus argentatus, silver-colored trichiurus.

Sternoptyx diaphana, transparent sternoptyx.

Xiphias Gladius, sword-fish.

Anarchias Lupus, wolf-fish.

4. *Order*—Jugulares.—Their essential character.—Generic character of the Gadus, Codfish.—Usefulness of this fish for

commerce and navigation.—Origin of the Cod-fishery.—Native country of this genus.—Generation.—Its size and color.—Use.—Natural History of the

*Gadus carbonarius*, coal-fish.

“ *minutus*, poor.

“ *barbatus*, whiting-pout.

*Blennius Maris*, sea-blennius.

*Kurtis Indicus*, Indian hunchback.

5. *Order*—Thoracici.—Essential character of this order.—

Natural History of the

*Pleuronectes Zebra*, zebra flounder.

“ *Argus*, argus flounder.

“ *Platessa*, plaice.

“ *bilineatus*, lined plaice.

“ *Hippoglossus*, halibut.

*Chætodon bicolor*.

“ *fasciatus*.

*Sparus falcatus*, falcated gilthead.

“ *Surinamensis*, Surinam gilthead.

“ *fasciatus*, striped gilthead.

“ *chryssurus*, golden-tail gilthead.

“ *annularis*, annulated gilthead.

*Labrus microlepidotus*, wrasse.

“ *trichopterus*, wrasse.

“ *malapterus*, wrasse.

“ *maculatus*, wrasse.

“ *punctatus*, wrasse.

“ *Melagaster*, black-bellied wrasse.

*Scarus viridis*, green scarus.

*Perca Brasiliensis*, Brazilian perch.

“ *saxatilis*.

“ *punctata*, basse.

“ *guttata*.

“ *maculata*.

“ *bimaculata*.

*Scomber Sarda*, Sardin.



- Scomber niger*.  
 " *saliens*.  
 " *ruber*.  
 " *Scomber*, mackerel.  
 " *Thynnus*, albacore.

6. *Order*—*Abdominales*.—Their essential character.—*Natural History of the Salmo Salar*, salmon.

- " *Trutta*, sea trout.  
 " *bimaculatus*.  
 " *fasciatus*.  
 " *Tumbil*,  
 " *Odoc*.  
 " *gasteroplecus*.  
 " *Fridericü*.  
 " *rhombeus*.  
*Fistularia Chinensis*, tobacco-pipe fish.  
 " *tabacaria*, tobacco-pipe fish.  
*Esox osseus*, great garfish.  
 " *Belone*, sea-pike.  
 " *Brasiliensis*, Brazilian pike.  
*Exocoetus evolans*, flying fish.  
 " *aviliens*.  
 " *Mesogaster*.  
*Clupea Harengus*, herring.  
 " *alosa*, shad.  
*Cyprinus Carpio*, carp.  
 " *Tinca*, tench.  
 " *auratus*, gold-fish.  
*Silurus Catus*, cat-fish.  
 " *Glanis*, sly cat-fish.  
 " *electricus*, electric cat-fish.

## LECTURE XXII.

(ENTOMOLOGY.)

V. CLASS—Insecta, Insects.—Definition of them.—Geographical distribution of them.—Their supposed number in the United States.—Proofs that the study of Insects is productive of considerable utility, and promotes our present welfare.—The study of Entomology is still more neglected and even less patronized in the United States than its kindred sciences.—Why new natural objects of North America are generally sent to Europe for examination.—General remarks on insects.—Benefits and injuries derived from them.—Explanation of their wonderful instinct—Their organs of sensation.—Their arms of attack and defence.—Generation.—Their nourishment.—Division of them by Linnæus.—Latreille's arrangement.—Division into nine orders.—1. Coleoptera.—2. Orthoptera.—3. Hemiptera.—4. Neuroptera.—5. Hymenoptera.—6. Lepidoptera.—7. Diptera.—8. Aptera.—9. Articulata.—Etymology and explanation of these terms.—1. *Order*—Coleoptera, Beetles.—Anatomy of a beetle.—Parts of the body,—Caput,—Clypeus,—Labia,—Mandibulæ,—Maxillæ,—Galea,—Palpi,—Antennæ,—Thorax,—Pectus,—Scutellum.—Sternum,—Abdomen,—Spiracula,—Tergum,—Venter,—Pedes pectorales,—P. abdominales,—Femur,—Tibia,—Tarsus,—Pedes cursorü, gressorü, fossorü, saltatorü, natatorü,—Alæ,—Elytra,—Sutura dorsalis,—S. transversalis.—Internal anatomy.—Generation of beetles.—Their metamorphosis.—Their fertility.—Their different food.—Carnivorous and herbivorous.—Diurna and nocturna.—Latreille's division of them into five families.—*a.* Pentamera; *b.* Heteromera; *c.* Tetramera; *d.* Trimera; *e.* Dimera.—Explanation of these terms.

1. *Order*—Coleoptera, Beetles.

(*a.*) *Familia*—Pentamera.—Natural History of the Cicindela, Tiger beetles.—Some species of them.

*Cicindela campestris.*

“ *sylvatica.*



Cicindela Germanica.		
“ paludosa.		
“ aquatica.		
“ purpurea.		of the United States.
“ repanda.		do
“ punctulata.		do
“ R. guttata.		do
Natural History of the Carabus, Running-beetle.---Some of these species.		
Carabus maculatus.		
“ punctatus.		
“ auro-ritens.		
“ granulatus.		
“ vinctus.		of the United States.
“ carinatus.		do
“ Goryü.		do
Calosoma Sycophanta.		
“ Scrutator.		of the United States.
“ calidum.		do
“ obsoletum.		do
“ longicorne.		do
Chlænienus tomentosus.		do
“ nemoralis.		do
“ pubescens.		do
“ emarginatus.		do
Galerita Americana,		
Brachinus explodens.	} Bombardier beetles.	
“ fumans.		of the U. S.
“ minutus.		
“ formosus.		
Scarites subterraneus.		do
Harpalus caliginosus.		do
“ bicolor.		do
“ herbivagus,		do
“ carbonarius.		do
“ agriculus.		do

Harpalus Baltimoriensis,	of the U. States.
Cosnonia Pennsylvanica.	do "
Pæcilus nitens.	do "
Agonoderus Pallipes.	do "

Natural History of the Genus Dyticus and Colymbetes, long-horned Water-beetles.—Some of these species:

Dyticus piceus.	
" latissimus.	
" marginatus.	
" cinereus.	
" caraboides.	
" sulcatus.	
" minutus.	
" bipustulatus.	
" uliginosus.	
" verticalis.	of the U. States,
" fasciventris.	do "
Colymbetes fenestralis.	do "
" binotatus.	do "
" discolor.	do "
Gyrinus Natator, whirling water-beetle.	
" Americanus.	

Natural History of the Genus Staphylinus, Rover-beetle.—  
Some species:

Staphylinus cinnamopterus,	of the U. States.
" maxillosus.	do "
" villosus.	do "
" pallipennis.	do "
" cingulatus.	do "
" Nigripes.	do "
" Fossator.	do "

Natural History of the Genus Buprestis, flat Boring-beetle.  
—Some species:

Buprestis gigantea.
" vittata.



*Buprestis ruficollis.* of the U. States.  
 “ *sylvatica.* do

Natural History of the Genus *Elater*, Snapping-Beetle. —  
 Some species of it:

*Elater noctilucus.*  
 “ *ignifer.*  
 “ *porcatus.*  
 “ *ocellatus.* of the U. States.  
 “ *instabilis.* do  
 “ *quercinus.* do  
 “ *lanceatus.* do  
 “ *communis.* do

Natural History of the Genus *Lampyris*, Fire-fly.—Some  
 species of it:

*Lampyris splendidula.* of the U. States.  
 “ *marginata.* do  
 “ *laticollis.* do  
 “ *versicolor.* do  
*Cantharis Carolinensis.* do  
 “ *marginata.* do  
 “ *autumnalis.* do

Natural History of the  
*Hister fulvicornis.*  
 “ *unicolor.*

Natural History of the Genus *Silpha*, Carrion-beetle.—Some  
 species of it:

*Silpha marginalis.* of the U. States.  
 “ *inæqualis.* do  
 “ *Surinamensis.* do  
 “ *Americana.* do  
 “ *caudata.* do

Natural History of the Genus *Necrophorus*, Grave-digger.—  
 Some species of it:

*Necrophorus grandis.* of the United States.  
 “ *velutinus.* do  
 “ *Mortuorum.* do

Natural History of the Genus *Hydrophilus*, short-horned Water-beetle.—Some species of it:

*Hydrophilus triangularis*.  
 “ *globosus*.

Natural History of some species of the Genus *Scarabæus*, Dor-beetle:

*Scarabæus Hercules*, elephant-beetle.  
 “ *Goliatus*.  
 “ *Chorinæus*.  
 “ *Molossus*.  
 “ *Sacer*.  
 “ *Tityus*. of the United States.  
 “ *Carnifex*. do  
 “ *splendidus*. do  
*Ateuchus volvens*, dung-beetle. do  
*Copris Carolina*, dung-beetle. do  
 “ *Ammon*, dung-beetle. do  
*Onthophagus Mæris*, dung-beetle. do  
 “ *latebrossus*, dung-beetle. do  
*Aphodius stercorarius*, dung-beetle. do  
 “ *fulvus* dung-beetle. do  
*Trox gemmatus*. do  
 “ *hispidus*. do

Natural History of some genera and species of the May-beetle:

*Rutela geminata*. of the United States.  
 “ *punctata*. do  
 “ *lanigera*. do  
*Macroductylus subspinosus*. do  
*Melolontha quercicola*. do  
 “ *hirsuta*. do  
 “ *hirta*. do  
*Anisoplia horticola*. do  
*Cetonia Inda*. do  
 “ *fulgida*. do  
 “ *nitida*. do  
*Trichius olens*. do



Natural History of some genera and species of the Stag-beetle.

Lucanus Cervus.

“ inermis.

“ Dama. of the United States.

“ latifrons. do

Passalus cornutus. do

### LECTURE XXIII.

(b.) Familia, Heteromera.—Definition of it.—Natural History of some species of the Genus Tenebrio, Meal-worm :

Tenebrio Gigas.

“ femoratus.

“ Molitor.

“ Curvipes.

“ culinaris.

“ ferrugineus.

“ granarius. of the United States.

“ punctulatus. do

Pimelia Gages.

“ Trogosita.

Helops Lanipes.

“ fasciata.

“ fusca.

“ micans. of the United States.

“ obliquatus. do

Opatrum clathratum. do

Mordella bicolor.

“ flava.

“ dorsalis.

“ frontalis.

“ nigra. of the United States.

“ scutellaris. do

Natural History of some species of the Blistering-beetle.

Lytta vesicatoria.

“ dubia. of the United States.

“ vittata. do

(c.) Familia, Tetramera.—Definition of it.—Natural History of some species of the Weevil:

Curculio bimaculatus.	
“ elegans.	
“ imperialis.	
“ regalis.	
“ annulatus.	
“ homopterus.	
Calandra Palmarum.	
“ 13 punctata.	of the United States.
“ Compressiroster.	do
Brentus Anchorago.	
“ Septentrionis.	of the United States.

Natural History of some species of the Capricorn-beetle:

Prionus longimanus.	
“ cervicornis.	
“ cylindricus.	of the United States.
“ brevicornis.	do
Carambyx irroratus.	do
“ imperialis.	do
Lamia quadrimaculata.	
“ Ternator.	of the United States.
Clytus flexuosus.	do
“ aspericollis.	do
Callidium Bajulus.	do
“ terminans.	do
Leptura cyanea.	do

Natural History of some species of the Flower-Beetle.

Cryptocephalus variabilis.	
“ lobatus.	
“ litturatus.	of the United States.
Hispa rubra.	do
“ mutica.	
Cassida grassa.	
“ lateralis.	
“ cruentata.	



<i>Cassida maculata.</i>	
<i>Eumolpus auratus.</i>	of the United States.
“ <i>flavidus.</i>	do
“ <i>longicornis.</i>	do
<i>Chrysomela gigantea.</i>	
“ <i>Surinamensis.</i>	
“ <i>pulchra.</i>	of the United States.
“ <i>maculata.</i>	do
“ <i>Rhois.</i>	do
“ <i>Philadelphica.</i>	do
<i>Galeruca 13 punctata.</i>	do
“ <i>vittata, cucumber beetle.</i>	do
<i>Haltica Carolinensis.</i>	do
“ <i>collata.</i>	do
“ <i>thoracica.</i>	do
<i>Languria Mozardi.</i>	do
“ <i>bicolor.</i>	do

(d.) Familia, Trimera—Definition of it.—Natural History of some species of the Lady-Beetle.

<i>Coccimella guttata.</i>	
“ <i>oblongo-guttata.</i>	
“ <i>12 pustulata.</i>	
“ <i>frontalis.</i>	
“ <i>12 punctata.</i>	
“ <i>22 punctata.</i>	
“ <i>7 notata.</i>	
“ <i>4 pustulata.</i>	
“ <i>analis.</i>	
“ <i>parvula.</i>	
“ <i>6 pustulata.</i>	
“ <i>borealis.</i>	of the United States.
“ <i>abbreviata.</i>	do
“ <i>9 punctata.</i>	do
“ <i>immaculata.</i>	do
“ <i>ursina.</i>	do
<i>Cacidula 10 punctata.</i>	do

(e.) Familia, Dimeria—Definition of it.—*Pselaphus insignis.*

## LECTURE XXIV.

2. *Order.* Orthoptera.—Definition of them.—Their metamorphosis.—Construction of their mouth, stomach, and intestines.—Their food.—Natural History of the *Blatta Germanica*, cockroach.

“ *Lapponica*.

“ *Orientalis*.

“ *gigantea*.—Their omnivorous voracity. Natural History of some species of the genus *Mantis*, Praying Bug.

*Mantis precaria*.

“ *bispinosa*.

“ *gongylodes*.

“ *strumaria*.

“ *pulchra*.—Their ferocity.—Singular construction of their fore legs.—Mantis-fighting a popular amusement in China.—Considered as pious insects in Europe.—Their native country.—Natural History of some species of the genus *Acheta*, Cricket.

*Acheta campestris*, field-cricket. of the United States,

“ *domestica*, house-cricket. do

“ *Gryllotalpa*, mole-cricket. do

Voracity of the house-cricket.—Powerful instruments and wonderful strength of the crickets.—Natural History of the genus *Gryllus* and *Locusta*, Grasshopper.—Difference between them.—Devastations caused by grasshoppers in several countries.—They are used as food.

*Gryllus migratorius*,

“ *punctatus*.

“ *Dux*.

“ *Carolinensis*. of the United States.

*Locusta viridissima*.

“ *perspicillata*. of the United States.

3. *Order.* Hemiptera.—Essential character of them.—Construction of their head.—Rostrum—Their wings.—Venomous Bugs.—Natural History of the *Pentatemon prasina*.



*Cimex Lectularius*, Bed-Bug, or Wall-Louse.—Pigeons infested by them.—Natural History of the

*Coreus Destructor*.

*Capsus singularis*.

*Reduvius pungens*.

“ *serratus*—Its electrical power.

*Lygæus apterus*.

*Gerris lacustris*. of the United States.

*Nepa grandis*. do

“ *cinerea*. do

*Notonecta Americana*. do

*Cercopis sanguinolenta*.

*Fulgora laternaria*, lanthorn-fly.

“ *candelaria*, “

*Membracis maculata*.

*Cicada Hæmatodes*.

“ *Stritula*.

“ *phalenoides*.

“ *maculata*. of the United States.

“ *Tibicen*. do

Anatomy of a male and female Cicada.—Locust, an improper name given to this insect.—Remarks on the Cicada *Septemdecim*.—It is not probable, that it appears only every seventeen years.—Its injuries are trifling.—Benefit.

4. *Order*—Neuroptera.—Essential character of this order.—Construction of their wings,—of their mouth,—of their antennæ.—Their eyes,—their abdomen,—their food,—their metamorphosis.—Natural History of the Genus *Libellula*, Dragon-fly.—Their eggs and larvæ.—Some species of this Genus:

*Libellula clavata*.

“ *linearis*.

“ *Indica*.

“ *grandis*.

“ *Virgo*.

“ *Puella*.

Libellula Heros.	of the United States
“ pulchella.	do
“ Lydia.	do

Natural History of the Ephemera, or May-fly.—Their innumerable quantity.—They are the principal nutriment of fishes.—Their larva state.—Duration of their life.—Reaumur's observations.—Ephemera vulgata.—Natural History of the Phryganea varia.

“ semifasciata. of the United States.

Ascalaphus Americanus.

“ Barbarus.

Hemerobius Chrysops.

Myrmeleon Libelluloides, Ant-Lion.—Why so called.—Its larva state.—Its stratagem in procuring its prey.—Its principal food.—Its duration of life.—Natural History of the Panorpa communis.

“ Coa.

Raphidia Ophiopsis.

Termes bellicosus, White Ant of Africa.—Males, females and neuters.—Societies of them.—Their native country.—Habitation or nests.—Their food.—Singularity of the female.—They are eaten by the Africans.

5. Order—Hymenoptera.—Essential character of this order.—Construction of their wings, mouth, eyes, antennæ, and sting.—Their metamorphosis.—Their food.—Their instinct.—Their native country.—Injuries done by them.—Benefit derived from them.—Natural History of some genera and species of this order:

Tenthredo bimaculata.

“ femorata.

“ falcicornis.

Cynips quercus folii.

Sirex Gigas.

“ Iuvenus.

Ichneumon flavicornis.



*Ichneumon persuasorius.*

*Amophila subulosa.*

*Scolia flavifrons.*

“ *bicingulata.*

of the United States.

*Thynnus emarginatus.*

*Leucopsis dorsigera.*

*Chrysis ignita.*

*Vespa 4 Dens.*

“ *cincta.*

“ *testacea.*

“ *arcuata.*

“ *fasciata.*

*Formica Gigas.*

“ *Bengalensis.*

“ *rubra.*

*Apis festiva.*

“ *violacea.*

“ *æstuans.*

of the United States.

“ *fervida.*

do

“ *lapidaria.*

do

“ *Americanorum.*

do

“ *mellifica.*

do

General idea of the operation of bees.—Explanation of the laboring bees, the queen and drones.—External and internal anatomy of the bee.—Teeth.—Two cavities of the leg.—Honey-bag.—Venom-bag.—Sting and its parts.—Their society.—Number of bees in one hive.—Building of cells.—Their great diligence.—Description of the hexagon cells.—Use of the cells.—Materials for making honey and wax.—Pollen and nectarium of flowers.—Of the queen-bee.—Number of young.—Their education and metamorphosis.—Time of growth.—Of the sign and appearance of the swarm.—Usual time of swarming.—Manner of hiving a swarm.—Description of various kinds of hives.—Hives of rye-straw.—Glass-hives.—Management of bees.—Place of the bee-house.—Enemies of the bees.—Duration of their life.—Barbarity of destroying them with

sulphur.—Manner of taking the honey and wax from the hive without injuring the bees.—Their native country.—Medicinal quality of bees, when reduced to powder.—Use of the wax.—Medicinal qualities of honey.—Oxymel.—Domestic use of honey.—Vinous hydromel.—Calculation of the expenses and benefit of raising bees.—Produce of one hive.—Price of honey and wax in the United States.—Remarks on the commerce of it in the United States.—Description of plants cultivated for the use of bees, and which are, at the same time, useful for domestic purposes.—Poisonous honey.—Cause of it.—Favorite plants of bees.

## LECTURE XXV.

6. *Order*—Lepidoptera, Butterflies.—Essential character of them.—Construction of their wings, mouth and spiral tongue.—Their palpi and antennæ.—Their spiracula or organs of respiration.—Their principal function of life.—Their metamorphosis.—The egg.—The larva, or caterpillar.—Their different food.—Their societies.—Duration of life as caterpillar.—Their casting off the skin.—Different colors.—Number of their feet.—The pupa or cocoon.—Different manner of spinning the cocoon.—Use of butterflies.—Natural History of the following genera and species :

Papilio Turnus.	of the United States.
“ Asterius.	do
“ Troilus.	do
“ Hector.	
“ Achates.	
“ Polytes.	
Argynnis Idalia.	of the United States.
Vannessa Antiope.	do
“ Urticæ.	do
Cynthia Atalanta.	do
“ Cardui.	do
Danaus Plexippus.	do
Sphinx Carolina.	do



Saturnia Proserpina.	of the United States.
Bombyx Mori.	do
“ Pavonia.	
“ Madrono.	
Phalæna Lunæ.	of the United States.
“ Cecropia.	do
“ Paphia.	
“ Cynthia.	

General remarks on the common silk-worms.---Description of them as perfect insects,---as caterpillars,---as cocoons.---Use of them.---Their food.---Mode of raising them.---Calculation of the quantity of food for them.---Mode of raising them in Italy, France, Crimea, Transcaucasy, and Rapp's Economy, near Pittsburg, Pa.---Diseases of them.---Calculation of the benefit of this culture in the United States.---Remarks on the climate of the Northern, Western and Southern states of North America.---Ancient commerce and price of silk in Rome and Constantinople.---Importance of its commerce in our time.---Other species of silk-worms.---Description of Phalæna Paphia of Bengal.---Value of its silk.---Value and use of the silk of Phalæna Cynthia of Bengal.---Its food.---Possibility of raising this silk-worm in the United States.---Silk manufactured of Bombyx Pavonia in Germany.---Silk of Bombyx Madrona of South America.

## LECTURE XXVI.

7. *Order*—Diptera, Flies or insects with two wings.---Essential character of them.---Anatomical analysis of a fly.---Their generation, metamorphosis, and duration of life.---Injuries done by them.---Their great use.---Their food.---Singular diseases of them.---Natural History of the

*Tabanus bovinus.*

“ *autumnalis.*

*Culex pipiens,* gnat, mosquetó.

*Empis forcipata.*

“ *borealis.*

- Stomoxys rostrata.  
     " irritans.  
     " calcitrans.  
     " pungens.  
 Œstrus Equi.  
     " Bovis.  
     " Ovis.  
 Tipula rivosa.  
     " Hortorum.  
     " variegata.  
 Conops ferruginea.  
     " aculeata.  
     " petiolota.  
 Asilus gibbosus.  
 Bombylius major.  
     " medius.  
 Hyppobosca equina.  
     " ovina.  
 Musca bifasciata.  
     " grossa.  
     " Pendula.

8. *Order*---Aptera, or insects without wings.—Essential character of this order, according to Linnæus,---Latreille's arrangement of them, with respect to their internal organization.—Natural History of the

- Pediculus humanus, human louse.  
     " Asini, ass louse.  
     " Cygni, swan louse.  
     " Corvi, crow louse.  
     " Picæ, magpie louse.  
     " Gruis, crane louse.  
     " Columbæ, pigeon louse.  
     " pluvialis, plover louse.  
     " Apis, bee louse.

Numerous species of this genus.--General remarks on the human louse.--Rapid increase of these animals.--Leeuwenhoek's experiments.--Phthiriasis, or pedicular disease.--Description of it.—Antiochus Epiphanes, the Dictator Sylla, the Emperor Maximinian, King Philip the Second, carried off by it.--What insects are the cause of this disease.

Natural History of the  
 Pulex irritans, flea.



*Pulex penetrans*, sand-flea or Chiger of West India.—Calamity occasioned by it.—Natural history of the  
*Acarus Reduvius*.

“ *Americanus*.

8. *Order*—Articulata.—Essential character of this order.—Division of it into two families.—*a*. Crustacea; *b*. Arachnides;—Definition of Crustacea.—Anatomy of a crab.—Natural History of some species of this genus:

*Cancer variegatus*.

“ *fluviatilis*.

Anatomy of the Arachnides.—Their food.—Natural History of the spiders.—*Aranea avicularia*.—Some peculiarities of this species.—*Aranea Tarantula*.—*Thelyphonus caudatus*.—*Reniiformis*.—*Scorpio Afer*.—*Europæus*.—*Linearis*.—Native country of the scorpions.—Their sting.—Remedies used for it.—Their generation.—Natural History of the  
*Oniscus Asellus*.

“ *Armadillo*.

*Scolopendra morsitans*.

*Iulus terrestris*.

“ *maximus*.

## LECTURE XXVII.

(HELMINTHOLOGY.)

Etymology.—Essential character of Vermes, Worms.—Linnæus' definition of them.—Arrangement of them by the French school.—Linnæus' division of them into five orders, viz. 1. Intestina.—2. Mollusca.—3. Testacea.—4. Zoophyta.—5. Infusoria. 1. *Order*—Intestina, Intestinal worms.—Why so called.—Their internal and external organization.—Their power of reproduction.—Their generation.—Natural History of the Genus *Ascaris*.—Great number of the species.—Natural History of the Genus *Tænia*, Tape-worm.—Species of them.—Effective remedies against it used by the East India quacks.—*Carica Papaya*.—*Punica Granatus*.—Natural History of the  
*Lumbricus terrestris*, earth-worm.

“ *maritimus*

*Hirudo medicinalis*, common leech.

“ *sanguisuga*, horse-leech.

“ *vulgaris*.—Use of them for medical purposes,—as barometers.—Pliny's report.

2. *Order*—Mollusca.—Definition of them.—Their external



and internal organization.—Their blood, irritability, and generation.—Natural History of some of the Linnæan genera of this order:

*Limax maximus*, great slug.

“ *ater*, black slug.

“ *agrestis*, field slug.

*Nereis noctiluca*.

“ *cœrulea*.

*Sepia officinalis*, cuttle-fish.

“ *Loligo*.

*Medusa aurita*, sea-nettle.

“ *purpurea*.

“ *simplex*.—Medicinal virtues of it.—How Discorides cured the gout with it.—Phosphorous quality of it known to Pliny. Natural History of the

*Asterias nobilis*, star-fish.

“ *rubens*.

“ *glacialis*.

“ *aculeata*.

*Echinus esculentus*, sea-egg, sea urchin.

“ *Cidaris*.

“ *lacunosus*.

3. *Order*—*Testacea*, Shell-fish.—Essential character of them. Their generation and reproductive power. Their use as food for men and animals.—Linnæan division of them into *Multivalvia*, *Bivalvia*, and *Univalvia*. Necessity of knowing the parts of a shell, for distinguishing the different Genera of them.

*Conchæ*, bivalves.

*Valvulæ*, valves.

*Cardo*, hinge.

*Basis*, buttom.

*Margo inferior*, underside.

*Hymen*, ligament.

*Rima anterior*, (*Vulva*,) anterior chink.

*Margo anterior*, anterior margin.

“ *posterior*, hinder margin.

“ *superior*, outer or upper margin.

*Umbones*, (*Nates*,) protuberances at the hinge.

*Mucro*, point of the shell.

*Valvulæ æquilateræ*, equally curved valves.

“ *inæquilateræ*, irregularly curved valves.

*Ambitus*, outline.



- Limbus, inner margin.  
 Discus, middle margin of the outer surface.  
 Dentes, teeth of the hinge.  
 Anus, depression at the hinder margin of the hinge.  
 Labia vulvæ, margins round the ligament on the anterior side.  
 Nymphæ, cartilage, to which the ligament is attached.  
 Pubes, asperities or prickles.

Natural History of some Genera of Bivalvia :

Parts of a Cochlea, or univalve shell.

- Apex, spire.  
 Anfractus, wreaths.  
 Columella, column, about which the wreaths revolve.  
 Mucro, the beginning of the columella.  
 Basis, (apertura,) end or mouth of the columella.  
 Cauda, the prolonged mouth.  
 Canalis, the channelled part of the Cauda.  
 Labium exterius, (sinistrum,) the end of the wreaths.  
 " interius, (dextrum,) inner lip of the wreaths.  
 Corpus, (Venter,) the last and largest wreath.  
 Tentacula, feelers.  
 Operculum, covering.

Natural History of some Genera of Univalvia.

4. *Order*—Zoophyta, or animal plants.—Essential character of this order.—Their native country.—Calcareous, horny and fungous Zoophyta.—Stirps radicata or root of their body.—Their singular organization.—Natural History of the  
 Tubipora musica, coral.  
 Madrepora verrucaria, coral.  
 Millepora polymorpha, coral.  
 " tubulosa, coral.  
 Gorgonia anceps, sea-fan.  
 " verrucosa, sea-fan.  
 " Flabellum, sea-fan.  
 Spongia officinalis, common sponge.  
 " tomentosa.  
 Pennatula phosphorea, sea-pen.  
 " mirabilis.

5. *Order*—Infusoria.—Essential character of them.—Their abode.—Remarks on their nature.—A magnified water-drop a world of animated beings.







