

PHILOSOPHICAL
TRANSACTIONS:

**Memoirs for a natural history of animals;
containing the anatomical descriptions of
several creatures, dissected by the Royal
Academy of Sciences at Paris; Englished
by Alexander Pitfield, Esquire, R. S. Soc.
To which is added, an account of the
measure of a degree of a great circle of the
Earth: Published by the same academy,
and Englished by Richard Waller, Esquire,
R. S. Secr**

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Norimbergæ eandem Eclipsim observavit J. P. Wurtzelbaur. Initium quidem accurate ad $1^h. 58' \frac{1}{2}$; circa medium, sc. ad $2^h. 36' \frac{1}{2}$ quantitatem maximam duorum dig. præcise; Finem vero ad $3^h. 18'. 33''$.

Ulmæ Sueviæ, observavit Honoldus Initium ad $1^h. 48'$; Quantitatem maximam $2 \frac{1}{3}$ dig. Finem vero ad $3^h. 16'$.

Lipfiæ, observatore Kirchio, Eclipsis jam satis notabilis ad horam $2^h. 20'. 10''$. ad $2^h. 47' \frac{1}{2}$ digiti $1 \frac{1}{3}$ circiter. Finis vero incidit præcise in $3^h. 15'$.

Vratislaviæ Silesiæ denique observavit D. G. Schultzius Maximam obscuracionem, paulo citius quam $3^h. 12' \frac{1}{2}$ fuisse $1 \frac{1}{2}$ dig. Finem vero hora $3^h. 37'$.

In omnibus hujusmodi observationibus momentam Finis multo tutius determinatur; itaque huic potius fidendum est, præsertim in Eclipsibus parvis, ubi ob incidentiam maxime obliquam diu hærent quasi in Contactu Luminaria.

Memoirs for a Natural History of Animals; containing the Anatomical Descriptions of several Creatures, dissected by the Royal Academy of Sciences at Paris; Englished by Alexander Pitfield, Esquire, R. S. Soc. To which is added, An Account of the Measure of a Degree of a great Circle of the Earth: Published by the same Academy, and Englished by Richard Waller, Esquire, R. S. Secr.

THIS Book, containing the Anatomical Observations of 28 Species of Animals, and about 70 Individuals, was published in two very large Folio's by the Royal Academy at Paris; and owned by them, as their united Labours, as they are a Body. The Difficulty of procuring Copies of the French Edition, few of the Learned having ever seen the Book, tho' Printed some Years since, was no small Inducement, as the Translators say, to their Undertaking.

Waving what may be said as to their *Preface*, and of the first 12 *Species* of Animals; viz. two *Lions* and a *Lyonesse*, a *Camelion*, a *Dromedary*, a *Bear*, five *Gazella's* or *Antilopes*, a *Chat Pard*, a *Sea-Fox*, a *Castor*, an *Otter*, two *Civet Cats*, an *Elke*, and a *Coati mondi*, of all which, a large Account has been already given by Mr. Oldenburg in his *Philosophical Transactions*, Numb. 49. & 124. to which I refer the Reader; I shall proceed to give some Account of the sixteen remaining *Species*; all which were published in the Second Volumn of the *French Edition*.

The Thirteenth *Species* then is the *Sea-Calf*, which, from *Rondeletius*, they observe to be of two kinds, the larger from the *Ocean*, the lesser from the *Mediterranean*, of which sort this was. That which is most extraordinary in it, was the *Epiglottis*, much larger than in other Animals; its *Ventricle* like an *Intestine*: it had all the *Organs* for *Secretion* of *Urine*, and the *Kidneys* seemed composed of several *Glands*, each provided with a particular *Pelvis*: it had *Lungs* like other *Amphibious* Animals; and the *foramen Ovale* giving Passage to the Blood from the *Cava* to the *Aorta*. It had the *Cristalline* more convex before, which is not common; and several Particularities in the Formation of the *Eye* favouring the Opinion of the Reception of the visual *Species* on the *Retina*.

The Fourteenth, the *Barbary Cow*, an Animal something resembling a *Deer*: it had but two *Teats*, four *Ventricles* like other ruminating Animals, a very large *Cæcum*, and no distinct *Lobes* in the *Liver*. It was in several Particulars like the common Cow.

The Fifteenth is the *Cormorant*, wherein the shortness of the *Legs* is remarkable, and structure of the *Feet* for swimming with one Foot while the other holds the Prey: the largeness of the *Oesophagus*: want of the two *Cæcums*, found in most Birds: the *Kidneys* separated from the other *Viscera* by a particular Membrane: the *Tongue* and *Eye* very small, this Water-Fowl being to feel for its Food under the Water, rather than discover it from afar.

The Sixteenth, the *Chamois* or *Rupicapra*, in whose *Ventricle* a Ball was found; whence they take occasion to discourse of the *Balls* found in the Stomachs of Creatures, as *Cows*, *Horses*, &c. and observe that they are compos'd of *lignous Fibreo* and not *Hair*, as is usually thought: besides several other Observables, the *Cornua uteri* were very long and winding; the *Heart* had a *Callous Apophysis*, &c.

The Seventeenth and Eighteenth are the *Porcupine* and *Hedg-hog*, a comparison being made between these two *Animals*. They observe the external *Ear* of the *Porcupine* to be like a *Mans*; the end of the *Tongue* armed as it were with *Teeth*; the *Skin* provided with an extraordinary Muscle for *Ejaculation* of the *Quills*. Of these they dissected six. In comparing the *Hedg-hog* with them, they describe the *Musculus carnosus*, which serves to bring the Head round into the Breech like a Foot ball; whereas in the *Porcupines* the *Cæcum* was very large, in the *Hedg-hog* there was none at all; the *Epididymis*, in the *Porcupine*, was separate from the *Testis*; in the *Hedg-hog* united to it: in the *Hedg-hog* they observed a large *CrySTALLINE* filling almost the whole *Globe* of the *Eye*.

The Nineteenth are four *Monkeys*; where they in general observe, that this *Animal* more resembles *Man* in his outward shape than inward *Formation* of the Parts, which in many things are like a *Dog*; the *genital* Parts of the *Male* like neither; of the *Female* much like *Woman*; the Anfractuosities of the *Brain* like *Mans*, but the *Processus mammillares* were hard and membranous, which they are not in *Man*: they conclude with a comparison of the *Muscles*, which very much resemble those of *Men*.

The Twentieth is the *Stag* of *Canada* and *Sardinian Hinde*. In the *Stag*, the length of the *Intestines* is observable, being in all 96 feet; and indeed, generally all *grazing Animals* have long *Guts*. In the *Hinde*, the four *Ventricles* were more distinguishable than in the *Stag*; the *Cornua uteri* long and winding, as in the *Chamois*: in the Trunks of the *Jugulars* were found 16 *Valves*, which were in situation contrary to the *Cir-*

culatation of the Blood. In the *Carotides* were observed several transverse *Incisures*.

The Twenty first, ten *Pintadoes*; where, after a full description of the outward Form, they describe several Parts like the common *Hen*; the *Pancreas* wanting: the *Bladders* in the lower Belly were raised by blowing into the *aspera Arteria*, whence they hint at the use of *Respiration*.

The Twenty second, three *Eagles*: after having discoursed of the six kinds of *Eagles*, according to *Aristotle* and *Pliny*; they observe, That the *Intestines*, after the usual manner of voracious Animals, were slender and short, as also the *Kidneys*; some had the *Cæcum*, others none: the Globe of the *Eye* was large, and the *Cornea* very prominent. In this Subject they first discovered that the *Spinal Marrow* in the middle of the Back was divided in two, with a *Ventricle* like those in the *Brain* betwixt: this was afterwards found common to all *Birds*.

The Twenty third, two *Indian Cocks*, not our *Turkey Cocks*. They were both Males: in one there was two *Pancreas*'s, with three *Cholidoci*, and two *Pancreatici ductus* into the *Intestine*: in the other was but one *Pancreas*, and a single *ductus*: the *Intestines* were 12 feet long, and *Cæcum* six: the *Aspera Arteria* made a fold in the *Craw bone*, after a most particular manner.

The Twenty Fourth, six *Bustards*; in which the *Craw* was scarce distinguishable from the *Oesophagus*, and furnished with a great number of *Glands* most conspicuous in this, but to be found in most *Birds*: a particular description of the *Gizzard* follows, and of a third *Cæcum* near the *Rectum* or the *Bursa Fabricii*: between the *Cornea* and *Sclerotica* a cartilaginous Circle was observed. They end with the discovery of a black *Purse* in the *Eyes* of *Birds*.

The Twenty fifth, six *Demoiselles* of *Numidia*, a kind of Crane, in which they found the *Liver* very large, and without *Gall bladder* in some Subjects. In the Female a kind of Gland besides the *Ovary*, resembling the *Testicles* of the Male. Amongst other Observables, the Structure of the *Wind-pipe* was very unusual, entering with a winding into the Bone of the

the *Sternum*: at its Union with the *Lungs* it had a kind of *Larynx*: the *Punctum Lachrymale* in the *Eye* was double, &c.

The Twenty sixth, eight *Ostriches*, in which they very largely discourse of the make of the *Feathers* of Birds, and joyning of the *Fibres* of each Feather to one another; a great part of which, seems to have been taken out of Mr. *Hook*'s ingenious Book of *Microscopical Observations*, tho' they have not thought fit to own it. The *Foot* of this *Animal* seems contrived for a speedy Course, in which its *Wings* are of great use: the different length of the *Intestines* is observable, in some being 50, whereas in another they were but 29 feet; the *Cæcum*, which was double, was wreath'd like a *Screw*, and the inside of the *Colon* provided with Valves or semilunar leaves, like *Membranes*. At the extremity of the *Rectum* was found a *Bladder* filled with *Urine*. In this Description they discourse largely of the *Ureters* and genital Parts of *Birds*, as likewise of the *Lungs*, and its Divisions or *Diaphragmes*, and its Communication with the *Bladders* containing the *Ventricle* and *Intestines*: together with the manner and use of *Breathing* in *Birds*, explaining it by a pair of double *Bellows*, &c.

The Twenty seventh, the *Cassowar*, a Bird but lately known to the *Europeans*: it has no *Quills* nor *Feathers* for flying, and indeed but short *Wings*: that which was most unusual was the want of a musculous *Gizzard*, tho' a *granivorous Animal*; which might in some sort be supplied by the number of *Ventricles*. In this Subject they more particularly insist on the *Muscles* of the *Thorax* necessary for *Respiration*, and a curious description of the Parts of the *internal Eye lid* in *Birds*, as to its *Mechanism* and *Use*.

The Twenty eighth. They conclude these *Discourses* with that of a very large *Land Tortoise*, being four foot and $\frac{1}{2}$ from the extremity of the *Head* to the *Tail*. Amongst the *Internal Parts*, the Structure of the *Urine Bladder* is very curious for its *exterior Tunicle* being *membranous*: the inside was strengthened with an infinite number of *musculous Fibres*, not unlike those in the *Ventricles* of the *Hearts* of *Animals*. This Contrivance

seems necessary for the pressing out of the *Urine* in this *Animal*, which has an unyielding *Belly*, not capable of *Compression*; nor was the *formation* of the *Heart* less observable: it had three *Ventricles* communicating with each other by *holes* in the *Septum*: the *Vena Cava* had two *Branches* into two of the *Ventricles*, which likewise received *Blood* from two *Vene pulmonares* to be transmitted to the *Aorta*, &c. Having been already too large, I shall pass by what was observed of the extraordinary *Structure* of the *Lungs*, with a *Discourse* of the *Lungs* of *Animals* in general, which they reduce to three *sorts*; treating next of *Respiration*, together with an *Experiment* of blowing up the *Lungs* of a *Dog* with a pair of *Blows*; but I shall refer, as to the other *Particulars* in this and the former *Anatomical Discourses*, to the *Book* it self, very well deserving the *Perusal* of all *Persons* curious in *Anatomy* and *Chirurgery*, containing many useful *Remarks* and natural *Discoveries*, of which this is but a very imperfect *Account*.

I shall say nothing of the *Measure* of the *Earth* added to the end of this *Edition*, a very full *Account* having been given of it in the *Philos. Transf.* Numb. 112. to which I refer the *Reader*: only the *Translators* thought fit to annex it, the *Curiousness* of its *Subject*, and exceeding *Scarcity*, being sufficient to recommend it to this *Learned* and *Inquisitive Age*.

Confucius Sinarum Philosophus, sive Scientia Sinenfis
Latine exposita, Studio & Operâ Patrum Societatis
JESU, &c. Adjecta est Tabula Chronologica Sinica
Monarchiae ab hujus exordio ad hæc usque tempora.

THE famed *Chinese* Philosopher CUM-FU-CU, or as we call him *Confucius*, being in so great esteem in his own *Nation*, and having never yet appeared in an *European Dress*, cannot but be gratefully received by the *Curious*, especially since the *Version* is performed

ed by very ancient Missionairs sufficiently accomplished in the knowledge of the *Chinese* Character, and at the Command (as is said) of the King of *France*.

The Subject of this Book being foreign to our purpose, as consisting chiefly of Moral and Political Precepts and Apophthegmes of the Philosopher, I shall not enlarge thereon; only to recommend it, the Translators assure, That the Memory of the Author is still precious in *China*; and that in respect to *him*, his Posterity, after above 2200 Years, enjoys certain great Privileges never granted but to the Royal Family; is exempt from all Taxes; and whosoever is advanced to the Degree of Doctor, gives, as a mark of his Respect to the great *Confucius*, some Present to the eldest of his Family, who is now 68 Generations removed from him.

As to the time when *Confucius* lived, 'tis here precisely set down from the *Chinese* Annals: He was born *Anno* 551. *ante Christum*, and lived 73 Years; so that he was contemporary with the most ancient Greek Philosophers, and not long after *Pythagoras*, flourishing about the time of *Tarquinius Superbus* and the first Consulats, when *Darius Hystaspis* held the *Persian* Empire. He is said to be descended of a Branch of one of the most ancient Royal Families, which might not a little contribute to gain Respect and Credit to his Writings.

But what may not improperly find place here, is, the *Chinese* Chronology, whereof such wonderful Relations have been brought into *Europe*: This Matter the Author of this Part of the Book, *P. Couplet*, seems well to have examined, and to have sifted the credible from the fabulous. They begin their Account with the Years of the Reign of King *Fohi*, who was the Founder of their Empire, about the Year before Christ 2952; rejecting, as ill grounded, and not to be believed, all that some Authors have said of the Times before, and following therein the Opinion of the best reputed *Chinese* Historians. This *Fohi* is said to have reigned 115 Years, and to have invented the Character now in use in *China*, and his Successor *Xin-nun* is made to govern 140 Years: These two Kings are by our Author, by reason of some manifest Fables in their History, reputed doubtful; wherefore they, as from a more certain *Era*, choose to begin their Annals with the third King *Hoam-ti*, and the Year before Christ 2697. This *Hoam-ti* is said to have instituted the Sexagenary Cycles or Periods of 60 Years, according to which this Chronology is adjusted, and for want of which or the like, our Account of Time, both Sacred and Profane, is subject to too great Uncertainties; the Years of the Reigns of Kings, where the Months and Days are neglected, introducing great Errors in length of time, which

which by this method are prevented. Since this Institution, there are now 73 Periods elapsed, and the 74 is current; in which time they account that there has been 234 Kings of *China*, sprung from no less than 22 several Royal Families; the King now reigning being the second of the Race of the *Tartars*, who within these 50 Years have throughly subjected *China*.

In this Chronology are set down the beginnings of each Kings Reign, with a short Character of the Prince, and the principal of his Acts, with the most notable Contingencies of his time: amongst the rest, several Eclipses of great Antiquity are recorded, whereby this account may be examined.

The third King, *Chuen-hio*, is said to be the Author of the *Chinese* Kalendar, and to have appointed the beginning of the Year to be on the New-Moon next the beginning of the Spring, which the *Chinese* account to be when the Sun is in 5 gr. of *Aquarius*: this Account is now in use, tho' instituted 2500 Years before Christ. About 700 Years after, the King *Chim-tam* reduced the beginning of the Year to the Winter Solstice; but the former was restored about 100 Years before Christ, and still continues.

The Years of this Account are Luni-solar, or consisting of 12 Lunar Months, half of 30 days, and the rest of 29 days, with the Intercalation of 7 mon. in 19 years; so that 7 years in each Cycle have 13 mon. This Distribution of mon. was ordained by K. *Yao*, above 2300 years *ante Christum*, and is, if rightly intercalated, a more exact measure of the Cœlestial Motions than our *Julian* Account or old Style, for that fails a day in 131 years, whereas this Account of the *Chinese* (which is nearly the same with the *Jewish*) fails but a day in 225 years, or 4 days in 900 years; but since their method of Intercalation is not here expounded, I shall not say more in a matter of such Uncertainty.

'Tis here said, that the famous Wall of *China*, extending above 400 Leagues, was begun by King *Xi-Hoam-ti* about the year *ant. Chr.* 210. to hinder the Incursions of the *Tartars*, which in all Ages have infested this Country. The following Cycles are more amply described, and towards the End, the Transactions of the *Romish* Missionaries are inserted, with a brief account of that great Revolution in *China*, by the entire Conquest of that Kingdom by the *Tartars*. This Chronology ends with the year of Christ 1683, being the last of the 73d Cycle, since the King *Hoam-ti*; and contains in all 4380 years.

'Twill be needless to advertise, that this Account places the beginning of the *Chinese* Empire long before the *Deluge*, according to the Holy Scriptures; wherefore if this be to be wholly rejected, as fabulous; or if not, how it is to be reconciled with the sacred Chronology, belongs more properly to the Disquisition of the Divines.