An Account of some Books.

I. FREE CONSIDERATIONS *about* SUBORDINATE FORMS, *by the Honourable* ROBERT BOYLE.

THis Tract is an *Appendix* to the Noble Author's *Examen of Substantial Forms*, publisht last year, and reprinted this. There hath been already given an Account of the principal Part, as appears by *Numb.* 11. 'Tis very fit the like should be done now of this considerable *Appendix*.

First then it clears up and states the Doctrine about *Subordinate Forms*, as it is maintain'd by divers learned *Moderns*, especially *Sennertus*, who teacheth, that besides the *Specifick Form*, (so called by him) there may reside in Animals and Plants, certain other Forms, so subject to the predominant *Mistress-Form*, that they deserve the Title but of *Subordinate* Forms, and during the Reign of the *Specifick*, are subservient to it; yet when *that* is deposed or abolisht, these *Inferiour* Forms may come to set up for themselves, *viz.*

This done, the Author tryes, whether the *Phænomena* and Effects of these pretended *Subordinate Forms* may not be as well as the principal ones, intelligibly explicated by the *Mechanical Principles*, *vid. Matter* and *Motion*, and the thence resulting *Shape* and *Texture*. Which that it may be done, is so happily made out in this *Tract*, that a Rational Unprejudiced and Attentive Reader cannot but embrace the *Author's* Doctrine, and, according to it, be satisfied, that the portions of Matter, that are endowed with these pretended *Subordinate Forms*, cannot pay the presumed *Superintendent Form* any other obedience, than some such kind of one, as the parts of a *Clock* or *Engine* may be said to yield to one another. So that the whole matter may be well conceived to be nothing but this; That, when divers bodies of differing natures or *Schematisms* come to be associated so as to compose a Body of one denomination, though each of them be supposed to act according to its own peculiar nature, yet by reason of the coaptation of those parts, and the contrivement of the compounded Body, it will many times happen, that the Action

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action or effect produced, will be of a *mixed* nature, and differing from that, which ſeveral of the parts conſider'd as *diſtinct* Bodies or Agents, tended to, or would have perform'd; As when in a Ballance, by putting in a weight into one of the Scales, the oppoſite Scale, though as a heavy body it will naturally tend downwards, yet by vertue of the fabrick of the Inſtrument is made to mount upwards. So that thoſe Actions, which Scholaſtical men attribute to the conſpiring of ſubordinate *Forms* to aſſiſt the *Specifick*, are but the reſultant actions of ſeveral Bodies, which being aſſociated together, are thereby reduced in many caſes to act jointly, and mutually modifie each others actions; and that which they aſcribe to the dominion of the *Preſiding* Form, is to be imputed to the ſtructure and connexion of the parts of the compounded body.

This the Author confirms and illuſtrates by many very inſtructive Examples and Compariſons, taken from manual Arts and Practiſes, Phyſicks, Chymiſtry, *&c*, And applying his doctrine about theſe *ſubordinate Forms* to inanimate Bodies, he ſums up the heads of all, and caſts them into 9 diſtinct Propoſitions, which are

1. The word *Form* is of an interminate ſignification.

2. 'Tis not eaſie, to decide the *Nobleneſs* of Forms.

3. In divers Bodies the Form is attributed upon the account of ſome eminent *Property* or *Uſe*; which if it be preſent and continue, though many other things ſupervene, or chance to be wanting, the matter is nevertheleſs lookt upon, as retaining its Form, and is wont to be allow'd its uſual denomination.

4. By reaſon of the Conjunction or Connexion of the *parts*, that make up a *whole* (or, at leaſt an Aggregate of Bodies, that for their connexion are looked upon as ſuch) it willoften happen, that ſeveral things will be perform'd by the joint or concurrent Action of theſe united or coherent parts.

5. We may yet in a *ſound ſenſe* admit, that in ſome Bodies there may be *ſubordinate Forms*.

6. The ſupervening of a new Form is often but accidental to the Pre-exiſtent Form, and (*then*) does not at all deſtroy its nature but modifie its operations.

7. Beſides the *Specifick* actions of a Body, that harbours *ſubordinate Forms*, there may be divers others, wherein ſome of the

Parts or Ingredients may act according to their particular and priſtine nature.

8. In divers Bodies, that which is call'd or look'd upon as the *Specifick* Form, is often not ſo much as the *Preſiding*, but only the *moſt eminent*.

9. The forms diſcourſed of, ſeem to be rather *concurrent*, than *ſubordinate*.

To each of theſe *Propoſitions* are annexed ſhort *Comments*, full of very pertinent and teaching Inſtances, Relations, Compariſons, *&c.* for which the *Reader* is referred to the Book it ſelf.

II. *Joh. SWAMMERDAM, M.D. Amſterodamenſis de RESPIRATIONE & USU PVLMONUM.*

THis *Author* is of opinion, that all thoſe Philoſophers, who have hitherto inquired into the *Nature* and *Uſe* of *Reſpiration*, have only caught the ſhadow of it, nothing of the ſubſtance. And of this he gives this for the chief reaſon, becauſe they have been too negligent in conſidering the firſt manifeſt motion of the Breaſt and Lungs in a *Fœtus*; which particular being underſtood he thinks it very eaſie to judge of the Reſpiration of *born* Animals. He ſcruples not to reprehend the immortal Doctor *Harvey*, for having excluded from the office of the Lungs the uſe of *Refrigeration*; which he pretends to have aſſerted himſelf by moſt evident Experiments, and uncontroulable Reaſons.

To repreſent diſtinctly, what he undertakes to make out in this *Tract*, we may take notice of theſe particulars.

1. He takes pains to refute the Doctrine of *Attraction*, and to ſubſtitute in its place the Doctrine of *Pulſion* or *Intruſion* of Air into the Lungs.

2. He endeavours to aſſert, that the Lungs do not *fall down*, but are by the Breaſt *contracted*.

3. He affirms, to have clearly ſhew'd, what is the proper function and work of the *Diaphragme*, and other *Muſcles* ſerving for Reſpiration.

4. He pretends, to have experimentally evinced the Genuine *Uſe* of *Reſpiration*, and the Benefit thence reſulting to the Animal Life.

In

In *ſhort*, He makes *Reſpiration* to be a Motion of the Thorax and Lungs, whereby the Air is ſometimes impſled by the Noſe, Mouth and Wind-pipe into the Lungs; and thence again expelled; farther to elaborate the Blood, by *Refrigerating it*, and by ſeperating its *fuliginous ſteams*, and ſo raiſe it to its ultimate and higheſt perfection, for the Conſervation of the Life of Animals.

Notice may be taken here by the by, that this *Author* in his *Preface* promiſes the publiſhing of a *Treatiſe* about *Inſects*, in which he ingages to ſhew many wonderfull things in thoſe little and ſeemingly contemptible Creatures, and in particular to demonſtrate to the Eye the very method and manner how a *Caterpiller* is tranſmuted into a *Chryſalis* or *Aurelia*: By performing of which, he hop eth, he ſhall make the *Curious* bear more eaſily the loſs of Dr. *Harvey's* Treatiſe on that Subject.

III. *Obſervations faites ſur vn* GRAND POISON, *& vn* LION, *diſſequés dans la Bibliotheque du Roy à* Paris, *le* 24. *& le* 28. *Juin*, 1667.

THis *Great Fiſh*, diſſected by the *Pariſian* Philoſophers, was a *Vulpecula Marina* (a Sea-fox:) in which they obſerv'd;

Firſt, The length of his Tail, equalling very near the whole length of the reſt of his body (the whole Fiſh being $8\frac{1}{2}$ feet long) and faſhioned after the manner of a Sithe, bowed and turned up toward the belly.

Secondly, His *Mouth* was armed with two ſorts of Teeth; one ſort in the upper Jaw, being pointed, hard and firm, and of one only bone, in the manner of a *Saw*: the other ſort, found in the reſt of the upper, and in the whole under-Jaw, were moveable, and faſtned by fleſhly membranes.

Thirdly, His *Tongue* did altogether adhere to the lower Jaw, and its skin was hard and covered with little ſhining points, which rendred it very rough and ſcabrous one way. The points viewed with a Miſcroſcope, appeared tranſparent like Chryſtal.

Fourthly, His *Throat* was very large, and the *Oeſophagus*, as large as his Maw; concerning which Authors ſay, that he hath the dexterity of diſengaging himſelf from the ſwallowed hook, by caſting it up together with his *Maw*, the inſide of it turned out. They

found in his *Maw* the Sea-herb *Varec* 5 inches long, and a *Fiſh* of the like length without head, ſcales, skin and guts, all being waſted but the muſculous fleſh, which remained entire.

Fifthly, The ſuperior part of his *great Gut* had this peculiar, that inſtead of the uſual circumvolutions of Guts, the cavity of this was divided tranſverſly by many partitions, conſiſting of the membranes of the *Gut* turned inwards, and in the figure of a Vice, like Snail-ſhels, or winding Stairs.

Sixthly, His *Spleen* was double; his *Liver* divided into two Lobes; the *Gall* found to have more of bitter than ſower: the *Heart*, without a *Pericardium*, as big as a Hens egge; the *Head* almoſt nothing but a maſs of fleſh, very little Brains in it, and that which was there, having very few meanders or windings: the *Eyes*, bigger than thoſe of an *Ox*, only half-ſpherical, flat before; the *Sclerotica* formed like a Cup, very thin, but very hard; the *Cornea* very tender and ſoft; the *Chryſtallin* perfectly ſpherical; the *Vaea* grayiſh; the *Chorodies* of the ſame colour and pierced, for the production of the *Retina*, by a very large hole: the bottom of this *Chorodies* had that luſtre of Mother of Pearl, which is found in *Terreſtrial* Animals, but with leſs vivid colours: and the *Retina* was alſo ſtreaked with very apparent ſanguineous Veſſels.

The obſervables in the *Lyon* were,

In *General*, that for outward ſhape, and the conſtitution of many parts, as the *Claws*, *Teeth*, *Eyes*, *Tongue*, (beſides the likeneſs of the *Viſcera*) a *Lyon* reſembles very much a *Cat*.

In *particular*, an admirable ſtructure of his *Claws*; a peculiar ſhape and poſition of his *Teeth*; a very ſtiff *Neck*; a mighty rough and ſharp *Tongue*, having points like claws both for hardneſs and ſhape, *Eyes* very clear and bright, even after death, which without cloſing the Eye-lids, Lyons can cover with a thick and blackiſh membrane, placed towards the great Angle, which by riſing it ſelf and reaching towards the ſmall Angle, can extend it ſelf over the whole *Cornea*, as tis in *Birds*, but eſpecially in *Catts*: The reverſe of the anterior *Uvea*, where it lies over the *Chryſtallin*, is altogether black: the *Chryſtallin* very flat, and its greateſt convexity, which is not uſual, in its anterior part, at tis in *Cats*: the *Aqueous* humour very plentifull, equalling almoſt the ſixth part of the *Vitreous*, which plenty was judged to be the cauſe of the brightneſs that remains in the eyes after death.

His

His *Throat* was not above an Inch and a half large: the *Stomach*, 6 inches large, and 18 inches long: all the *Guts* 25 foot long: the *Liver*, divided into 7 *Lobes*, as in Cats; its cavity under the *Bladder of Gall* was full of Gall, ſhed abroad in the ſubſtance of the *Liver*, and of the neighbouring parts; which was ſuſpected by the Phyſitians, adminiſtring this operation, to have been the cauſe of this *Lyons* death: the *Bladder or Call* was 7 inches long, and 1½ inch large, of a peculiar ſtructure: the *Spleen*, a foot long, 2 inches large, and ½ inch thick: the Kidney weighed ſomewhat above 7 ounces: the *Genitals* of a peculiar conformation, cauſing this Animal to caſt his Urine backwards, and to couple like *Camels* and *Hares*.

His *Lungs* had 6 *Lobes* on the right ſide, and 3 on the left: the *Wind-pipe* had its annular Cartilages *entire*, excepting two or three; it was above four inches in compaſs, being very firme, and by this bgneſs and firmneſs enabling a Lyon, ſtrongly to thurſt Air enough through it, for his dread ful *roaring*.

His *Heart* was dry, and without water in the *Pericard*; much greater in proportion, than of any other Animal, between ſix inches long, and four inches large towards the *baſis*, and terminating in a ſharp point, It had very little fleſh, and was all hollow; the Ventricles very large; the Auricles very ſmall: the proportion of the branches, which the aſcending *Aorta* caſts out, was ſuch, that the *Carotids* were as big, as the left *Subclavial* branch, and as the reſt of the right *Subclavial*, whence they iſſue; Which is conſiderable, ſeeing the *Brain* is ſo ſmall: For the *Brain* was but two inches big, of any dimenſion; the reſt of the head being very fleſhy, and conſiſting of very firm *Bones*. By comparing the little quantity of the Lyons *Brain* with the plenty of that of a *Calf*, it was Judged, that the having but little Brain is rather a mark and a cauſe of a fierce and cruel temper, than want of wit. Which conjecture was ſtrengthened by the obſervation formerly made in the *Sea-Fox*, in whom almoſt no Brains was found, though it thought, that his craft and addreſs hath occaſioned men to give him that Name.

IV. HISTORIA AMBRÆ, *Authore* JUSTO KLOBIO, D. *in Academ. Wittebergenſi.*

THis Author reckons up 18 Opinions concerning *Ambergreeſe*, and having examined every one of them, he embraces that, which holds, That it is the *Dung* of a *Bird*, (called in the *Madagaſcar* Tongue *Aſchibobuch*:) of which he gives the deſcription out of *Odarotus Barboſa* and others; who affirm it to be of the bigneſs of a Gooſe, curiouſly feather'd, with a big head, well tufted. Theſe Birds being found in great numbers in *Madagaſcar*, the *Maldives*, and other parts of *Eaſt-Indies*, are affirmed by *Anthors* to flock together in great numbers, as Cranes; and frequenting high Cliffs near the Sea-ſide, and there voiding their Excrement, the Sea waſhes thence, if it fall not of it ſelf, into it.

§ There is another opinion among the ſaid 18, for which the *Author* hath a good inclination, but yet dares not embrace it; *viz.* that 'tis the *Excrement* of a certain kind of *Whales*. If this *Amber* were but in thoſe other places, where there is good ſtore of ſuch *Whales*, it ſeems that would make the *Author* relinquiſh the former Opinion.

This puts us in mind of a *Relation*, to be met with in *Purchas*, which, giving an Account of a certain Commiſſion for a Gentleman to go Factor into *Greenland* for the killing of *Whales* and *Morſes*, takes notice, among other Particulars, of a ſort of Whale, called *Trompa*, having but one Trunk on his head, whereas the *Sarda*, another kind of Whales, hath two. This *Trompa* (ſaith that Author) hath teeth of a ſpan long, and as thick as a mans Wriſt, but no Fins. In his *Head* is the *Sperma Ceti*, ſaith he farther, and in his *Entrails*, the *Ambergreeſe*, being in ſhape and colour like *Cowes-dung*. Expreſs order was given in the ſaid Commiſſion, that the perſon deputed ſhould himſelf be preſent at the opening of this ſort of Whale, and cauſe the reſidue of the ſaid Entrails to be put in ſmall Casks, and bring them along with him into *England*.

This will give occaſion to increaſe our *Inquires* for *Greenland*; which perhaps may be inſerted in the *Book* of the next Month.