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## **INTRODUCTION.**

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IN the enumeration<sup>1</sup> of those studies which the fair sex may properly be permitted to employ some part of their time in an application to, given in our last Number, it may be remembered that history and natural philosophy stood foremost in the list. Curiosity is one of the most prevalent<sup>2</sup>, and, when properly applied, one of the most amiable<sup>3</sup>, passions of the human mind; nor can it in any way find a more rational scope for exertion, than in the recollection of historical facts, and a curious inquisition<sup>4</sup> into the wonders of creation. To this application of that passion the female part of the world are unquestionably most happily adapted.

Undisturbed by the more intricate<sup>5</sup> affairs of business; unburthened<sup>6</sup> with the load of political entanglements<sup>7</sup>; with the anxiety of commercial negotiations; or the suspense and anguish which attend on the pursuit of fame or fortune, the memories of the fair are left vacant to receive and to retain the regular [Page 130] connection of a train of events, to register them in that order which fancy may point out as most pleasing, and to form deductions from them such as may render their lives more agreeable to themselves, and more serviceable to everyone about them. Their more exalted<sup>8</sup> faculties, not being tied down by wearisome<sup>9</sup> attention to mathematical

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<sup>1</sup> The act of numbering or counting over; number told out (*Johnson’s Dictionary Online*, “Importunity, n.s.”).

<sup>2</sup> Victorious; gaining superiority (*Johnson’s Dictionary Online*, “prevalent, adj.”).

<sup>3</sup> Lovely, pleasing (*Johnson’s Dictionary Online*, “amiable, adj.”).

<sup>4</sup> Judicial inquiry (*Johnson’s Dictionary Online*, “inquisition, n.s.”).

<sup>5</sup> Entangled; perplexed; involved; complicated; obscure (*Johnson’s Dictionary Online*, “intricate, adj.”).

<sup>6</sup> An archaic spelling of unburden (*Johnson’s Dictionary Online*, “unburthen, v.a.”)

<sup>7</sup> Involvement of any thing intricate or adhesive, (*Johnson’s Dictionary Online*, “entanglement, n.s.”).

<sup>8</sup> Mysterious, elevated (*Johnson’s Dictionary Online*, “exalt, v.a.”).

<sup>9</sup> troublesome; tedious; causing weariness (*Johnson’s Dictionary Online*, “wearisome, adj.”).

investigations, metaphysical<sup>10</sup> chimeras<sup>11</sup>, or abstruse<sup>12</sup> scholastic learning, are more at liberty to observe with care, see with perspicuity<sup>13</sup>, and judge without prejudice, concerning the amazing world of wonders round them than those of men, who, very frequently by attempting to arrive at every kind of knowledge, find themselves stopped short in their career by the limited period of life, before they can properly be said to have reached any.

To gratify and furnish food for this laudable<sup>14</sup> curiosity, therefore, in both these branches of knowledge, shall be one of our principal aims in the prosecution of this work; yet as amusement no less than instruction will ever constitute one of the main columns of our edifice<sup>15</sup>, and that our wish is to render the ladies though learned not pedantic<sup>16</sup>, conversable rather than scientific, we shall avoid entering into any of those minutiae<sup>17</sup>, or diving into those depths of literature, which may make their study dry to themselves, or occasion its becoming tiresome<sup>18</sup> to others.

If therefore we treat of philosophy, it shall be polished from the rust of theoretical erudition<sup>19</sup>, and adorned<sup>20</sup> with all those advantages which a connexion with the politer arts and sciences can throw upon it. If of history, a pleasing relation of the most interesting facts shall be endeavoured<sup>21</sup> at, the movement [Page 131] of the grand machine of government shall indeed be set before our readers, and the influence of each apparent wheel be rendered visible: but we shall think it unnecessary to look into every secret spring whereby these wheels were actuated<sup>22</sup>; and shall dispense with entering into the never to be discovered causes of the rise and fall of nations now no more, to make room for the more useful knowledge of those movements of the human

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<sup>10</sup> Versed in metaphysics; relating to metaphysics (*Johnson's Dictionary Online*, “metaphysical, adj.”).

<sup>11</sup> A vain and wild fancy, as remote from reality as the existence of the poetical chimera, a monster feigned to have the head of a lion, the belly of a goat, and the tail of a dragon (*Johnson's Dictionary Online*, “chimera, n.s.”).

<sup>12</sup> Hidden; difficult, remote from concept or apprehension (*Johnson's Dictionary Online*, “abstruse, adj.”).

<sup>13</sup> Clearness to the mind; easiness to be understood; freedom from obscurity or ambiguity (*Johnson's Dictionary Online*, “perspicuity, n.s.”).

<sup>14</sup> Praise-worthy; commendable (*Johnson's Dictionary Online*, “laudable, adj.”).

<sup>15</sup> A fabric; a building; a structure (*Johnson's Dictionary Online*, “edifice, n.s.”).

<sup>16</sup> Awkwardly ostentatious of learning (*Johnson's Dictionary Online*, “pedantic, adj.”).

<sup>17</sup> The small, precise, or trivial details of a thing (*Johnson's Dictionary Online*, “minutiae, n.s.”).

<sup>18</sup> Wearisome; fatiguing; tedious (*Johnson's Dictionary Online*, “tiresome, adj.”).

<sup>19</sup> Learning; knowledge obtained by study and instruction (*Johnson's Dictionary Online*, “erudition, n.s.”).

<sup>20</sup> To dress; to deck the person with ornaments (*Johnson's Dictionary Online*, “adorn, v.a.”)

<sup>21</sup> Labour directed to some certain end; effort to obtain or avoid (*Johnson's Dictionary Online*, “endeavour, n.s.”)

<sup>22</sup> Put into action; animated; brought into effect (*Johnson's Dictionary Online*, “actuate, adj.”)

heart on which depend the happiness or ruin<sup>23</sup> of in-dividuals. If geography should form, as we pro-pose it shall, one portion of each number, it will not be with us the meer description of large tracts of land, where woods and plains, mountains and valleys, rivers and sandy deserts occur alike in all; but only a detail in every country of those things which are peculiar<sup>24</sup>to itself: a picture not of the face of the earth, of sea and air, in different latitudes and longitudes, but a more varied prospect of hu-man nature diversified<sup>25</sup> by different laws, by dif-ferent constitutions<sup>26</sup>, and different ideas.

Thus much will be sufficient to premise<sup>27</sup> in re-gard to the matter of our researches on these kind of subjects, in order to obviate<sup>28</sup> the horrid idea which the word philosophy might perhaps otherwise impress on the minds of our female readers, who might from that term expect to find a work intended and calculated chiefly for their amusement and in-struction, loaded with dry and abstruse<sup>29</sup>investiga-tions, which some of them might not have time, or others even want attention, to examine with the application necessary to become mistresses<sup>30</sup> of them; and which if they were attained would stand a [Page 132] chance of more than ten to one of exciting the outcry<sup>31</sup> of the world against them.

As to the method we intend to pursue, how-ever, something, though not much, will be neces-sary to add. Which will be only to observe that no regular course of philosophy, no long train of historical events, nor any close confinement<sup>32</sup> to one branch of geographical knowledge, shall be aimed at in our essays on these subjects. Variety is the soul of study, as well as the pleasure of life; and a thousand useful pieces of knowledge steal into the vacancies<sup>33</sup> of our mind when

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<sup>23</sup> Destruction; loss of happiness or fortune; overthrow (*Johnson's Dictionary Online*, “ruin, n.s.”)

<sup>24</sup> To make different from another; to distinguish (*Johnson's Dictionary Online*, “peculiar, adj.”)

<sup>25</sup> To make different from another; to distinguish (*Johnson's Dictionary Online*, “diversity, v.a.”)

<sup>26</sup> Temper of body, with respect to health or disease (*Johnson's Dictionary Online*, “constitution, n.s.”)

<sup>27</sup> To explain previously; to lay down premises (*Johnson's Dictionary Online*, “premise, v.a.”).

<sup>28</sup> Obviate, v, To forget, commit to oblivion (*Johnson's Dictionary Online*, “obviate, v.a.”).

<sup>29</sup> Difficult, remote from conception or apprehension. It is opposed to obvious and easy (*Johnson's Dictionary Online*, “abstruse, adj.”).

<sup>30</sup> A woman who governs: correlative to subject or to servant (*Johnson's Dictionary Online*, “mistress, n.s.”).

<sup>31</sup> Clamour of detestation (*Johnson's Dictionary Online*, “outcry, n.s.”).

<sup>32</sup> restraint of liberty (*Johnson's Dictionary Online*, “confinement, n.s.”).

<sup>33</sup> Listlessness; emptiness of thought (*Johnson's Dictionary Online*, “vacancy, n.s.”).

detached, which would never find their way thither<sup>34</sup> if they were entangled<sup>35</sup> with each other, or mingled<sup>36</sup> in the grand mass of philosophical enquiries.

Learning, in short, is the old man’s bundle of rods: when bound up in the cluster<sup>37</sup>, it is almost im-possible to be overcome, yet every single twig may easily be mastered. In short, we see not the labour we have to go through, when it is presented to us in minute portions; yet still it answers the end proposed, ‘Small sands the mountain, moments make the year.’ We accumulate knowledge by golden grains, and find ourselves possessed of an ample<sup>38</sup> treasure before we are even aware that we have attained the ne-cessary store for our passing easily through life.

To render this accumulation therefore thus easy, we shall fix ourselves to no peculiar order, but make variety<sup>39</sup> our aim; transport our reader by turns through all the regions of earth, air, and ocean, and to different climates, with expedition be-yond [Page 133] the power of a magician’s wand. No bars of time, of place, or distance, or even impossibility itself, shall stop our progress. One Number of our work perhaps shall leave us admiring the stupen-dous<sup>40</sup> fabric of the immense extended universe; the next shall find us aiding our limited sight by help of glasses in observations on a world of un-known beings contained within a drop of fluid, or forests waving in the narrow circuit of a small piece of moss. To-day we shall converse with almost our cotemporaries, enquire their actions, and cen-sure or applaud them as we please; to-morrow shall introduce us to an intercourse with the great founders of long abolished empires. One page shall teach the manners used by nations where splendor and magnificence surpass even the most volatile imagination; the next point out the va-rious artifices which want, the parent of inventive labor, instructs the poor unhappy savage to make use of for the supply of those necessities which bar-ren wilds and mountains desolate deny the fuller solace of. In short, every thing curious, every thing instructive, every thing entertaining, shall be carefully sought out, and offered to the view, without distinction or respect to order; still leav-ing to the mind of every reader to range and form them into systems according to his pleasure.

[...]

## PHILOSOPHY FOR THE LADIES CONTINUED.

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<sup>34</sup> To that place: it is opposed to bither (*Johnson’s Dictionary Online*, “thither, adv.”).

<sup>35</sup> To puzzle; to bewilder (*Johnson’s Dictionary Online*, “entangle, v.a.”).

<sup>36</sup> To be mixed; to be united with (*Johnson’s Dictionary Online*, “mingle v.n.”).

<sup>37</sup> A bunch; a number of things of the same kind growing or joined together (*Johnson’s Dictionary Online*, “cluster, n.s.”).

<sup>38</sup> Unlimited; without restriction (*Johnson’s Dictionary Online*, “ample, adj.”).

<sup>39</sup> Change; succession of one thing to another; intermixture of one thing with another (*Johnson’s Dictionary Online*, “variety, n.s.”).

<sup>40</sup> Wonderful; amazing; astonishing (*Johnson’s Dictionary Online*, “stupendous, adj.”).

*Of the Metamorphoses of ANIMALS, and the several Changes observable in ANIMAL LIFE.*

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THERE scarcely ever perhaps was any sys-tem, doctrine<sup>41</sup>, or opinion broach'd with more assurance, or that, for the time of its vogue<sup>42</sup>, met with a greater and more universal approbation<sup>43</sup>, than that which urg'd the idea of a metempsychosis<sup>44</sup>, or transmigration<sup>45</sup> of the soul, the spring or source of action, into various organized bodies, in which it had opportunities of exerting itself in different manners, and of producing different effects. Py-thagoras, who was perhaps the wisest as well as the most humane of all the heathen<sup>46</sup> philosophers, was, if not the first, at least the most considerable amongst all those who gave any sanction<sup>47</sup> to a prin-ciple, which, however productive of the most de-sirable effects, has nevertheless appeared extremely absurd; and, consequently, in ages more enlight-end [Page 230] in philosophical, tho' perhaps less so in the more advantageous branches of real knowledge, has been rejected as entirely dissonant<sup>48</sup> to experimental conviction<sup>49</sup>; and therefore, without trial, judge, or jury, deserving to be cast aside by those who think they can know nothing unless they are masters of every thing; and would almost renounce<sup>50</sup> an inter-course with the Lord of nature, unless they thought themselves able to dive into every motive of his actions.

[pg 233] This being premised, from whence<sup>51</sup> could be derived the doctrine of the Metempsychosis, or transmigration of the soul; but from a similar trans-migration of the more visible soul; that is to say, of animal life, distinguishable from the slightest observation of Nature's works, and hourly perform-ed under our very eyes? Of these changes there are many varieties; of which it is impossible that the ancient philosophers, who were perhaps closer and more accurate observers than the moderns, could have been ignorant of in their fullest extent:

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<sup>41</sup> The principles or positions of any sect or master; that which is taught (*Johnson's Dictionary Online*, "Doctrine, n.s.").

<sup>42</sup> Fashion; mode (*Johnson's Dictionary Online*, "Vogue, n.s.").

<sup>43</sup> The act of approving, or expressing himself pleased (*Johnson's Dictionary Online*, "Approbation, n.s.").

<sup>44</sup> The transmigration of souls from body to body (*Johnson's Dictionary Online*, "Metempsychosis, n.s.").

<sup>45</sup> Passage from one place or state into another (*Johnson's Dictionary Online*, "transmigration, n.s.").

<sup>46</sup> Gentle; pagan (*Johnson's Dictionary Online*, "heathen, adj.").

<sup>47</sup> The act of confirmation which gives to any thing its obligatory power; ratification (*Johnson's Dictionary Online*, "Sanction, n.s.").

<sup>48</sup> Harsh; unharmonious (*Johnson's Dictionary Online*, "dissonant, adj.").

<sup>49</sup> Detection of guilt, which is, in law, either when a man is outlawed, or appears and confesses, or else is found guilty by the inquest (*Johnson's Dictionary Online*, "Conviction, n.s.").

<sup>50</sup> To declare renunciation (*Johnson's Dictionary Online*, "Renounce, v.n.").

<sup>51</sup> From what source (*Johnson's Dictionary Online*, "whence, adj.").

and as even the very husbandman<sup>52</sup> and labourer must also be well informed of several of them, it is not in the least improbable that an advantageous use might be made of these so well-known circum-stances, for the illustrating and enforcing opinions, which it was necessary to inculcate the most forcibly in those minds which were the least capable of speculative or hypothetical theology.

Here, however, let us drop this conjecture<sup>53</sup>, which I have rather introduced with a view of corroborating the principle which I first set out with in defence of the study of philosophy, viz. that the observations we cannot avoid making in the course of it, may be employed with great propriety towards humanizing the heart, and producing the most amiable<sup>54</sup> effects in the general oeconomy of life and government. Was I to expatiate<sup>55</sup> farther on the very subject before us, it might not perhaps be difficult to evince<sup>56</sup> that these changes, even of the very lowest class of animals, that is to say, of the [Page 234]insect tribe, might be rendered not unserviceable<sup>57</sup> even in the present more enlightened period, when christianity and revelation have drawn us out of the labyrinths of doubt and suggestion into the plainer and unwinding paths of more assured truth; yet still, I say, these changes might form to us, by analogy, the idea of a future and more exalted<sup>58</sup> state; and convince us, that whilst we see the very minutest animals undergoing amazing alter-ations and metamorphoses, rising from the gro-velling state of a grub or water-worm, to range the wide expanse of air, before they submit to the uni-versal law of annihilation<sup>59</sup>, it must be impossible that the Lord of them all, for whose use, amusement, or instruction, they have all been created, should only pass through a series of years, for the most part miserable ones, even with those who possess the happiest lot on earth, in little more than meer animal existence, and then sink down into the grave in common with them all, without enjoying some more exalted privilege; and, in proportion to the rank he here possess'd, becoming less encumber'd<sup>60</sup> and fit to travel through and fully relish those other works of the Creator, of which even now, before 'We have shaken off this mortal coil<sup>61</sup>,' The very idea

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<sup>52</sup> One who works in tillage (*Johnson's Dictionary Online*, "husbandman, n.s").

<sup>53</sup> Idea; notion (*Johnson's Dictionary Online*, "conjecture, n.s.").

<sup>54</sup> Lovely; pleasing (*Johnson's Dictionary Online*, "amiable, adj.").

<sup>55</sup> To range at large; to rove without any prescribed limits(*Johnson's Dictionary Online*, "expatiate, v.n.").

<sup>56</sup> To prove; to show; to manifest; to make evident (*Johnson's Dictionary Online*, "evinced, v.a.").

<sup>57</sup> Useless; bringing no advantage or convenience (*Johnson's Dictionary Online*, "unserviceable, adj.").

<sup>58</sup> To raise on high (*Johnson's Dictionary Online*, "exalted, v.a.").

<sup>59</sup> The act of reducing to nothing. The state of being reduced to nothing (*Johnson's Dictionary Online*, "annihilation, n.s.").

<sup>60</sup> To entangle; to embarrass; to obstruct (*Johnson's Dictionary Online*, "encumber, v.a.").

<sup>61</sup> Tumult; turmoil; bustle; stir; hurry; confusion (*Johnson's Dictionary Online*, "coil, n.s.").



dazzles our imagination, and con-founds our faculties; and of which we see just e-nough of to admire his power, but know not suf-ficiently to comprehend his wisdom.

From these reflections, however, let us proceed to relate to our fair readers what these changes are, of which we have here been speaking, and of which these reflectional uses may be made. [Page 235] They are of many different kinds, and proceed, as all nature’s works do, in a regular gradation<sup>62</sup>; forming an ascent, the steps of which are scarcely<sup>63</sup> visible; and yet the height, when we have reached it, most obvious and amazing.

Those kinds of animals which are viviparous<sup>64</sup>, or produce their young alive, and apparently in a complete state, undergo the slightest alterations of any; yet some even they have. Growth itself, the distension<sup>65</sup> of parts, and increase of bulk, may be looked on as the lowest steps of this ladder, and these all animals have in common, man not excepted; who, lordly as he is, when in his more perfect growth, is not only the most helpless and imperfect at his birth, but longer continues in that situation, than any other member of the animal world.—Except-ing this incremotive<sup>66</sup> change, however, he under-goes no other alteration in this life, but the addition of some excremental<sup>67</sup> parts, such as teeth, hair, &c.

Next to him, in stability of condition, we must place the quadrupeds<sup>68</sup>, who, beside these additions, seem to be annually changed by the loss and reno-vation of their external covering, which almost all of them suffer, by what we call casting their coats. This change however is very gradual, and almost invisible, the same substances, and bearing the very same marks and colours, succeeding to their prede-cessors<sup>69</sup>, so as to leave the animal in appearance the very same he was at first. One exception however there is to this, in those which undergo this alteration twice within the course of the year, as do the bears, foxes, hares, &c. in Greenland and other cold coun-tries, [Page 236] whose furs in the winter season entirely drop those colours which would render them more conspicu-ous<sup>70</sup> to their respective enemies, by standing con-tracted to the whiteness of the snow with which the whole ground is covered, and assume a pure white; which again quits them as the warmth of summer, by restoring the rest of nature to its original ap-pearance, renders such a refuge unnecessary to them.

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<sup>62</sup> Regular progress from one degree to another (*Johnson’s Dictionary Online*, “gradation, n.s.”).

<sup>63</sup> Hardly; scantily (*Johnson’s Dictionary Online*, “scarcely, adv.”).

<sup>64</sup> Bringing the young alive (*Johnson’s Dictionary Online* “viviparous”, adj.)

<sup>65</sup> To stretch out in breadth (*Johnson’s Dictionary Online* “distend”, v.a.).

<sup>66</sup> Increase; cause of growing more (*Johnson’s Dictionary Online*, “incremental” n.s.”).

<sup>67</sup> That which is voided as excrement (*Johnson’s Dictionary Online*, “excremental, adj.”).

<sup>68</sup> Having four feet (*Johnson’s Dictionary Online*, “quadruped, adj.”).

<sup>69</sup> One that was in any state or place before another (*Johnson’s Dictionary Online*, “predecessor, n.s.”).

<sup>70</sup> Obvious to the sight; seen at distance (*Johnson’s Dictionary Online*, “conspicuous, adj.”).

One class however of the viviparous animals un-dergo a more immediate and visible alteration, and that is the serpent kind, who, having no hair or furr to lose more gradually, cast their whole covering at once in certain periods; and are so dexterous<sup>71</sup> in the doing this, although devoid<sup>72</sup> of the assistance of feet or claws, that the whole skins of them will frequently be found entire, with-out even so much as the cornea, or outward case of the eyes, which is affixed to the rest of the exu-vium,<sup>73</sup> being at all broken. From this renovation, which was well known to the ancients, and which is even attended by an additional brilliancy of co-louring, a fresh glow of beauty, and a renewal of that strength and vigour which is constantly abated<sup>74</sup> some little time before the change is brought about, it was that the antient<sup>75</sup> writers considered the snake as an emblem<sup>76</sup> of health; as may be seen in its be-ing made the symbol of Esculapius<sup>77</sup>, the God of physic, and a representation of time and eternity, ever destroyed and ever renewing, as we find from many of their coins; in which this animal, hold-ing his tail in his mouth, is constantly attended with some legend or device expressive of dura-tion.

[Page 237] Next to these are the oviparous<sup>78</sup> animals, or those who make their first appearance in a state of intire inaction<sup>79</sup>, and devoid of any sign of life, but that of some kind of vital warmth; but yet afterwards, either by the natural heat of the tender parent, by the warmth of the surrounding atmosphere, or by the more intense rays of the sun, are, as it were, ripened by degrees; and being secured, through the period of infantile inactivity, in a cell wherein food, raiment<sup>80</sup>, and lodging are dispensed within themselves, they at length burst forth, some in their fully complete state, as the lizards, spiders, crabs, lobsters, &c. and in general all the species of fish; and others, amongst which are all the bird-class, requiring the same degree of perfecting

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<sup>71</sup> Expert at any manual employment; active; ready; as, a *dexterous* workman (*Johnson's Dictionary Online*, “dexterous, adj.”).

<sup>72</sup> Empty; vacant; void (*Johnson's Dictionary Online* “devoid, adj.”).

<sup>73</sup> Cast skins, shells, or coverings of animals; any parts of animals which are shed or cast off, whether recent or fossil. (*Oxford English Dictionary*, “exuvium, n.”).

<sup>74</sup> To lessen, to diminish (*Johnson's Dictionary Online*, “abate, v.a.”).

<sup>75</sup> Old; that happened long since; of old time; not modern. *Ancient* and *old* are distinguished; *old* relates to the duration of the thing itself, as, an *old* coat, a *coat* much worn; and *ancient*, to time in general, as, an *ancient* dress, a habit used in former times. But this is not always observed; for we mention *old customs*; though *old* be sometimes opposed to *modern*, *ancient* is seldom opposed to *new*. (*Johnson's Dictionary Online*, “ancient, adj.”).

<sup>76</sup> An occult representation; an allusive picture; a typical designation (*Johnson's Dictionary Online* “emblem, n.s.”).

<sup>77</sup> A physician (*Oxford English Dictionary*, “Esculapius, n.”).

<sup>78</sup> Bringing forth eggs; not viviparous (*Johnson's Dictionary Online*, “oviparous, adj.”).

<sup>79</sup> Cessation from labour; forbearance of labour (*Johnson's Online Library*, “inaction, n.s.”).

<sup>80</sup> Vesture; vestment; cloths; dress; garment;coverings. A word now little used but in poetry (*Johnson's Dictionary Online*, “raiment, n.s.”).



that the viviparous ones do, by the addition of their excrementitious<sup>81</sup> parts, such as feathers, &c.—And of these creatures almost every species that we are acquainted with stands in need besides of those ad-ditional alterations we have mentioned in the vivi-parous<sup>82</sup> classes. The birds of all sorts moult<sup>83</sup> their feathers at certain periods, and even change the colour of them in the winter seasons of the cold countries, as we have described the quadrupeds<sup>84</sup> to do by their furs. The lizard kind drop their skins like the snakes, (which they the nearest resemble in substance, and even in figure, excepting the addition of four very short feet) and some of them, particu-larly the water-newt, so frequently as once in every fortnight or three weeks; and all the spider, crab, and lobster kind, whose outward coverings are crustaceous, and therefore incapable of distention<sup>85</sup>, and so connected as not to be gradually dropped like [Page 238] hair or feathers, cast their shells entire at certain times of the year, when nature kindly provides them with such supplimentary juices as, by a sort of exudation from their pores, form a new shell beneath.

Now, however, let us proceed to those whose metamorphoses are more complete and distinct; and which, being first allodged by the parent in one ele-ment, or appearing fully possessed of animal life under one figure, do afterwards assume another and very different form, and find their food, their bu-siness, and their pleasure in another and very diffe-rent element.

Of these some live their first period in the earth, others in the water. The inhabitants of this last named element content themselves with making earth their residence in their completer<sup>86</sup> state; whilst those who first creep on the earth, when be-come more perfect, usually find the air the region where their more improved form is enabled to ex-ert its abilities.

As we do not propose to enter here into a parti-cular natural history, but only to treat of a general property, we need only mention a single example of each kind. The frog is the most universally known instance of the first sort; the egg of which, being laid and nourished in the water, produces a small, but lively animal, which we call a tadpole. Its body is almost globular, and seems furnished with no other limbs but a thin filmy tail, which serves to steer and move its body very briskly in the water, to which its residence is entirely confined, during its continuance in this form; yet, after a [Page 239]certain space of time, small legs and feet begin to be discernible under the loosened skin of this little creature, which gradually bursting their way thro' it, first

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<sup>81</sup> Containing excrements; consisting of matter excreted from the body; offensive or useless to the body (*Johnson's Dictionary Online*, “excrementitious, adj.”).

<sup>82</sup> Bringing the young alive; opposed to *oviparous*. (*Johnson's Dictionary Online*, “viviparous, adj.”).

<sup>83</sup> To shed or change the feathers; to lose feathers. (*Johnson's Dictionary Online*, “moult, v.n.”).

<sup>84</sup> An animal that goes on four legs, as perhaps all beasts. (*Johnson's Dictionary Online*, “quadruped, n.s.”).

<sup>85</sup> The act of separating one part from another. (*Johnson's Dictionary Online*, “distention, n.s.”).

<sup>86</sup> No missing parts, also described as particularly complete (*Johnson's Dictionary Online*, “completer, adj.”).

one, then a second, and so to the number of four, and lastly, dropping the finney tail which had hitherto<sup>87</sup> been so very useful and necessary to it, it now, as if it disdained the element it had first been bred in, leaps on shore, and springing over large tracts of land, becomes changed from a fish to a per-fect terrestrial quadruped, and ranges at large over that very ground on which during its former state it would have been death for it to have been cast.

Of the other part of metamorphosis<sup>88</sup> of these states, viz<sup>89</sup>. from the earth to the air, we shall men-tion at present only the beetle class, and more par-ticularly the cock-chaffer<sup>90</sup>, or jeffry-cock, as an in-sect universally known. The female of this ani-mal lays her eggs in the earth, where, by means of an instrument, which nature has purposely provided her with, she is able to deposit them at some depth below the surface. Each of these, after a due time, is hatched into a soft white jointed grub, with six short clawed feet, and armed about the head, which is of a dark-brown colour, with a shelly coat, and two or three pair of very strong fangs or for-cipes, by which means it is most amply furnished with the means of forcing its way in the mold where it was lodged, and of cutting and tearing to pieces for its nourishment the roots not only of the ten-derer herbage, but even those fibres which the stronger roots of trees push forth to form a surer hold in the ground, to both which these voracious<sup>91</sup> [Page 240] animals frequently do very great mischief. After continuing however in this situation, with no dif-ference but increase of bulk, for two whole years, a shelly covering forms over its soft body; a pair of fine and filmy wings grow from the top of his back, to preserve which from danger, when unne-cessary for use, a pair of crustaceous<sup>92</sup> coverings are provided, and now forcing his way thro<sup>93</sup> the surface of the ground, he comes forth a lively inhabitant of the air; and soaring at will wherever he pleases, seems, by a buzzing song, to proclaim his satisfac-tion at being able now with equal greediness to de-vour the leaves and fruits, as he had before done the roots and fibres of whatever plant or tree he chuses to fix upon.

## PHILOSOPHY FOR THE LADIES CONTINUED.

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<sup>87</sup> To this time; yet; in any time till now (*Johnson's Dictionary Online*, “hitherto, adj.”).

<sup>88</sup> The changes an animal undergoes, both in its formation and growth; transformation in shape, form (*Johnson's Dictionary Online*, “metamorphosis, n.s.”).

<sup>89</sup> To wit; that is. A barbarous form of an unnecessary word. (*Johnson's Dictionary Online*, “viz, n.s.”).

<sup>90</sup> Any of several large European chafers of the genus *Melolontha*, (family Scarabaeidae), the adult of which is chiefly brown and flies at dusk in spring; also called *maybug*. (*Oxford English Dictionary*, “Cock-chaffer, n.s.”).

<sup>91</sup> Greedy to eat; ravenous; edacious. (*Johnson's Dictionary Online*, “voracious, adj.”).

<sup>92</sup> A living creature corporeal, distinct, on the one side, from pure spirit, on the other, from mere matter. *Animals* are such beings, which, besides the power of growing, and producing their like, as plants and vegetables have, are endowed also with sensation and spontaneous motion. (*Johnson's Dictionary Online*, “crustaceous, n.s.”).

<sup>93</sup> contracted by barbarians from *through*. (*Johnson's Dictionary Online*, “thro, n.s.”).

*Of the Metamorphoses of ANIMALS, and the several Changes observable in ANIMAL LIFE.*

BUT the most complete, and at the same time the most universal of all these metamorphoses<sup>94</sup> is that wherein the animal appears in four several shapes: which is the case with much the greatest part of the winged inhabitants of the air of the infect tribe; some of which in their different states have been by turns tenants of earth, air, and water. End-less would it be to enumerate all the various genera<sup>95</sup> of infects who undergo these changes. We shall therefore content ourselves, as in the last case, with only mentioning one of each sort, viz<sup>96</sup>. Of those whose origin is water, and of those whose rise is from the earth.

Of the first, let the common gnat<sup>97</sup> be taken for our example. This little delicate tender insect, which the gentlest touch will destroy, the least breath of [Page 307] wind waft upon its bosom<sup>98</sup>, and the least drop of rain buries in its waves, yet first sees existence in that rough and turbulent element the water. There it is the parent lays her egg, which is hatched by some means we can little comprehend, (for heat can have no influence at the bottom of the water) comes out a little groveling worm, minute and unobservable; changing from this, however, it soon arises towards the surface of the water, where, hanging suspended on an air-bubble, no bad emblem of the general dependence of human affairs, it passes thro<sup>99</sup> a thousand fluctuations; now hurried onwards by the rapid power of tides, or the uncertain gust of winds varying at every moment, and now gliding smoothly on the calm even sur-face of a glassy dream, till at length seizing on the happy moment for deliverance from this sus-pence, it drops the slough<sup>100</sup> which now envelops it, and mounting into air, quits and disdains alike its helpless state of infancy, and its precarious anxious situation when brought to somewhat more appa-rent ripeness. Reflect on this, oh man, and think what art thou but a poor insect, crushed before the moth!

As to the land metamorphosis of this com-pleatest kind, we need go no further to illustrate it, than to that useful animal the silk-worm, as he is perhaps the most perfect of this class of insects. His first state is, as that of all others of his kind, the egg. From this he issues a small black maggot<sup>101</sup>, which, after having shifted many various coats, and increased his bulk to upwards of a thousand times its original size, weaves out of his own bowels a [Page 308] silken monument

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<sup>94</sup> Transformation; change of shape (*Johnson's Dictionary Online*, "Metamorphosis, n.s.").

<sup>95</sup> In science, a class of being, comprehending under it many species: as *quadruped* is a *genus* comprehending under it almost all terrestrial beasts (*Johnson's Dictionary Online*, "genus, n.s.").

<sup>96</sup> [This word is *videlicet*, written with a contraction.] To wit; that is. A barbarous form of an unnecessary word (*Johnson's Dictionary Online*, "Viz, n.s.").

<sup>97</sup> A small winged stinging insect (*Johnson's Dictionary Online*, "gnat, n.s.").

<sup>98</sup> The breast; the heart (*Johnson's Dictionary Online*, "bosom, n.s.").

<sup>99</sup> contracted by barbarians from *through* (*Johnson's Dictionary Online*, "thro, n.s.").

<sup>100</sup> The skin which a serpent casts off at his periodical renovation (*Johnson's Dictionary Online*, "slough, n.s.").

<sup>101</sup> A small grub, which turns into a fly (*Johnson's Dictionary Online*, "maggot, n.s.").

in which he lies interred for a short space, and then sallies forth an elegant fly, compleat in every part, and as different from the worm it sprung from as fire from earth, or any the most pure can be from the grossest being. In this most perfect state, he ranges through creation, seems to be diverted even of the necessities of nature (for in the fly-state none of those creatures take any food) and in short appears to be transformed into a perfect sylph<sup>102</sup>, destined to nothing but the perpetuating of its species, which being once insured, it resigns its life as no longer worth the preservation.

To the first class of these changes may be referred every one of the gnat, midge, dragon-fly, and ichneumon<sup>103</sup> class; and to the latter all the fly, moth, and butterfly species. Were we to enter into particulars, the detail would be endless. This sketch, however, may suffice to turn the soul of man to a reflection on the vicissitude<sup>104</sup> and fluctuation of his own state, and to remind him that after the alterations he meets with in this life, which only lead him to that state of insensibility<sup>105</sup>, that even the minutest insect seems obliged to pass thro' ere it can reach its limited degree of perfection; there must be some final state superior to them all, and which, with him, has the advantage denied to these symbols of his happiness, that it shall last to all eternity.

### **The LION PISMIRE, or Formica-Leo in it's Several States.**

#### ***The Natural HISTORY of the FORMICA-LEO, or LION-PISMIRE.***

[Page 309]

Nature who has with the utmost care allotted<sup>106</sup> to every species of animals its peculiar place of residence and its peculiar kind of food, has also with equal wisdom furnished every individual with the means of rendering<sup>107</sup> such habitation the most commodious<sup>108</sup>, and of procuring such food with the greatest ease. Numberless expedients, numberless stratagems<sup>109</sup> has she instructed

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<sup>102</sup> “One of a race of beings or spirits supposed to inhabit the air” (Oxford English Dictionary, “slyph, n.s.”).

<sup>103</sup> A small animal that breaks the eggs of the crocodile (Johnson's Dictionary Online, “ichneumon, n.s.”).

<sup>104</sup> Regular change; return of the same things in the same succession (Johnson's Dictionary Online, “Vicissitude, n.s.”).

<sup>105</sup> Torpor; dulness of corporal sense (Johnson's Dictionary Online, “Insensibility, n.s.”).

<sup>106</sup> To adjust; to proportion, to mark out in stated quantities. (Johnson's Dictionary Online, “allot, v.a.”).

<sup>107</sup> To represent; to exhibit (Johnson's Dictionary Online, “render, v.a.”).

<sup>108</sup> Convenient; suitable; accommodate to any purpose; fit; proper; free from hindrance or uneasiness (Johnson's Dictionary Online “commodious”, adj.)

<sup>109</sup> An artifice; a trick by which some advantage is obtained (Johnson's Dictionary Online, “stratagem, n.s.”).

even the minutest insects in, for the ensnaring<sup>110</sup> and over-powering those animals which she has destined to be his prey. Of these we shall in the course of this work relate many, of which, however, there are few more curious, and at the same time more simple than that of the little animal which now falls under our consideration.

The formica-leo, or lion-pismire, is a very small insect, not much bigger than a large em-met<sup>111</sup>, which, however, notwithstanding<sup>112</sup> its name, bears no resemblance to the pismire class, either in its figure or disposition. On the contrary<sup>113</sup>, as the laborious ant ranges about every where with the greatest industry<sup>114</sup> to find its food in the summer-time, and lay it up in storehouses for the winter; the animal we are speaking of keeps itself ever con-fined to a single spot, waiting with a most amazing degree of patience and perseverance for the supply of the present moment, as chance shall throw it in its way; nay<sup>115</sup>, even when that chance has so far favoured<sup>116</sup> him as to bring some devoted victim to-wards his cell, he instead of advancing forwards to [Page 310] lay hold on it, constantly retires from it, as if he seemed to make it a point that the destruction of it should be entirely its own act, or unavoidable misfortune.

The form of the lion-pismire is that represented at Fig. I. and II. in the plate annexed to this work, of which the first represents the back, and the other the belly, although both about four times as big as life. The body of it is of an annular<sup>117</sup> texture, by which means the tail is rendered<sup>118</sup> extremely pliable<sup>119</sup> and apt<sup>120</sup> for the use which we shall hereafter de-scribe. It has six legs, placed as those of most in-sects are in the thorax<sup>121</sup>. Its head is small and flat, and from the forepart of it two pretty long horns shoot out, and between them a pair of serrated or saw-like forcipes<sup>122</sup>, wherewith it destroys and tears to pieces those creatures which are unfortunate enough to fall within its reach. The horns are about the sixth part of an inch in length, and bend like hooks in the extremity. Towards their insertion appear two small eyes very black and lively,

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<sup>110</sup> To intrap; to catch in a trap, gin, or snare; to inveigle. (*Johnson's Dictionary Online*, “insnare, v.a.”).

<sup>111</sup> An ant; a pismire. (*Johnson's Dictionary Online*, “emmet, n.s.”).

<sup>112</sup> Nevertheless; however. (*Johnson's Dictionary Online*, “notwithstanding, conj.”).

<sup>113</sup> Opposite; contradictory; not simply different, or not alike, but repugnant, so that one destroys or obstructs the other (*Johnson's Dictionary Online*, “contrary, adj.”).

<sup>114</sup> Diligence; assiduity (*Johnson's Dictionary Online*, “industry, n.s.”).

<sup>115</sup> No; an adverb of negation (*Johnson's Dictionary Online*, “nay, adv.”).

<sup>116</sup> Regarded with kindness (*Johnson's Dictionary Online*, “favoured, participial adj.”).

<sup>117</sup> In the form of a ring (*Johnson's Dictionary Online*, “annular, adj.”).

<sup>118</sup> To represent; to exhibit (*Johnson's Dictionary Online*, “render, v.a.”).

<sup>119</sup> Easy to be bend; flexible (*Johnson's Dictionary Online*, “pliable, adj.”).

<sup>120</sup> To fit (*Johnson's Dictionary Online*, “apt, adj.”).

<sup>121</sup> *Zoology*. The middle region of the body of an arthropod, between the head and the abdomen (*Oxford English Dictionary*, “thorax”, n.s.).

<sup>122</sup> Properly signifies a pair of tongs; but is used for an instrument in chirurgery, to extract any thing out of wounds, and the life occasions (*Johnson's Dictionary Online*, “forceps, n.s.”).

and which are extremely serviceable to the creature, for he starts from the smallest objects he discovers. Other animals are furnished with wings, or feet at least, to render them expeditious in the pursuit of their prey. But this creature seems to make use of his legs for little more purpose than to bear him backwards from his prey, which as we have before observed must come to him. He is, however, provided with means of causing it to fall into the ambuscade<sup>123</sup> he prepares for it. This is the only resource he has for subsistence, the only piece of skill that he is master of. That power, however, which has provided for every one whatever may [Page 311] be needful, has rendered this one knowledge sufficient for all his purposes whilst in his terrestrial<sup>124</sup> state; for this creature, as we shall farther relate, undergoes some of those metamorphoses<sup>125</sup> which we have before given an account of. His method of obtaining food is then as follows:

The place which he always chuses<sup>126</sup> as fittest for the scene of action is a bed of dry sand, at the foot of a wall, or under some shelter where no rain can come at it, either to disconcert<sup>127</sup> his work, or prevent the effect of his operations; which could by no means answer their intended purpose, were they to be attempted either in a solid soil, or in a moist sand, neither of which would be tractable to his tools, or become serviceable to the completion of his design.

He begins to work then, by bending the hinder part of his body which tapers into a point, and then plunging it like a plough-share into the sand, which he throws up in his rear with a backward motion of his body; and thus by repeating his efforts, and taking several rounds, he at last traces out a circular furrow, whose diameter always equals the depth which he intends to sink it. Near the edge of the first furrow he opens a second, and then a third, and so on to a great number, every one of which is smaller than the preceding one; sinking himself from time to time deeper and deeper in the sand, which he throws wide with his horns, still casting it up behind him with his rail as with a spade, and by the repeated strokes of his head whirling it out of the circle till he has compleatly [Page 312] formed his cell, which is a cavity in the form of an inverted cone, or the inside of a funnel. This cell is larger or smaller in proportion to the growth, and consequently to the size of the animal; but in a full grown one, is sometimes upwards of two inches in diameter and as much in depth.

fore extends his horns, and with a sudden spring tosses the light exuvium<sup>128</sup> of the slain to at least half a foot beyond the borders of his trench. And in case his habitation should in the course

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<sup>123</sup> A private station in which men lie to surprise others; ambush (*Johnson's Dictionary Online*, "ambuscade, n.s.").

<sup>124</sup> Earthly; not coelestial (*Johnson's Dictionary Online*, "terrestrial, adj.").

<sup>125</sup> Transformation; change of shape (*Johnson's Dictionary Online*, "metamorphosis, n.s.").

<sup>126</sup> to take by way of preference of several things offered; not to reject (*Johnson's Dictionary Online*, "choose, v.a.").

<sup>127</sup> To unsettle the mind; to discompose (*Johnson's Dictionary Online*, "disconcert, v.a.").

<sup>128</sup> Cast skins; cast shells; whatever is thrown off, or shed by animals (*Johnson's Dictionary Online*, "exuviae, n.s.").



of one of these exploits be any way disconcerted<sup>129</sup> or filled up, if the aperture<sup>130</sup> becomes too large for the depth, or the declivity<sup>131</sup> loses its proper slope, he instantly sets himself to work and repairs the whole, rounding, deepening, and clear-ing the cavity with a most amazing expertness; which done, he again conceals himself in the sand, [Page 314] and waits in an apparent<sup>132</sup> state of inactivity for whatever shall fall next into his snare<sup>133</sup>.

In the doing this his patience and perseverance are so great, and nature has provided him with such abilities for abstinence, that he sometimes passes whole weeks, nay months without motion, and what is still more surprizing without food itself.

The lion-pismire, hid at the bottom of his trench, and whirling the sand on an ant to pre-vent its regaining the bank, is represented at Fig. III.

The lion-pismire, however, as I have observed before, does not pass his whole life under the form we have here described. He is to become a fly; but before he can undergo so great and extraordinary a metamorphosis<sup>134</sup>, it is necessary that he should pass through a period of temporary death, for which state he prepares in the following manner, building to himself a secure and convenient tomb<sup>135</sup>, wherein he lies decently inurned till the appointed moment when he is to arise from his inactive state, and be-come the inhabitant of another element.

When the time comes for this resignation<sup>136</sup> of his first life, he troubles himself no further about the order and form of his trench<sup>137</sup>, but falls to work in the sand, striking out a great number of irregu-lar tracks in it, with an eagerness that appears as if it was designed to throw him into a sweat. Be this as it will, it is certain that his body becomes at this time covered over with a viscous moisture, which as he rolls himself about in the sand, where-in he plunges himself in every direction, fixes and [Page 315] unites all the grains he touches. With these sandy particles and the dried glew<sup>138</sup> that consolidates them, he forms a crust which encompasses his whole body like a little ball of five or six twelfths of an inch diameter (Vid. fig. IV.) Within this ball,

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<sup>129</sup> To unsettle the mind; to discompose (*Johnson's Dictionary Online*, “disconcert, v.a.”).

<sup>130</sup> The act of opening (*Johnson's Dictionary Online*, “aperture, n.s.”).

<sup>131</sup> Inclination or obliquity reckoned downwards; gradual descent; not precipitous or perpendicular: the contrary to acclivity (*Johnson's Dictionary Online*, “declivity, n.s.”).

<sup>132</sup> Visible; in opposition to secret (*Johnson's Dictionary Online*, “apparent, adj.”).

<sup>133</sup> Any thing by which one is intrapped or intangled (*Johnson's Dictionary Online*, “snare, n.s.”).

<sup>134</sup> Transformation; change of shape. (*Johnson's Dictionary Online*, “metamorphosis, n.s.”).

<sup>135</sup> A monument in which the dead are enclosed. (*Johnson's Dictionary Online*, “tomb, n.s.”).

<sup>136</sup> Submission; unresisting acquiescence (*Johnson's Dictionary Online*, “resignation, n.s.”).

<sup>137</sup> A pit or ditch (*Johnson's Dictionary Online*, “trench, n.s.”).

<sup>138</sup> A viscous cement made by dissolving the skins of animals in boiling water, and drying the gelly (*Johnson's Dictionary Online*, “glew, n.s.”).

how-ever, he reserves to himself a sufficient space to move about; and as a bare wall of sand would be too harsh and cold for him to remain happily in, he lines it throughout with a kind of silk tapestry<sup>139</sup> of his own weaving, composed of threads formed from his bowels<sup>140</sup>, of a beautiful pearl colour, and in-finitely surpassing in fineness that of the silk-worm. Yet whilst it is thus commodiously<sup>141</sup> and elegantly furnished within-side, the exterior still retains the same rugged and undesirable appearance, by which it escapes the notice of birds and other animals of prey, who might perhaps be tempted by a more alluring outside.

In this situation he lives secluded from the world, for six weeks or two months, and sometimes more: at the end of which period nature having performed her secret work, he divests himself of his horns, paws, and skin, his spoils<sup>142</sup> sink to the bottom of the ball, like a suit of cast-off cloathing, and his figure is then that of the nymp<sup>h</sup>a<sup>143</sup>, repre-sented greatly magnified, and in two different di-rections at Fig. V. and VI. when tearing away his tapestry and bursting his rocky enclosure, he comes out a perfect animal of the dragon-fly kind, fur-nished with four large filmy wings, with which he quits the obscurity of his former state; becomes divested<sup>144</sup> of his barbarity and subtle inclinations, as well as of his cumbersome weight, and in short ap-pears [Page 316]entirely a new animal, as is shewn in Fig. VII.

The animal before us, however, is not the only example of this kind of subtilty in the insect world. There has been discovered another creature, which from the resemblance it has to the lion-pismire in the method of digging a trench for in trapping its prey, has been distinguished by the authors who have described it by the name of the vermis-leo, or lion-worm. But as what we have said of the for-mica-leo, will equally describe the method of this creatures procuring its food, we shall not trou-ble our readers with any farther detail concerning it; but content ourselves with only presenting them a drawing of it at Fig. VIII. in the annexed copper -plate, in which *a* and *b* represent the worm in its first state, *c* shews the nymp<sup>h</sup>a, or second period of its life, and *d* the form of the fly, or last transformation.

## **PHILOSOPHY FOR THE LADIES CONCLUDED.**

### ***Some reflections and deductions drawn from the works of Nature in general.***

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<sup>139</sup> Cloth woven in regular figures (*Johnson's Dictionary Online*, "tapestry, n.s.").

<sup>140</sup> Intestines: the vessels and organs within the body (*Johnson's Dictionary Online*, "bowels, n.s.").

<sup>141</sup> Conveniently (*Johnson's Dictionary Online*, "commodiously, adv.").

<sup>142</sup> That which is taken by violence; that which is taken from an enemy; plunder; pillage; booty (*Johnson's Dictionary Online*, "spoil, n.s.").

<sup>143</sup> A goddess of the woods, meadows, or waters (*Johnson's Dictionary Online*, "nymph, n.s.").

<sup>144</sup> To strip; to make naked (*Johnson's Dictionary Online*, "divest, v.a.").

[Page 857]

AS we are now on the point of concluding the present design of this work, it is necessary that we should form some kind of conclusion to that part of it which has had a relation to the works of Nature, and the study of philosophy. A conclusion, I say, with respect to our confined and narrow limits herein;<sup>145</sup> for such is the immense scope and extent which those subjects would have afforded us, that could the prosecution<sup>146</sup> of our plan have been pursued beyond the period of life allotted to ourselves or our children, nay,<sup>147</sup> even to the farthest stretch of time, our researches into the wonders of Nature’s inexhaustible<sup>148</sup> storehouse,<sup>149</sup> would have been no other than the pursuance<sup>150</sup> of an apparent horizon, the boundaries of which are ever flying before us, and although they every moment present us with a fresh variety of enchanting objects, yet are, with respect to ourselves, as absolutely distant at the last as at the first moment of our journey. But to proceed.

From even the very small portion concerning which we have been enabled to enter into a detail, [Page 858]of the numberless amazing properties bestowed on mankind and on the other parts of the animal creation, what is the first, the most natural deduction<sup>151</sup> that must occur to every one? What, when we perceive that every one of the organs of this grand machine, not only the larger and more apparently useful, but even the more minute, insignificant, and almost invisible ones, are furnished in the amplest manner, not barely with such parts, such limbs<sup>152</sup>, such mechanism, as are needful for their mere existence, but still more particularly with such peculiar contrivances<sup>153</sup>, such sagacity<sup>154</sup>, such intellectual faculties, as must render that existence, with respect to the place, station, and allotment of each individual, absolutely and perfectly happy:— such properties as enable every one of those beings to preserve that existence, though surrounded by numberless dangers, and to procure the means of supporting it in the midst of apparent scarcity and want. What, when we perceive these assistances bestowed<sup>155</sup> on them with an

<sup>145</sup> [*here and in.*] In this (*Johnson’s Dictionary Online*, “herein, adj.”).

<sup>146</sup> Pursuit; endeavour to carry on (*Johnson’s Dictionary Online*, “prosecution, n.s.”).

<sup>147</sup> Not only so but more. A word of amplification (*Johnson’s Dictionary Online*, “nay, adv.”).

<sup>148</sup> [*in and exhaustible.*] Not to be drawn all away; not to be spent (*Johnson’s Dictionary Online*, “inexhaustible, adj.”).

<sup>149</sup> [*store and house.*] Magazine; treasury; place in which things are hoarded and repositied against a future time (*Johnson’s Dictionary Online*, “storehouse, n.s.”).

<sup>150</sup> Prosecution; process (*Johnson’s Dictionary Online*, “pursuance, n.s.”).

<sup>151</sup> Consequential collection; consequence. (*Johnson’s Dictionary Online*, “deduction, n.s.”).

<sup>152</sup> A member; a jointed or articulated part of animals (*Johnson’s Dictionary Online*, “limb, n.s.”).

<sup>153</sup> Scheme; plan; disposition of parts or causes (*Johnson’s Dictionary Online*, “contrivance, n.s.”).

<sup>154</sup> Quick of thought; acute in making discoveries (*Johnson’s Dictionary Online*, “sagacious, n.s.”).

<sup>155</sup> To give; to confer upon (*Johnson’s Dictionary Online*, “bestow, v.a.”).

endless variety, with such a peculiar propriety to every single animal, as if each was of itself the sole and peculiar care of Providence:—What, I say, must be the immediate result of these observations, but that the whole must be the work of infinite power, of infinite wisdom, of infinite goodness? Who can cast his eyes around him even with the slightest reflection on what he sees on every side, but must immediately cry out with the royal philosopher, ‘How manifold<sup>156</sup> are thy works, O Lord! in wisdom hast thou made them all!’ [Page 859]Can any one perceive the work of amazing art, and maintain one moment’s doubt of the existence of the artist?—Must he not indeed be a fool who can say in his heart there is no God?

If then this reflection is the first that must arise from this delightful study, and most undoubtedly it is so, can we possibly give scope thereto<sup>157</sup> without proceeding still farther, and finding that due influence produced by it on our minds which must lead us to the warmest gratitude, and the most ardent<sup>158</sup> zeal<sup>159</sup> to do every thing that may lead towards the rendering our services acceptable in his sight? Can we look with unconcern on all these wondrous operations? Can we perceive these incomprehensible proofs of infinite perfection, in what are but the mechanical exertion, perhaps no more than the sport, if we may be allowed the expression, of his wisdom and power, without conceiving an idea infinitely more exalted<sup>160</sup> of the almighty mind? Can we be blind to the proofs that these present us with, of his being equally the origin of all purity, and the possessor of all ability? Can we avoid being convinced that

He must delight in virtue,

And that which he delights in must be happy?

How strong an incitement this to the practice of that virtue which, at the same time, delights that Being whose minutest pleasure ought to be our supremest<sup>161</sup> joy, and ensures our own happiness in the very act itself! How eminent<sup>162</sup> then the advantage to ourselves, and the good to society in general, which might be derived from a proper [Page 860]application of this study! and from how evident a parity of reasoning will every thinking man be convinced, whilst<sup>163</sup> he sees every part of the creation in general formed with such a connection, such a necessary dependence on

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<sup>156</sup> Of different kinds; many in number; multiplied; complicated.” (*Johnson’s Dictionary Online*, “manifold, adj.”).

<sup>157</sup> To that (*Johnson’s Dictionary Online*, “thereto, adv.”).

<sup>158</sup> Hot; burning; fiery (*Johnson’s Dictionary Online*, “ardent, adj.”).

<sup>159</sup> Passionate ardour for any person or cause (*Johnson’s Dictionary Online*, “zeal, n.s.”).

<sup>160</sup> To raise on high (*Johnson’s Dictionary Online*, “exalt, v.a.”).

<sup>161</sup> Highest in dignity; highest in authority. It may be observed that superiour is used often of local elevation, but supreme only of intellectual or political (*Johnson’s Dictionary Online*, “supreme, adj.”).

<sup>162</sup> High; lofty (*Johnson’s Dictionary Online*, “eminent, adj.”).

<sup>163</sup> During the time that; at the same time that (*Johnson’s Dictionary Online*, “whilst, adv.”).

every other part, as well as on the great whole, how strongly, I say, will he be convinced of the duty incumbent<sup>164</sup> on himself to promote as much as possible this grand design, and render his every action conducive to it, in the peculiar circle which heaven has assigned to him to fill? In how smooth, how tranquil<sup>165</sup> a path might all the transactions of this world proceed, would every man but carry the reflection from natural to moral connections; and, persuaded, that his own happiness must proportionably depend on that of every individual around him, labour to accelerate the movement of these admirably contrived<sup>166</sup> wheels, instead of clogging them with the intricate<sup>167</sup> machinery of self-interest, or dragging them back with the weight of vice and folly.

But now let us consider Nature’s works in a second point of view, let us consider man, and every other animated part of the creation as a separate and detached being, and placed in his peculiar sphere without connection or relationship with any other: even in this light how admirable, how incomprehensible is the extent of omnipotent<sup>168</sup> care in this formation of each! How amazingly is each animal provided by the all-wise Fountain of good with every means for his preservation! how admirably are dangers and necessities spread [Page 861]around him, as if they were designed to shew the unlimited wisdom of the Creator in the variety of means pointed out to him for avoiding the one, and relieving the other; at the same time that both are rendered the instruments of his happiness, from that consciousness of relief which heightens<sup>169</sup> the enjoyment of every blessing by a sensibility of the misery attached to its opposite situation.

In this view how much has man in particular to felicitate<sup>170</sup> himself upon! how many grateful reflections ought his mind to overflow with when he considers his situation as more exposed, more helpless in its original and apparent state than that of any other animal; yet in the course of life, in the period of his existence more thoroughly protected, more perfectly supplied with conveniences than that of his fellow-creatures would be, even if the various resources of them all could be united for the service of each individual. With what an eye of admiration ought he to look up to the Being, who, by a peculiar distinction, has so highly and almost partially favoured him, as to bestow<sup>171</sup> on him alone that single spark from heaven, that emanation<sup>172</sup> from himself,

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<sup>164</sup> Resting upon; lying upon (*Johnson’s Dictionary Online*, “incumbent, adj.”).

<sup>165</sup> Quiet; peaceful; undisturbed (*Johnson’s Dictionary Online*, “tranquil, adj.”).

<sup>166</sup> To plan out; to excogitate (*Johnson’s Dictionary Online*, “contrive, v.a.”).

<sup>167</sup> Entangled; perplexed; involved; complicated; obscure (*Johnson’s Dictionary Online*, “intricate, adj.”).

<sup>168</sup> Almighty; powerful without limit (*Johnson’s Dictionary Online*, “omnipotent, adj.”).

<sup>169</sup> To raise higher (*Johnson’s Dictionary Online*, “heighten, v.a.”).

<sup>170</sup> To make happy (*Johnson’s Dictionary Online*, “felicitate, v.a.”).

<sup>171</sup> To give; to confer upon (*Johnson’s Dictionary Online*, “bestow, v.a.”).

<sup>172</sup> The act of issuing or proceeding from any other substance (*Johnson’s Dictionary Online*, “emanation, n.s.”).

which in itself answers every purpose that any thing beneath immortality ought to wish for the power of executing.

Again, let us permit this last reflection to pro-duce another very proper effect on our minds, and at the same time that it inspires us with the most exalted<sup>173</sup> degree of acknowledgment to the just giver of all things, suffer it to strike us with [Page 862]a conscious humility, and curb that indecent, that dangerous pride which frequently puffs up the mind of man, and is the occasion, that, conceiving himself the lord of the universe,

Being placed so high,

He ‘sdains subjection, and thinks one step higher

Would set him high’st.

But let this lord of nature, this sovereign<sup>174</sup> of the universe, call his eyes around and see all other beings emerging into life almost in a state of per-fection; let him look on the poor servile<sup>175</sup> dog, and the domestic kitten, within two months of their appearance in the world able to quit the tender parent’s care, and seek their prey, endowed<sup>176</sup> with all the faculties to find and to destroy it. Let him observe the little duckling bursting from the egg, and rushing instantly into an unruly<sup>177</sup>, a de-structive element, to pick up food, and taste the joys of living. Let him go farther still, and mark the light, the tender, the seemingly insignificant ephemeron<sup>178</sup>, with a life destined but for some hours continuance<sup>179</sup>, burst from its embryo<sup>180</sup> state in one element, and almost imperceptibly become the inhabitant of another, enabled to rove<sup>181</sup> unlimited, and taste of every pleasure his being will admit of. After even this slight review, let him but turn his eyes back on his own infant state, and see him-self “mewling<sup>182</sup> and puking in the nurse’s arms,” unable for a time to find a use even for his very limbs; for a yet longer period of time deprived of the

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<sup>173</sup> To raise on high (*Johnson’s Dictionary Online*, “exalt, v.a.”).

<sup>174</sup> Supreme lord (*Johnson’s Dictionary Online*, “sovereign, n.s.”).

<sup>175</sup> Slavish; dependant, mean (*Johnson’s Dictionary Online*, “servile, adj.”).

<sup>176</sup> To enrich with any excellence (*Johnson’s Dictionary Online*, “endow, v.a.”).

<sup>177</sup> Turbulent; ungovernable; licentious; tumultuous (*Johnson’s Dictionary Online*, “unruly, adj.”).

<sup>178</sup> An insect, which, in its winged state, lives but for a day. (*Oxford English Dictionary*, “ephemeron, n.”).

<sup>179</sup> Succession uninterrupted (*Johnson’s Dictionary Online*, “continuance, n.s.”).

<sup>180</sup> The offspring yet unfinished in the womb (*Johnson’s Dictionary Online*, “embryo, n.s.”).

<sup>181</sup> To wander over (*Johnson’s Dictionary Online*, “rove, v.a.”).

<sup>182</sup> To shut up; to confine; to imprison; to inclose (*Johnson’s Dictionary Online*, “mew, v.a.”).



advantages of language, and still much longer under the necessity of aid, and of instruction [Page 863] to form his reasoning faculties, and render him capable of self assistance.

Again, when brought to his maturity and fullness of perfection as to his natural state, how still deficient in every particular both of attack, defence, and sustenance<sup>183</sup>! First, for attack, the lion has his teeth, the bull his horns, the eagle his talons, and the hawk his beak, either to combat with their foes<sup>184</sup> or to destroy their prey:—but what has man? None of all these. Consider him un-assisted, he could not stab the sheep, knock down the ox, or combat with the hog, did either know his weakness or their own power to resist him. With what propriety<sup>185</sup> then do we pray to the Bestower and Disposer of all life to give us our daily Bread!

Next for defence, the horse has his heels, the fox his holes, the calamary can spread a cloud of ink around him, and the torpedo strike with numbness and insensibility the creature which shall dare to touch him. The cat can swell her form to twice its size, and even a little bird distort her figure into such shapes of terror, as shall deter even animals of bulk and power from coming near her nest.—But which of these advantages does man possess? His speed the heavy elephant will over-take; he cannot dig into the earth to hide him from his foe; nor with his firmest frown or fiercest attitude drive back the hungry wolf or half starved tyger.

[Page 864] Then for his sustenance, the crocodile can change his form, and the camelion his colour, the spider spread a web, and the polypus<sup>186</sup> expand a net, to allure and to entrap their prey: but man, unaided by the means of art, and of a thousand substances not any way appertaining to himself, might starve in the midst of plenty, and daily suffer the fabled fate of Tantalus, to see perpetually before him the greatest delicacies without being able to procure or to enjoy them.

What deductions then may be drawn from these observations? Evidently the two following, with which we shall terminate this discourse: viz<sup>187</sup>. First, that whatever we may imagine of ourselves, and of our self-applied superiority, it must, if it has existence at all, be owing to the favour of that omnipotent Being, who was equally the creator of all other creatures as of ourselves; and that therefore, instead of harbouring an unbecoming pride on the possession of the peculiar gift of reason, which supplies, in one single property, all the deficiencies I have been just mentioning, we ought assuredly to be inspired with the utmost<sup>188</sup> humility united to gratitude, when we consider ourselves as selected out to enjoy that blessing from amidst such an infinite variety of

<sup>183</sup> Necessaries of life; victuals (*Johnson's Dictionary Online*, “sustenance, n.s.”).

<sup>184</sup> An enemy in war, an opponent (*Johnson's Dictionary Online*, “foe, n.s.”).

<sup>185</sup> Peculiarity of possession; exclusive right (*Johnson's Dictionary Online*, “propriety, n.s.”).

<sup>186</sup> A seam animal with many feet (*Johnson's Dictionary Online*, “polypus, n.s.”).

<sup>187</sup> This word is videlicet, written with a contraction. To wit; that is. A barbarous form of an unnecessary word. (*Johnson's Dictionary Online*, “viz, n.s.”).

<sup>188</sup> Extreme; placed at the extremity (*Johnson's Dictionary Online*, “utmost, adj.”).

his other works, every one of which appears to have an equal, and many of them even a higher claim to that most desirable preference:—and secondly, that since in natural advantages many even of the lowest and most insignificant beings seem greatly [Page 865] to excel us, there certainly must be some other part of us, some more intellectual and imma-terial part belonging to us, in which our supe-riority must necessarily consist; to which therefore we ought to pay a more particular attention; and on the cultivation<sup>189</sup> and improvement of which must wholly depend every essential view of happiness both in our present state and that which is to come.

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<sup>189</sup> The action of refining or improving a person, the mind, faculties, etc., by education or training (*Johnson's Dictionary Online*, “cultivation, n.s.”).