

Man a machine / Translated from the French of the Marquiss D'Argens.

Contributors

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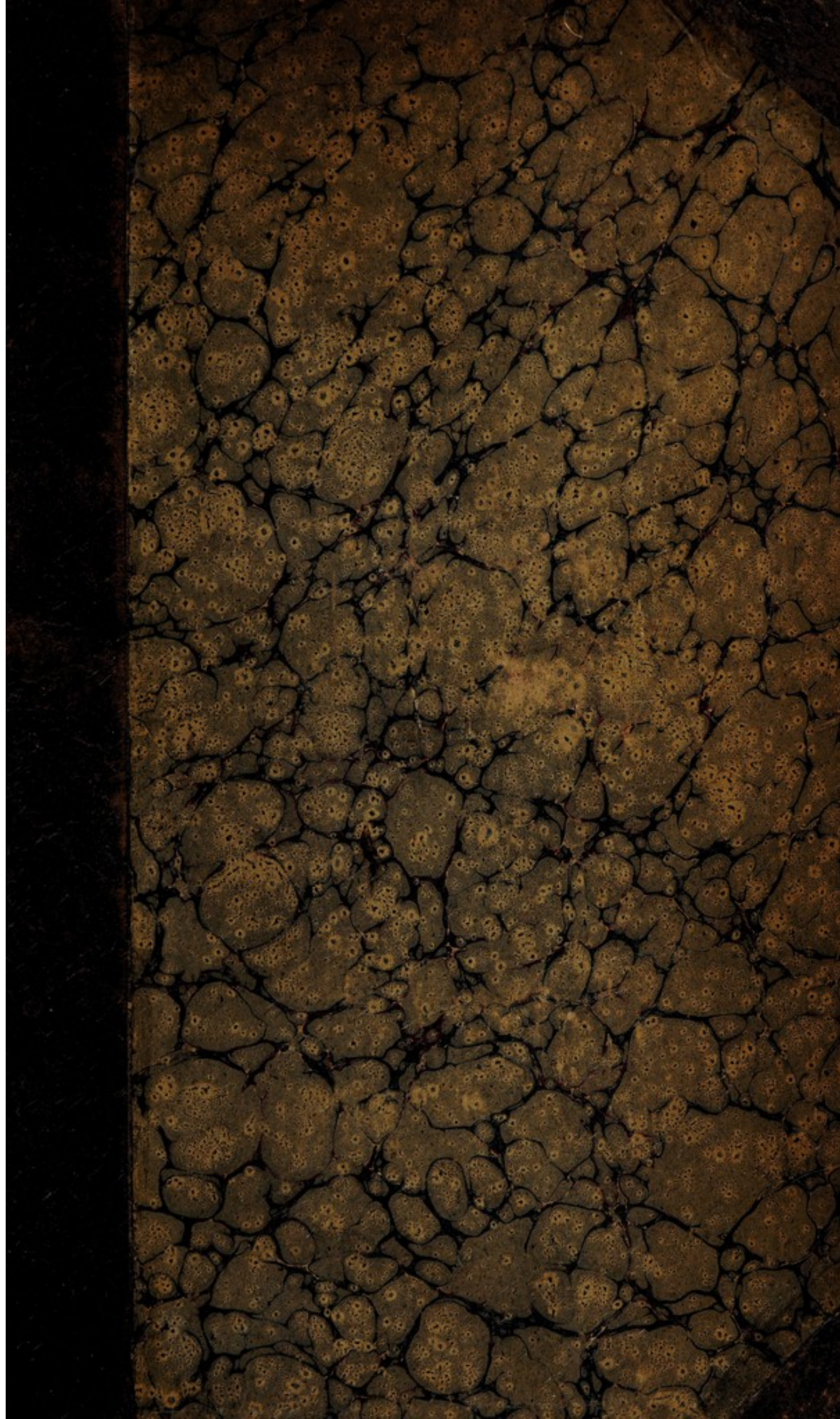
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LA METTRIE

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In fact a translation of
'L'homme machine' by
Julien Offray de la Mettrie.



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M A N
A
M A C H I N E.

Translated from the *French*
O F T H E
Marquifs D'ARGENS.



L O N D O N:
Printed for W. OWEN, at *Homer's Head*, near
Temple-Bar. M D C C X L I X.

(Price One Shilling and Six-pence.)

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M A N
A
M A C H I N E.

Translated from the French
OF THE
Machinists D'ARGENS.

1797



L O N D O N :

Printed for W. Owen, at Thomas's Head, near
Temple-Bar, in December.

(Price One Shilling and Six pence)



P R E F A C E.



O sooner had the following work made its appearance abroad, than it met with the severest and bitterest treatment from almost every quarter; some representing it as a stem of atheism, others as a work, that had a tendency to subvert all order, encourage every vice, and in a word, destroy the essence of virtue itself. This notion was propagated so industriously by a particular set of men, who seem to have an interest in opposing whatever encourages us to shake off the manacles with which custom, prejudice, and education, have fettered human reason, that, by the orders of a certain foreign court, it would have been sentenc'd to the flames, had it not been whisper'd into the ears of the leading men, that it had for its author no less a person than the marquiss D'Argens, the known favourite of the court, the darling of the ladies, the terror of bigots, and the delight of men of sense. This sudden revolution

P R E F A C E.

revolution in the fate of the work, rous'd the attention of all parties, so that MAN A MACHINE is now as well known in foreign parts as any book in Europe.

We intended to have given the reader a brief account of the author's design, to have pointed out a few instances of the surprising force of his reasoning, and in a word, to have shewn, that whatever constructions may be put upon his words, yet his intention is, to render man, inquisitive after truth, fearful of error, and suspicious of every thing that will not bear the test of reason and experience.

But if we should now undertake such a task, it would only anticipate the pleasure of the reader by a dull, and perhaps imperfect representation of those sublime parts of philosophy, which instead of being better treated of elsewhere, were never so much as known, 'till the publication of MAN A MACHINE, to which the reader is referr'd, with this wish, that he may reap as much pleasure in reading, as we have had in translating it.

MAN



MAN *a Machine.*



IS not sufficient for a philosopher to study nature and truth; he ought to have courage to speak it in favour of the few, that are willing and able to think; for as to the rest, who are voluntary slaves to prejudices, they are no more capable to come at the truth, than frogs to fly.

The systems of philosophers in respect to the soul of man, are reducible to two. The first and most ancient is the system of materialism; the second that of spiritualism.

Those metaphysicians who have attempted to prove that matter has a power of thinking, have not dishonoured their reason, because they have an advantage (for such indeed it is here) in expressing themselves with impropriety. In fact, to ask whether matter is capable of thinking, without considering it otherwise than in itself, is asking whether

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matter

matter is capable of pointing out the hours. Here 'tis obvious, we shall avoid the rock on which Mr. *Locke* unfortunately split.

The Leibnitzians with their *monades*, have raised an unintelligible hypothesis. They have rather spiritualized matter, than materialized the soul. How is it possible to define a being, whose nature is absolutely unknown to us?

Descartes and all his followers, among whom the *Mallebranchists* are also reckoned, have committed the same mistake. They admit two distinct substances in man, as if they had really seen and told them.

The wisest however have affirmed, that the soul cannot know itself, but by the light of faith: and yet as rational beings, they thought they might reserve to themselves, the right of examining what the scripture means by the word *spirit*, which it makes use of, in speaking of the human soul; and if in this research they do not agree with the divines, what wonder is it, when these very divines agree so little in other points among themselves?

We shall give here in few words, the result of all their reflections.

If there be a God, he is the author of nature, as well as of revelation; he has given us the one to explain the other; and reason to reconcile them both.

To distrust the knowledge we may draw from animated bodies, is considering nature and religion, as two contraries that destroy one another; and consequently 'tis advancing
this

this absurdity, that God contradicts himself in his different works, and deceives us.

If there be therefore any such thing as revelation, it cannot contradict nature. By nature alone, we may discover the meaning of the words of the gospel, of which experience is the true interpreter. In fact the other commentators have hitherto only embroiled the truth. Of this we shall form a judgment by the author of the *Spectacle de la nature*. “ ’Tis very strange (says he with regard to Mr. *Locke*) that a man, who degrades our soul even so far, as to think it formed of clay, should presume to set up reason for a judge, and supreme arbiter of the mysteries of faith; for, continues he, what a shocking idea should we have of christianity, were we to follow only our reason ?”

These reflections, besides their clearing up nothing in relation to faith, contain such frivolous objections against the method of those who think themselves capable of interpreting the sacred scriptures, that I am almost ashamed to lose time in refuting them.

1. The excellency of reason does not depend on that great unmeaning word (*immateriality*;) but on its force, extent, or acuteness. Wherefore a soul of clay, capable of discerning at one glance, the relations and consequences of an infinite number of ideas, that are difficult to apprehend, would be evidently preferable to a heavy and stupid soul, formed of the most precious elements.

'Tis not behaving like a philosopher, to blush with Pliny at the misery of our origin: that which bears so mean an appearance, is here a most precious thing, for which nature seems to have exerted her utmost care and application. But as man, tho' he were to spring from a still meaner source in appearance, would be nevertheless the most perfect of beings; so let the origin of his soul be what it will, if it be pure, noble, and sublime, it shines with rays of beauty that render every one that is endowed with it, worthy of respect.

The second method of reasoning, introduced by *Abbe Pluche* appears to me faulty even in his system, which has a mixture of fanaticism; for if we have an idea of faith, contrary to the clearest principles of nature, and to the most uncontestable truths, we must suppose for the honour of God and of his revelation, that such an idea is false, and that we do not as yet sufficiently comprehend the words of the gospel.

Of two things one must be admitted; either all is delusion, as well in nature, as revelation; or experience only can account for faith. But what greater folly can there be, than this of our author? Methinks, I hear a peripatetic, who says to me; "You must not credit the experiments of *Toricelli*; for if we believe them, we banish the horror of a vacuum, and then what a shocking philosophy shall we have?"

I have demonstrated the erroneousness of
Abbe

Abbe Pluche's reasoning*, in order to prove, first that if there be a revelation, it is not sufficiently evinced by the sole authority of the church, without the examination of reason, as all those bigots pretend who fear it's light. Secondly, that I might secure from insult, the method of those who may please to follow the way I lay open to them, of interpreting such things as are supernatural, and incomprehensible in themselves, by those helps, and lights we have all received from nature.

Experiments and observation alone ought to guide us here. These we find in abundance, in the writings of such physicians as were philosophers, and not in those philosophers, who were unacquainted with physic. The former have explored and unravelled the labyrinth of Man. They alone have discovered to us those hidden springs concealed under a cover, which hides from us so many wonders. They alone in a philosophical contemplation of the soul, have a thousand times surprized it in it's misery and grandeur; without despising it in one of these conditions, or idolizing it in the other. Once more, I will be bold to say, these are the only authors that have a right to speak on this subject. What would other lame philosophers say, and above all, the divines? Is it not ridiculous to hear them determine without modesty, on a subject they have never been qualified to examine thoroughly? a subject, from which they have been always diverted by dark idle stu-

* He falls evidently into a *petitio principii*.

dies, that have tintured them with a thousand, gross, childish prejudices, and to say all in one word, have plunged them over head and ears in fanaticism, which adds still to their ignorance in the mechanism of bodies.

But tho' we have chosen the best guides, yet we shall find many thorns, and obstacles in our way.

Man is a machine so compound, that it is impossible to form at first a clear idea thereof, and consequently to define it. This is the reason, that all the enquiries the philosophers have made *a priori*, that is, by endeavouring to raise themselves on the wings of the understanding, have proved ineffectual. Thus it is only *a posteriori*, or as it were by disentangling the soul from the organs of the body, that we can, I do not say, discover with evidence the nature of man, but obtain the greatest degree of probability the subject will admit of.

Let us then follow the direction of experience, and not trouble our heads with the vain history of the opinions of philosophers. To be blind, and to think we can do without this guide, is the very height of infatuation. Very justly has it been observed by a modern writer, that nothing but vanity can hinder us from drawing from second causes, what we pretend to infer from the first. We may, and even ought to admire all these subtil geniuses in their most useless labours ; I mean the *Descarteses*, the *Mallebranches*, the *Leibnitizes*, &c. but I would fain know,
what

what benefit mankind have reaped from their profound meditations, and from all their works? Let us then see, not what others have thought, but what we ought to think ourselves for the tranquility of our own lives.

As many different constitutions as there are amongst men, so many different minds, characters, and manners. Even *Galen* knew this truth, which *Descartes*, and not *Hypocrates*, as the author of the history of the soul says, has carried so far, as to say, that physic alone could change the minds and manners together with the body. It is true, that melancholy, bile, phlegm, blood, &c. according to the nature, quantity, and different mixture of these humours, not only produce differences in different men, but also render every individual different from what he was, before particular changes were induced in his fluids.

In diseases the soul is sometimes as it were eclipsed, and shews no sign of existence; sometimes one would say it was doubled, so far does passion transport it; sometimes its weakness vanishes, and a fool by the recovery of health, becomes a man of sense. Sometimes the noblest genius in the world sinks into stupidity, and never after recovers. Farewell, then to all those noble acquisitions of learning obtained with so much labour!

Here you may see a paralytic, who asks whether his leg be in bed; there a soldier who believes he still has the arm the surgeon
has

has cut off. The memory of his former sensations, and of the part to which his soul referred them, causes his delusion and species of phrenzy. It suffices to speak to him of the amputated member, to make him recollect and renew, as it were, all its former sensations; which is done with a kind of displeasure of the imagination impossible to be expressed.

One man shall cry like a child at the approaches of death, which another perhaps will laugh at. What was it that could change the intrepidity of *Canus Julius*, *Seneca*, and *Petronius* into pusillanimity and cowardice? An obstruction in the spleen, the liver, or some disorder in the *vena porta*. Why? Because the imagination is disorder'd at the same time, as the entrails, and hence arise all the different surprizing phænomena of the hysteric, and hypochondriac affections.

What shall I say of those who believe they are transformed into wolves, cocks, pipkins, or believe that the dead suck, and live upon their blood? Or why should I take notice of those who think they see their noses, or some other member chang'd into glass, and who must be advised to lye on straw for fear of breaking them; to the end that they may find again the use of those parts, and their true flesh, when upon setting fire to the straw, they are afraid of being consumed, a fear which has sometimes cured a palsy?

a palsy? I ought to pass lightly over things that are well known by every body.

Nor shall I dwell upon the effects of sleep. Behold that wearied soldier! he snores in a trench, within the noise of a hundred cannon. His soul perceives nothing, his sleep is a perfect apoplexy. A bomb is ready to dash him in pieces; perhaps he will less feel this blow, than an insect that lies under his body.

On another side, a man, whom jealousy, hatred, avarice, or ambition devour, is incapable of finding the least repose. The stillest place, the most cooling and refreshing liquors, all become a subject of uneasiness to him, who has not freed his heart from the turbulence of the passions.

The body and soul seem to fall asleep together. In proportion as the motion of the blood grows calm, a soft soothing sense of peace and tranquility spreads itself over the whole machine; the soul finds itself sweetly weighed down with slumber, and sinks with the fibres of the brain: it becomes thus paralytic as it were, by degrees, together with all the muscles of the body. The latter are no longer able to support the head; the head itself can no longer bear the weight of thought; the soul is during sleep, as if it had no existence.

If the circulation goes on with too great rapidity; the soul cannot sleep. If the soul be thrown into too great an agitation, the blood loses its calm, and rushes thro' the veins with a noise that sometimes may be distinctly

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heard:

heard : such are the two reciprocal causes of infomny. A frightful dream makes the heart beat double, and tears us from the sweet necessity of rest, as effectually as a lively pain, or pressing want. In a word, as the sole cessation of the functions of the soul produces sleep, man is subject even during some waking moments (when in reality the soul is no more than half awake) to certain sorts of revery or slumbers of the soul, which are very frequent, and sufficiently prove that the soul does not wait for the body to fall asleep. For if it does not entirely sleep, how little does it want of it? Since it is impossible for her to recollect one object, to which she gave attention, amidst that innumerable crowd of confused ideas, which as so many vanishing clouds had filled up, if I may so say, the atmosphere of the brain.

Opium has too great a relation with sleep, not to give it a place here. This drug intoxicates as well as wine, coffee, &c. every one according to it's nature, and the quantity of the dose. It renders man happy in a state, which one would think to be the grave of all thoughts, as it is the image of death. What a pleasing lethargy ! the soul would never be willing to quit it : she was torn as it were to pieces with the sharpest pains ; but she has now no other sensation, than of the pleasure of suffering no longer, and of enjoying a charming tranquillity. Opium seems even to change the will ; it forces the soul that would fain wake and divert herself, to lie down with the body
against

against her inclination. I wave mentioning here the history of poisons.

'Tis by lashing, as it were, the imagination, that coffee, that antidote of wine, dissipates our head-achs, and chagrins, without making us suffer, as the other liquor often does, the next day.

Let us consider the soul in its other wants. The human body is a machine that winds up its own springs: it is a living image of the perpetual motion. Food nourishes what a fever heats and excites. Without proper food the soul languishes, raves, and dies with faintness. It is like a taper, which revives in the moment it is going to be extinguished. Give but good nourishment to the body, pour into its tubes vigorous juices and strong liquors; then the soul, generous as these, arms itself with courage; and a soldier, whom water would have made run away, becoming undaunted, meets death with alacrity amidst the rattle of drums. Thus it is that hot water agitates the blood, which cold had calmed.

What a vast power there is in a repast! Joy revives in a disconsolate heart; it is transfused into the souls of all the guests, who express it by amiable conversation, or music. The hypochondriac mortal is overpowered with it; and the lumpish pedant is unfit for the entertainment.

Raw meat gives a fierceness to animals; and man would also become fierce by the same nourishment. This is so true, that the *Eng-*

fish, who eat not their meat so well roasted or boiled as we, but red and bloody, seem to partake of this fierceness more or less, which arises in part from such food, and from other causes, which nothing but education can render ineffectual. This fierceness produces in the soul pride, hatred, contempt of other nations, indocility, and other bad qualities that deprave man's character, just as gross phlegmatic meat causes a heavy, cloudy spirit, whose favourite attributes are idleness and indolence.

Mr. *Pope* knew perfectly well the power of gluttony, when he said

*Catius is ever moral, ever grave,
Thinks who endures a knave, is next a knave:
Save just at dinner—then prefers no doubt,
A rogue with ven'son, to a saint without.*

And a little higher the same poet says,

*See the same man, in vigour, in the gout,
Alone in company, in place or out;
Early at business, and at hazard late,
Mad at a fox-chase, wise at a debate:
Drunk at a borough, civil at a ball,
Friendly at Hackney, faithless at Whitehall.*

There was, in *Switzerland*, a magistrate called *Monfieur Steiguer*, of *Wittigkofen*: this gentleman was, when fasting, the most upright and merciful judge; but woe to the wretch who came before him when he had made a hearty

heartly dinner! he was then disposed to hang every body, the innocent as well as the guilty.

We think not, nay, we are not honest men, but as we are chearful, or brave; all depends on the manner of winding up our machine. A person would be tempted to think, at certain times, that the soul is lodged in the stomach, and that Van Helmont in placing it in the pylorus, * is not deceived but by taking a part for the whole.

To what rage and extravagance cannot hunger drive us? No longer is there any respect shewn to the bowels, to which we owe, or to which we have given life. They are torn and devoured in a detestable feast; and in the madness that seizeth us, the weakest are always sure to fall a prey to the strongest.

Pregnancy that mimic of the green-sickness, is not contented oftentimes with the depraved longings of the latter disorder; it has sometimes driven a frantic soul into the greatest extravagances; the effects of a sudden madness, which stifles the very sentiments of nature. 'Tis thus the brain, that matrix, if I may use the expression, of the soul, is perverted after its manner, together with that of the body.

Strange is that other kind of madness which is sometimes observable among these men and women, who are forc'd to continency and blest'd with good health. 'Tis not enough for that bashful modest maid to have lost all honour and shame; she makes no more of incest, than a wanton wife does of adultery. If her necessi-

* The nether orifice of the stomach.

ties do not find a quick remedy, they will not be confin'd to symptoms of an uterine affection, of madness, &c. the wretch will die of a disease, for the cure of which the world is stocked with physicians.

We need only have eyes to see the necessary influence which age has over reason. The soul follows the progress of the body, as well as of education. In the fair sex, the soul adapts itself to the delicacy of constitution: thence flow that tenderness, that affection, those lively sentiments founded rather upon passion than reason; and in fine, those prejudices and superstitions whose impression is so hard to be effaced. Man, on the contrary, whose brain and nerves participate of the firmness of all the solids, has his mind, as well as the features of his face, more nervous. Education, which women are deprived of by custom, adds still new degrees of strength to his soul. With such succours, both of nature and art, how should he not be more grateful, more generous, more constant in friendship, more firm in adversity, &c. But according to the opinion of the author of the letters on physiognomy, the sex, which is favoured with the graces of mind and body, together with almost all the tenderest and most delicate sentiments of the heart, ought not to envy man this double strength of body and mind, which seem to have been bestowed upon him for no other end but in order to render him more sensible of the attractives of beauty, and more subservient

subservient to the pleasures of that amiable part of the creation.

It is not more necessary to be as great a physiognomist as that author, to guess at the disposition of the mind, by the lines and features of the face, when they are marked in a certain degree; than it is requisite to be a great physician, in order to know a distemper, accompanied with all its outward symptoms. Examine the portraits of *Locke*, *Steel*, *Boerhaave*, *Mauvertuis*, &c. you will not be surprised to find their features strong, and their eyes aquiline. Examine an infinity of others, you will always distinguish the beauty of a great genius; and oftentimes you will know an honest man from a knave. It has been observed, that a celebrated poet of our days, has (in his portrait) the air of a rogue, joined with *Prometheus's* fire.

History furnishes us with a memorable example of the power of air. The famous duke of *Guise* was so strongly convinced, that *Henry* the III^d, who had had him so often in his power, would never dare to assassinate him, that he set out for *Blois*, where the King then resided. The chancellor *Cbyverni* being informed of his journey, cried out, *He is a lost Man*. When this fatal prediction was verified by the event, they asked him the reason.

“ It is twenty years, said he, since I have
“ been acquainted with the king: he is na-
“ turally compassionate, and even weak; but
“ I have observed, that a meer trifle makes
“ him

“ him impatient, and drives him to frenzy
 “ in very cold weather.”

One nation, we may observe, is generally heavy and stupid ; and another is sprightly, gay, and sagacious. What is this owing to, unless it be in part to the food they live on, to the feed of their parents *, or to that chaos of different elements that swim in the immense expanse of the air ? The mind has, as well as the body, its epidemical and scorbutic disorders.

Such is the power of climate, that a man who changes it, feels, in spite of him, the effects of this alteration. Man is like a walking plant, that has transplanted itself : if the climate be not the same, it must either degenerate or improve.

We learn insensibly, from those we live with, their gestures, accents, &c. just as the eye-lid falls at the threatening of a blow, or as the body imitates mechanically and involuntarily all the postures and movements of a good pantomime.

What I have now mentioned, shews that the best company for an ingenious man is his own, if he cannot find his equals. Wit contracts rust amongst those who have none : for want of exercise at tennis, the ball is undextrously returned to him who knows not how to strike it. I would rather chuse for a companion a sensible man, tho' unimproved

* The history of animals and of men, demonstrates the influence of the feed of parents, over the minds and bodies of their children.

by education, than a person who had had the misfortune of a bad one, provided the former had but sufficient youth on his side. And ill-tutored wit is like a strolling actor, whom the country has spoiled.

The different states of the soul are therefore always co-relative to the states of the body. But the better to shew all this dependency and its causes, let us make use of comparative anatomy, and open the entrails of men and brutes. What method can we have of knowing the human structure, but by being enlightened by a just comparison of the animal oeconomy of both?

In general, the form and composition of the brains of quadrupeds are very near the same with those of man. There is the same figure, the same composition throughout: with this essential difference, that man of all animals has the most brains, and fullest of windings and folds in proportion to the bulk of his body; next to him are the ape, the beaver, the elephant, the dog, the fox, the Cat, &c.

These are the animals, that resemble man the most; for we observe likewise amongst them the same gradual analogy, in relation to the callous body, in which *Lancisi* had placed the seat of the Soul, before the late Monsieur *de la Peyronnie*, who has illustrated this opinion with a variety of experiments.

After quadrupeds, birds have the largest portion of brains. Fish have big heads indeed, but void of sense; as are the heads of a great part of mankind. They have not the

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callous

callous body and have very little brains ; but insects have none at all.

I shall not expatiate in a longer detail of all the varieties of nature, nor in conjectures ; for both are infinite : as we may judge only by reading the treatises of *Willis de cerebro & de anima brutorum*.

I shall only conclude what evidently follows from these incontestable observations : first that the more savage animals are, the less brains they have : secondly, that this organ seems to be greater in some measure, in proportion to their docility : thirdly, that there is a constant and very surprizing law of nature, that the more is gained on the side of understanding and wit, the more is lost on the side of instinct. Now which overballances, the loss or the gain ?

But do not imagine, I design by this reasoning to prove that the volume of the brain alone suffices us, to judge of the docility of animals ; the quality must correspond with the quantity, and the solids and fluids be in that harmonious equilibrium, which constitutes health.

If a weak person wants not a due quantity of brain, as is often observed, yet this organ may have a bad consistency ; for instance too great a softness. The same may be said of idiots ; the defects of their brain are not always concealed from our enquiry ; but if the causes of imbecillity, folly, &c. are not sensible, how shall we ever investigate the hidden causes of the endless variety of human minds ? These would escape the subtle eyes

eyes of a linx, or of Argus. *A nothing, a minute fibre, something too subtle for the nicest anatomy,* would have made two dunces, of *Erasmus* and *Fontenelle*, as the latter himself observes in one of his most ingenious dialogues.

Besides the softness of the marrow of the brain, in children, puppies, and birds, *Willis* has observed, that the *carvernous bodies* are effaced and discoloured as it were in all these animals; and that their depressions are as imperfectly formed as in paralytic persons. He adds, what is very true, that man has the annular protuberance very large, and then in gradual diminution the ape, and other animals abovementioned; whilst the calf, the ox, the wolf, the sheep, the hog, &c. which have this part of a very small size, have the *nates* and *testes* vastly large.

Little does it signify to affect a reservedness about the consequences, which may be drawn from these observations, and many others upon this kind of inconstancy in the vessels, and nerves, &c. such a variety cannot be a meer wanton sport of nature. It proves at least the necessity of a good and complete organisation, because in the whole animal oeconomy, the soul improving gradually with the body, acquires penetration and sagacity, in proportion as the latter gains vigour and perfection.

Let us stop a little, to contemplate the different docility of animals. Doubtless the best analogy inclines the mind to believe, that the causes we have made mention of, are pro-

ductive of the whole diversity observable betwixt them and us; tho' it must be acknowledged that our weak understanding, confined to gross observations, cannot descry the hidden connections betwixt the cause and its effects. This is a kind of *harmony* which philosophers will never be able to understand.

Amongst animals, some learn to talk, and sing; they remember tunes and airs, and take the notes as perfectly, as the most skilful musician. Yet others which shew more sagacity, such as the ape, cannot succeed in this. Why so, unless it be thro' some defect in the organs of articulation?

But is this so far a defect of the conformation, as to be irremediable? In a word, is it an absolute impossibility to teach this animal to speak? really I think not.

I would take the baboon, preferably to all others, till chance leads us to the discovery of some other species more resembling ours; for there is no contradiction in supposing there may be such in countries yet unknown to us. This animal is so very like us that *Naturalists* have called it the savage man, or the man of the woods: I would take him on the same condition, as the scholars of *Ammanus*; that is to say, I would have him neither too young, nor too old: for those that are brought over into *Europe* are commonly too old. I would chuse one, that had the most sensible face, and that answered best my expectation in a thousand pretty little tricks. In fine if I found myself unfit for being his tutor, I would put him
to

to the school of that excellent master, I now mentioned, or of another, if any such exists, as skilful as he.

You know by the book of *Ammanus**, and of those who have translated his method, all the wonders that he could effect in those who were born deaf, in whose eyes as he says himself, he made the discovery of ears; and in how small a time he taught them to hear, speak, read, and write. I grant that the eyes of a deaf person see clearer, and have a quicker perception, than if he had his hearing, because the loss of one Limb, or of one sense, may encrease the strength and penetration of another: but the baboon sees and hears: he thoroughly understands what he hears and sees, and so perfectly does he comprehend the signs, that are made him, that in any other sport or exercise, I doubt not but he would make fools of *Ammanus*'s disciples. Why then should the education of baboons and monkeys be impossible? Why might they not at length, by dint of care, imitate, after the example of the deaf, the motions necessary for articulation? I dare not decide whether the organs of speech in a monkey, are incapable with all possible diligence, of attaining pronunciation: but an absolute impossibility of this kind would indeed surprize me, because of the great analogy there is betwixt the monkey and man; and besides there has hitherto been no animal found, whose inward and outward parts re-

* The author of the natural history of the soul, &c.
semble

femble him in so surprizing a manner. Mr. *Locke* who certainly was never suspected of credulity, made no difficulty in believing the history Sir *William Temple* gives us in his memoirs, of a parrot that answered pertinently to every thing it was asked, and learnt like us to hold a conversation. I am not ignorant that this great metaphysician † has been made a jest of upon this account, but had any one publicly declared to the whole world, that there were generations without eggs and females, would he, think you, have found many partizans? Yet Mr. *Trembly* has discovered some, without copulation, and by section only. Would not *Ammanus* have passed for a madman, had he boasted, before he made the lucky experiments, of instructing, and in so small a time, such scholars as his? Yet his success has astonished the universe, and like the author of the history of the polypus's, he has launched with full sail into immortality. He that owes to his own genius the wonders he performs, far excels in my opinion those, who for theirs are indebted to chance. He that has found out the art to embellish the finest of kingdoms, and to give it perfections which it had not before, ought to be ranked above an idle inventor of frivolous systems, or a laborious author of barren discoveries. Those of *Ammanus* are of a much superior value, he has drawn men out of that instinct, which they seemed condemned to; he has

† The author of the history of the soul.

given them ideas, wit, and in one word, a soul, which otherwise they would never have had. What power can be imagined greater?

Let us not limit the resources of nature, they are infinite; especially assisted by an extraordinary art.

Might not the same mechanism, that opens the pipe of *Eustachius* in deaf persons, unstop it also in monkeys? A happy inclination to imitate the pronunciation of the master might, one would think, set at liberty the organs of speech in animals, that imitate so many other signs with so much address and sagacity. I not only defy any one to produce me a really conclusive argument, that will prove my project impossible and ridiculous: but the similitude of the structure and operations in the monkey are such, that I scarce doubt, but that if we carefully tutored this animal, we might teach him to speak, and by consequence to understand, according to his capacity, a language. Then he would no longer be a wild or imperfect man; he would be a compleat man, a little polite fellow, with as many members and muscles as ourselves, to think and improve by his education.

The transition from animals to man is no way violent: to this all true philosophers will agree. What was man before the invention of words, and the knowledge of language? nothing but an animal of his kind, with much less natural instinct than others, of whom in such a state he could not imagine himself king; and distinguished from the ape and from other animals

mals, only as the ape himself is distinguished ; that is, by a more sensible physiognomy. Confined in this condition to the *intuitive knowledge* of the followers of *Leibnitz*, he saw nothing but figures and colours, without being able to distinguish any thing amongst them : old or young he was a child at every age, he stammered his sensations and wants, as a dog famished or tired with rest craves to eat, or to run about.

Words, languages, laws, sciences, and the liberal arts were introduced in time, and by them the rough diamond of our understanding was polished. Man has been broke and trained up, like any other animal ; and he has learnt to be an author, as well as to be a porter. Geometricians have contrived to make the most difficult demonstrations and calculations, just as a monkey to put on, or take off his little hat, or jump upon his tractable dog. All was done by signs ; each species comprehended what it could, and thus it was that men acquired *symbolical knowledge*, which still retains this name amongst the *German* philosophers.

Nothing, we see, is so simple as the mechanism of our education ! All is reduced to sounds or words, that from the mouth of one pass thro' the ears of another, into the brain, which receives at the same time by the eyes the figure of bodies, of which these words are arbitrary signs.

But who is it that first contrived to speak ? Who was the first preceptor of the human race ?

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Who invented the means of benefiting by the docility of our organization? This I confess I know not: the names of those first and happy geniuses, are lost in the dark night of time. But art is the daughter of nature; and nature therefore must have been long before her.

We ought to believe, that the best organized men, those for whom nature exhausted her favours, first instructed others. They could not hear a new sound, for example, experience a new sensation, or be struck with all this beautiful variety of objects that form the ravishing spectacle of nature, without finding themselves in the case of the deaf man of *Chartres*, of whom the great *Fontenelle* first gave us the history, when he heard for the first time the astonishing noise of bells at forty years of age.

Would it be therefore absurd to think that those first mortals essayed in the manner of this deaf person, or after the manner of animals and mutes, (another kind of animals) to express their new sensations by motions dependent on the oeconomy of their imagination, and consequently afterwards by spontaneous sounds proper to each animal; these being the natural expression of their surprize, joy, transports, or wants? For certainly those whom nature has endued with a more exquisite sensibility, have been favoured likewise with a greater facility to express it.

Thus it is I conceive that men employed their sensation, or instinct, to obtain understanding, and afterwards their understand-

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ing, to attain to knowledge. These are the methods, as far as I comprehend, that have filled the brain with ideas, for the reception of which nature has formed it. One assisted the other; and the smallest beginnings increasing by degrees, every thing in the world came to be as easily distinguished, as the circumference of a circle.

As the string of a violin or harpsichord trembles and vibrates, so the fibres or strings of the brain struck by the undulating rays of sound, are excited to return or repeat the words that touched them. But as the structure of this organ is such, that when once the eye formed for vision has received the pictures of objects, the brain cannot help seeing their images and differences: in the same manner when the signs of these differences are marked or ingraved in the brain, the soul must necessarily examine their relations; an examination that would be impossible without the discovery of signs, or invention of languages. At that time when the world was almost mute, the soul was in regard of all objects as a man, who without having any idea of proportion, should look on a picture, or a piece of sculpture: or as a little child (for the soul was then in its infancy) who holding in his hand a parcel of straws or bits of wood, sees them in general in a vague superficial manner, without being able to count or distinguish them. But let us put a kind of flag or colours on that piece of wood for example, which we call mast, and let another be
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put on another like body; let the first that comes to hand be marked by the sign 1. and the second by the sign, or cypher 2. then this child will be able to count them, and thus by degrees he will learn arithmetic. As soon as one figure appears to him equal to another by its *numerical* sign, he will conclude without difficulty that they are two distinct bodies, that 1 and 1 make 2; and 2 and 2 make 4, &c. *

'Tis this real or apparent similitude of figures, that is the fundamental basis of all truths, and of all our knowledge, amongst which it is certain that those whose signs are less simple and less sensible, are harder to be learnt than the others; because they require more genius to embrace and combine that immense quantity of words, by which the sciences I have mentioned express their respective truths: whereas those sciences that are expressed by cyphers or by other little signs, are easily learnt. And without doubt 'tis this facility that has established the reputation of algebraical calculations, more than their evidence.

All this knowledge therefore, the vanity of which puffs up the giddy brain of our supercilious pedants, is nothing but a vast heap of words and figures, which form in the head the traces by which we distinguish and remember objects. All our ideas

* There are people at this day, that for want of a greater number of signs, can only count to 20.

are revived, as a gardner that knows the plants, remembers their names as soon as he sees them. These words and figures are so connected in the brain, that we rarely happen to imagine a thing without the name, or the sign thereto annexed.

I always use the word *imagine*, because I am of opinion that every thing is imagined, and that all the parts of the soul may be justly reduced to the imagination only, which forms them all; and thus the judgment, reason, and memory are not absolute faculties of the soul, but real modifications of this kind of *medullary substance*, on which the objects painted in the eye are reflected, as from a magic lanthorn.

But if such be this wonderful and incomprehensible result of the organization of the brain, if all is conceived, all explained by the imagination, why should we divide the sensitive principle, which thinks in man? Is not this a manifest contradiction in the partizans for the simplicity of the mind? For whatever is divided, cannot without absurdity, be looked upon as indivisible. See to what the abuse of language reduces us; and the use of these pompous words *spirituality*, *immateriality*, often placed by chance, without being understood even by men of parts.

Nothing is more easy than to prove a system founded as this, upon the internal sense and particular experience of each individual. If the imagination, or that fantastical part of the brain, whose nature is as unknown to us, as
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its manner of acting ; if the imagination, I say, be naturally little, or weak, it will find a difficulty in comparing the analogy or resemblance of its ideas ; it will be able to see only just what is opposite to it, or makes the most lively impression : but still it is true that the imagination alone perceives, that it is it which represents all objects, with the words and figures that characterise them, and thus it is the imagination that is the soul, because it performs all its operations. By its flattering pencil the cold skeleton of abstract reason assumes living and vermillion flesh ; by it the sciences flourish, arts are embellished, woods speak, echoes sigh, rocks weep, marble breathes, and all the inanimate bodies are suddenly inspired with life. 'Tis it that adds to the tenderness of an amorous heart the poignant taste of pleasures ; it makes love bud in the cabinet of the philosopher, and dusty pedant : in fine it forms the scientific men as well as orators, and poets. Foolishly decried by some, and vainly extolled by others, by whom it has been alike misunderstood, it waits on the graces and liberal arts, and not only paints nature, but is also capable to measure it. The imagination perceives, reasons, judges, penetrates, compares and dives into things. Is it possible it should so perfectly perceive the beauties of pictures set before it, without discovering their relations ? By no means ; as it cannot attend to the pleasures of sense without tasting their full perfection and enjoyment, so it cannot reflect upon what it

it has mechanically conceived, without being then the judgement itself.

The more we exercise the imagination or the poorest genius, the more it improves, the more it grows, and becomes nervous, robust, large, and capable of thinking. The best organization has need of this exercise.

Organization is the principal merit of man; in vain do *Ethic* writers refuse to rank amongst valuable qualities, those which we directly receive from nature, but such talents only as are acquired by dint of reflection, and industry. For whence comes, I pray you, skill, science, and virtue, but from a disposition that renders us proper to become skilful, knowing, and virtuous? And whence comes this disposition but from nature? We have no valuable qualities without her; we are indebted to her for what we are. Why therefore should I not as much esteem those who are possessed of natural qualities, as those who shine with acquired, and as it were borrowed virtues? Whatever the merit be, from whence soever it comes, it is worthy of esteem: the point is only to know how to measure it. Wit, Beauty, riches, nobility, tho' children of chance, have all their value, as well as address, knowledge, virtue, &c. Those whom nature has favoured with her most precious gifts, ought to pity those to whom they are denied; but they may know their own superiority without pride, and as equitable judges. A beautiful woman would be as ridiculous in thinking herself ugly, as a man of sense in taking himself

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self for a fool. An extravagant modesty (a rare quality indeed) is a kind of ingratitude towards nature. On the contrary an honest pride is the mark of a great and noble soul, distinguished by masculine lines, that are moulded as it were by reason and sentiment.

If organization be a primary merit, and the source of all the rest, instruction is the second. The best framed brain without it would be to no purpose; as without the knowledge of the world, the best made man would be but a gross peasant. Besides what would the very best school avail without a matrix perfectly open for the entrance, or conception of ideas? It is as impossible to give a single idea or notion to a man, deprived of his senses, as it is to get a woman with child, to whom nature in a hurry has denied a womb; as I once saw in one, who had neither a slit, vagina, nor matrix, and therefore was divorced after ten years co-habitation.

But if the brain be at the same time well framed and instructed, it is a fruitful and well sown soil, that produces a hundred fold to what it received: or (to leave the figurative stile which is often necessary the better to express what we feel, and to give new graces to truth itself) imagination raised by art to the sublime and rare dignity of genius, apprehends exactly all the relations of the ideas it has conceiv'd, with facility comprehends an astonishing variety of objects, to infer from thence a long chain of consequences, which are still but new relations, produced by
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the comparison of the former, with which the soul finds a perfect resemblance. Such is, methinks, the generation of the understanding. I say *finds*, as I gave before the epithet of *apparent* to the similitude of objects. Not that I think our senses are always deceitful, as father *Mallebranche* pretends, or that our eyes naturally somewhat fallacious, see not the objects such as they are in themselves, tho' microscopes prove it every day ; but to have no dispute with the *Pyrrhonists*, amongst whom Mr. *Bayle* has distinguished himself.

I say of truth in general what *Fontenelle* says in particular, that it must be sacrificed to the pleasures of society. It becomes the civility of my character to obviate all dispute, unless such as enlivens conversation. In vain would the *Cartesians* come here to attack me with their *innate ideas* ; I certainly should not give myself a fourth part of the trouble, that Mr. *Locke* has taken to explode such chimæras. What would it signify, in fact to write a large volume, in order to prove a doctrine, that was considered as an axiom three thousand years ago?

According to the principles here laid down, and which I really look upon as true, he that has most imagination ought to be regarded as endowed with most wit, and genius ; for all these words are synonymous ; and once more I say it, 'tis a shameful abuse, to think as we often do, that we are speaking of different things, when we are only using different words or signs, to which we have annexed no idea, or real distinction.

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The finest, the greatest, and the strongest imagination, is therefore the properest for the sciences as well as arts. I do not pretend to decide, whether more understanding be requisite to excell in the art of *Aristotle*, or *Descartes*, than in that of *Euripides*, or *Sophocles*; or whether nature put herself to greater expence to make a *Newton*, than to form a *Corneille* (a point I much doubt of) but certain it is, that the imagination alone differently applied, has formed their different triumphs, and rendered their memories immortal.

If a person is said to have but little judgment with a strong imagination, this is as much as to say, that the imagination being too much abandoned to itself, and almost constantly employed in looking at itself in the mirror of its sensations, has not sufficiently contracted the habit of examining them with attention: being more deeply moved with the traces and images, than with their truth or resemblance.

True it is, that such is vivacity of the springs of the imagination, that if attention, that key or mother of sciences, does not assist, it can only run slightly over the objects.

Like that bird on yonder spray, the imagination seems to be perpetually ready to take wing. Hurried with incessant rapidity by the vortex of the blood and animal spirits, one undulation makes an impression, which is immediately effaced by another; the soul pursues it, but often in vain: she must wait to bewail the

loss of what she did not quickly lay hold of ; and thus it is that the imagination, true image of time, is incessantly destroyed and renewed.

Such is the chaos, such the rapid and continual succession of our ideas ; they drive one another successively, as one wave impels another ; so that if the imagination does not employ a part of its muscles, poised as it were in an equilibrium upon the strings of the brain, so as to sustain itself some time on a fleeting object, and to avoid falling upon another, which it is not yet proper time to contemplate, it will never be worthy of the beautiful name of judgment. It will give a lively expression of what it has felt ; it will form orators, musicians, painters, poets, but not one philosopher. On the contrary, if from our infancy the imagination be accustomed to bridle itself ; not to give way to its own impetuosity, which forms nothing but splendid enthusiasts ; to stop, to contain its ideas, and to revolve them in every sense, in order to view all the appearances of an object : then the imagination ready to judge, will embrace by reasoning the greatest sphere of objects, and its vivacity, which is always a good omen in children, and only needs the regulation of study and exercise, will become a clear-sighted penetration, without which we can make little progress in the sciences.

Such are the plain foundations upon which the structure of logic is erected. Nature designed them for the whole human species ; but
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some have profited thereby, and others have only abused them.

In spite of all these prerogatives of man over brutes, 'tis an honour to him to be ranked in the same class. True it is, that 'till a certain age, he is more an animal than they, because he brought less instinct with him into the world.

What animal is there that would die with thirst in the midst of a river of milk? none but man. Like to that old child of which a modern makes mention after Arnobius; he knows neither the food that is proper for him, nor the water that may drown him, nor the fire that may reduce him to ashes. Hold a blazing candle for the first time before a child, he will mechanically put his finger to it, to know what this new phænomenon he sees is; at his own expence he will learn the danger, but he will not be caught again.

Put him with an animal upon the brink of a precipice; he alone will fall into it: he will be drowned, where the other will save himself by swimming. At fourteen or fifteen years of age, he scarce has a notion of the great pleasures that will attend him in the reproduction of his species; when a youth he knows not readily how to go about a sport which nature so quickly teaches all animals: He hides himself, as if he were ashamed to enjoy pleasure, and to be formed to be happy, whilst other animals seem to glory in being *Cynics*. Without education they are

without prejudice. Let us observe the boy and dog, that have both lost their masters in the high way; the child cries, he knows not whom to apply to. The dog better served by his scent, than the other by reason, will soon find his master out.

Nature has then made us inferiour at first to other animals, to the end that we should by this means display to greater advantage the wonderful effects of education, which is the only thing that raises us from a level with the brutes, and exalts us above them. But can we likewise allow the same superiour distinction to those who are born deaf or blind, to idiots, to madmen, to the wild and savage part of mankind, or those who have been bred up among the beasts in the woods, to those who are overpower'd by melancholy, and their imagination deaden'd; in short to all those human brutes, who are guided by instinct alone, and that the dullest sort? No, all these partake of the nature of the body, and not of the understanding, and therefore are not to be considered as a particular class of beings.

We do not intend here to affect an ignorance of those objections, which may be made against our opinion, in defence of that superiour distinction so long attributed to man over other animals. There is, say they, a law of nature, a knowledge of right and wrong deeply imprinted on the mind of man, which, in other animals, is not perceived.

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But is this objection, or rather assertion, founded upon experience? for without this a philosopher may reject every thing. Have we one argument of this sort to convince us that man alone is enlighten'd with the rays of reason, from which all other creatures are excluded? If we have not, we can no more know what passes within them, or even within men, than we can form an idea of the inward part of our own being. We know that we think, and that we are stung with remorse after we have done any guilty action; inward reflection makes us feel the force of this truth; but when we have a mind to form a judgment on the remorse of another person, then we become sensible that this inward reflection is insufficient for that purpose. Hence we must give credit to other men upon their words, or we must rely upon those outward and visible signs, which we have observ'd to prevail in ourselves in the like case, when we feel the same consciousness of guilt, accompanied with the same uneasiness.

In order therefore to determine whether those animals which have not the use of speech, have receiv'd a law of nature, we must have recourse to the consideration of these outward signs, which have been mentioned, supposing they exist, which seems to be made evident by real facts. A Dog, upon some provocation, bites his master; and no sooner has he done it but he appears to be mov'd with repentance; you
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may see him sorrowful, uneasy, ashamed to shew his face, and confessing his guilt by his crouching humble behaviour. History furnishes us with a famous instance of a lyon, who refrain'd from tearing to pieces a man whom he had in the power of his clutches, because he recollected him to be the person who had formerly been his benefactor. How much is it to be wished that man would in all cases shew the same grateful sense of generous actions; and the same degree of humanity? Then we should have no occasion to be afraid of ingratitude; then we should have no reason to dread the terrors of war, which is become the scourge of mankind, and the subverter of all the laws of nature.

But a being on whom nature has bestow'd an instinct so early ripe, so full of insight, who judges, who connects causes as well as their consequences, who reasons and deliberates as much as the sphere of his activity allows, and so far as it extends: A being whose affection is gain'd by kind treatment, and whose friendship we lose by a contrary usage, and whom we see frequently going in quest of another master: A being resembling our own in the curious contrivance of its structure, who performs the same operations, who has the same passions, the same pain, the same pleasures, more or less lively, as they are influenced by the power of the imagination and the delicacy of the nerves: in short does not such a being as this give us the clearest demonstration, that it feels the injuries

injuries done to itself, as well as those it does to others; that it knows a right and a wrong, and in fine has a consciousness of what it does? This being has a soul, which, like ours, feels the same joys, the same misfortunes, the same disappointments; and can we help concluding that this being will feel an inward horror at the sight of any of its own species torn to pieces, or can it avoid being touch'd with remorse when guilty itself of a piece of cruelty of this nature? These things being granted, that valuable gift, the subject of our present enquiry, cannot be deny'd to other animals; for since they give us evident marks of their repentance and understanding, where can be the absurdity to conclude that beings, who are as perfect machines as ourselves, are fram'd to think like us, and to feel the law of nature?

Here let it not be objected against me that other animals are in general fierce beings, and insensible of the evil they commit; for do all mankind distinguish vice and virtue better than they do? There is a sort of fierceness in our kind as well as theirs. The uncivilized part of mankind who have been nurs'd up in barbarity, and accustomed to break thro' all the laws of nature, do not feel that inward uneasiness from a transgression of this kind, which those suffer who make the first breach of this nature, and have not yet been inur'd to it by the force of example. Thus it is with other animals as well as men; all of them become
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more or less fierce according to their constitutions, and still more so when they live amongst others who are of savage disposition. But an animal of a mild and peaceable nature, which herds among others of the same complexion, and lives on soft nourishment, will have a strong antipathy to blood and slaughter, and will blush inwardly when guilty of cruelty; with this difference, that as amongst them all is sacrific'd to necessity, pleasure, and the conveniences of life, of which they have more enjoyment than we, so their remorse ought not to appear so sharp as ours, because we are not press'd by the same necessity as they are: custom takes off the edge, and perhaps stifles remorse, as much as the pursuit after pleasure.

But I shall suppose that I am mistaken, and that it is unreasonable to imagine all mankind to be in the wrong while I alone am in the right; I shall grant then that other animals, even the highest sort of them, are entirely ignorant of moral good and evil, that they do not retain in their memory any remembrance of regard shewn, or kindness done to them, and have not the least knowledge of their own virtues: That this lion, for example, which I as well as so many others, have made mention of, had not the least remembrance of what was past, when he spar'd the life of that man who was delivered to his fury at a publick shew; a shew in its nature more inhuman than any thing we
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can possibly behold amongst lions, tygers, or bears: all this, I say, I may grant whilst men go on in their usual way, country-men fighting against country-men, *Swiss* against *Swiss*, and brothers against brothers, and tho' known to each other, yet enslave and kill one another, because they are paid by some prince for their murders. In fine then, let us suppose, that the law of nature has not been given to other animals, what are the consequences which will thence follow? Man is fram'd of materials, not exceeding in value those of other animals; nature has made use of one and the same paste, she has only diversify'd the ferment in working it up. If then animals do not feel an inward repentance after the violation of that inward consciousness which I have been mentioning, or rather, if they are entirely destitute of it, then of necessity must man be reduc'd to the same situation: then farewell to the law of nature, and all those elaborate treatises which have been wrote upon this subject! The whole animal kingdom will then be in the self same state. But on the other hand, if man will own that, when he is in health and has the natural enjoyment of himself, he cannot but distinguish the honest, the humane, and virtuous part of mankind, from those who are void of honesty, virtue, and humanity; that he can distinguish virtue from vice, by that inward satisfaction which he feels in the one, and that natural repugnancy which he finds in the other;

both which are effects flowing from nature ; thence it follows that other animals form'd of the same matter, which only wants a higher degree of fermentation to make them equal to man in every thing ; it follows I say from what has been said that, as animals they must partake of the prerogatives of the animal kind, and thus there can be no soul or sensitive substance, which is not capable of being touch'd with remorse. The following reflection will further strengthen what has been said.

The law of nature cannot be destroy'd. The impression of it is so deeply engraved in all animals, that I make not the least doubt, but the most fierce and savage feel, at certain times the inward shocks of repentance. I dare say, that savage woman, of the city of *Châlons* in *Champagne*, who is said to have eaten her own sister, must have suffered an inward punishment for her crime. I am of the same opinion with regard to all those who are guilty of crimes, tho' they have been involuntary, or proceeding from their natural constitution : such as *Gaston* of *Orleans*, who could not keep his hands from pilfering, and a certain woman who was subject to the same vice, when she was with child, and whose children inherited her thieving disposition ; such also as the woman in the same province, who devoured her own husband ; and that wretch who murdered her own children, then salted their bodies, and eat of them every day as of a delicious morsel ; as the daughter likewise of

of a robber and cannibal, who tho' she had lost both her father and mother when she was but a twelve month old, and had been bred up by honest people, yet she follow'd her father's profession by the time she was twelve years of age: not to mention a great many other examples which every where occur to curious observers, and which serve to prove that there are numberless hereditary vices as well as virtues, which are communicated from parents to their children, in the same manner as from nurses to those whom they suckle. I say then, and I agree that those guilty criminals, for the most part, do not immediately feel the heinousness of their actions. *Bulimy*, for example, or in other words, the canine appetite may extinguish all inward reflection; this is a madness which rages in the stomach, and must be satisfied. But when such barbarous women as these come to themselves, when they return to their sober senses, how then will they be tortured with the stings of remorse, after being sensible that they have murder'd what was most dear and precious to them! what a dreadful punishment will then follow a crime, which in them was involuntary, which they could not resist, and they were not conscious of: but however this will serve as no excuse in a court of justice. Of these women one of them was broke on the wheel and burnt, and another was bury'd alive. I am sensible that the interest of society requires all this rigour. But however it is much to be wish'd that we had none for judges, but the most

skilful physicians. They alone could distinguish the guilty, from the innocent. If reason is the slave of depraved, or distracted sense, how then can it be expected, that at that time it should be governor?

But since guilt carries along with it its own punishment more or less severe ; since, if we had been never so long accusom'd to the most barbarous actions, yet this could not utterly extinguish all repentance in the most inhuman hearts ; if men are thus rack'd with the remembrance of their guilt, what occasion is there then, to confound weak understandings, and startle their imagination with the notion of hell, apparitions, and precipices of fire, that have less reality in them than those of *Paschal** ? What occasion is there to have recourse to fabulous stories, as an honest pope himself frankly confess'd, to add still more torture to those unhappy criminals that are about to perish, as if they had not suffer'd sufficiently from the stings of their own con-

* *Either in company, or at table, he used always to have a kind of fence made of chairs, or some body close to his left hand, to hinder him from seeing the frightful abysses, into which he was sometimes afraid of falling, notwithstanding he knew perfectly well that this was all an illusion. What a frightful effect of the imagination, or of a singular circulation in a lobe of the brain ! As great a man as he was on the one hand, on the other he was half a fool. Folly and Wisdom had each their partition, or lobe, separated by a scythe. On which side did he adhere so steadily to the gentlemen of Port-Royal ? This fact I have met with in an extract of a treatise of a dizziness by Monsieur de la Mettrie.*

science

science which is their first executioner? I mean not here to say that all criminals are unjustly punished; what I maintain is, that those, whose will has been depraved, and conscience extinguish'd, are sufficiently punished by remorse when they come to themselves, tho' nature methinks ought to have exempted in this case from remorse, those unhappy wretches who were dragg'd along by a fatal necessity.

The mischievous, the wicked, the ungrateful, those in short who do not feel natural sympathy, tyrannical princes unworthy to enjoy life, all these may take an unnatural pleasure in their cruelty, but still there will come some moments of calmness and reflection, when the avenging conscience rouses itself, and becoming evidence against those criminals, condemns them to be almost without interruption torn to pieces by their own hands. He who torments mankind, becomes his own tormentor; and the miseries, which he himself shall suffer, will be in a just proportion to those, which he has been the cause of to others.

On the other hand, there is such an unexpressible pleasure in doing good, and in retaining a grateful sense of the good done ~~to~~ ^{as} by others; there is so much inward satisfaction in the practice of virtue, there is such a deal of contentment, in being benevolent, humane, tender hearted, charitable, compassionate and generous (this one word includes all the virtues) that I cannot help thinking
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that man is sufficiently punished, who has had the misfortune not to be born virtuous.

We were not originally fram'd to become learned ; nay it is perhaps by a sort of abuse of our organized faculties, that we become so ; and this too at the expence of the state, which supports a number of lazy drones, whom vanity has deck'd with the title of philosophers. Nature has created us all to be happy ; all I say from the worm that creeps, to the eagle that soars aloft in the clouds. For this reason she has given to all animals a certain portion of the law of nature, more or less exquisite, according to the different organs of each animal.

How shall we then at present define the law of nature ? It is an inward principle, which instructs us in what we ought not to do to others, by putting us in mind of what we should not choose to be done to ourselves. May I be allow'd to adjoin to this general idea, that methinks this inward principle is nothing but a sort of fear or dread equally useful to the whole species and each individual ; for perhaps we keep our hands from the purses and lives of other men, in order that we may the better secure our own life and property from violence ; in this not a little resembling those Ixions of christianity who love God out of fear of hell, and thro' this slavish apprehension embrace so many ridiculous tenets.

You see then that the law of nature is nothing but an inward principle which belongs
to

to the imagination, as well as all others, amongst which we reckon thought. Consequently it supposes neither education, nor revelation, nor a law giver, at least it is not to be confounded with the civil laws, after the ridiculous manner of the divines.

Mad *Enthusiasts* with their arms may destroy the supporters of these truths ; but the truths themselves can never be destroyed.

I do not here intend to call in question the existence of a supreme being ; on the contrary I am of opinion that the greatest degree we can have of probability makes for this truth : but as this existence does not prove the necessity of one sort of worship more than another, we must therefore look upon it as a theoretical truth, which is but of little use in practice. As we may therefore say, after a deal of experience, that religion does not suppose strict probity, so the same reasons give us foundation to think that atheism does not exclude it.

Besides who knows but the cause of the existence of man, may be in the very existence itself ? Perhaps he has been thrown by chance upon some spot of the surface of the earth, without a possibility of discovering why or whence he came ; and with this knowledge only that he must live and die ; like to those mushrooms which appear to day and are gone to morrow, or to those flowers which sprout up in ditches, or cover walls.

Let us not therefore lose ourselves in infinity,

finity, since we are incapable of having the least idea of it: it is impossible for us to trace the original of things; it is a matter really indifferent as to our happiness, whether matter has been from all eternity, or was created; whether there is or is not a supreme being. What folly then is it to torment oneself so much in searching after what is impossible to know, and which could not add any thing to our present felicity even if we were to gain our point.

But some will say to me, read the works of *Fenelon*, *Nieuwentit*, *Abadie*, *Derham*, *Ray*, &c. Well, what after reading them? wherein will they instruct me? or rather, wherein have they instructed me? these works are nothing but the tiresome repetitions of enthusiastick writers, who only add more and more fustian to each other, more proper to strengthen than undermine the foundations of atheism. The multitude of proofs which they collect from the beauties of nature display'd, does not add to their strength. The structure of one finger alone, an ear, an eye, an observation of *Malpighi*, is able to prove all, and certainly more than *Descartes* or *Mallbranche*; or all the rest proves nothing. The deists and christians too ought to content themselves with this observation, that, in the whole animal system, the same ends are come at by an infinite number of different ways and means, and all these the most exactly geometrical. And what stronger arms than these can we make use of to pull
down

down the insolence of atheists? it is true, indeed, that if my reason is not mistaken, man, and the whole universe, seem to be destin'd for one and the same end. The sun, the air, the water, the organization and form of bodies, are all rang'd in order in the eye, as in a looking-glass, which represents to the imagination the pictures of all the objects painted there, according to the laws of vision, which prevail amongst that numberless variety of particles or corpuscles. In the structure of the ear, we find every where a most amazing variety; and tho' the mechanism of this organ is different in man, as well as in beasts, birds, and fishes, yet this does not produce different effects. The ears of all are made with such exquisite mathematical skill, that they all tend to one and the same end, which is to hear. Can chance then, says the deist, be so admirable a geometrician, thus at pleasure to diversify the works of the creation, of which some suppose it to be the author; and yet notwithstanding this variety, nothing be hindered, nothing obstructed, but all pursue the same grand design and universal end. He goes on and urges still more in defence of his opinion; he takes notice of those parts which are contain'd in the animal for future purposes, such as the butterfly in the caterpillar, man in the spermatick animalcule, a polypus entire in all its parts, the valve of the *foramen ovale*, the lungs to be observ'd in the foetus, the teeth, tho' not visible to the naked eye, yet lodg'd in their sockets, the

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bones,

bones, which seeming to be mix'd with the fluids, yet separate and grow solid in the most unconceivable manner. And as the advocates for this system, call into their aid whatever may contribute to support it, and are incessantly bringing proofs upon proofs, they want to make every thing serve to promote their cause; nay, even weakness of understanding itself, in some particular cases. Behold, say they, your Spinozas, your Vaninis, your Desbarreaus, your Bodins, all of them do more honour than injury to the cause of deism! no sooner have these men been weak or sickly, but they have forsaken their infidelity: And it seldom happens, add they, that the atheist does not renounce his opinion, when the passions come to be weaken'd with the body their instrument.

This is then the sum of all the most material proofs which can be brought in favour of a deity; tho' the last argument indeed is but frivolous, because these alterations of opinion are generally short and sudden, the mind generally resuming its former sentiments, as soon as it has recover'd its proper vigor, together with the usual strength of the body. Here let us consider what the physician *Diderot* has said in his philosophical thoughts, a most noble performance, yet it will not be able to convince a real atheist. What, indeed, can we answer to a man who says, " We know not
 " nature; the secret causes which are hidden
 " in her bosom, might have produced every
 " thing. Examine the polypus of *Trembley*;
 " does

“ does it not contain in itself the causes of its
 “ regeneration? what an absurdity then is it
 “ to think that there are physical causes for
 “ which all has been made, and to which the
 “ whole chain of this vast universe has been
 “ connected and made subservient; and that
 “ there is not one thing happens which could
 “ have avoided being so: our ignorance in
 “ these causes being unfurmountable, this has
 “ even made us have recourse to a deity, who
 “ according to some, is not even an *ens rationis*.
 “ Thus when we destroy chance, we do not
 “ then prove the existence of a supreme being,
 “ since it is possible there may be something
 “ else which is neither chance nor deity; what
 “ I mean is nature, the study of which
 “ will only make infidels, as we find the
 “ curious searchers into nature generally
 “ are.”

The weight of the whole universe then, is
 so far from crushing to pieces, that it does
 not in the least shake the true atheist: and all
 those evidences of a creator, a thousand and
 a thousand times repeated, which are greatly
 above the comprehension of creatures like us,
 are not evidences, however far they may push
 the argument, unless it is to the antipirrhoni-
 ans, or to those who put so much confidence
 in their reason, as to imagine themselves able
 to form a judgment on certain appearances,
 in opposition to which you see atheists are able
 to bring others quite contradictory, and per-
 haps as strong. For if we listen a little more to
 what naturalists say, they will tell us, that the

same causes which have conspir'd, as it were by chance-medley, to form a looking-glass in the hands of the chemist, have, in like manner, contributed to create pure water in the hands of nature, which serves as a mirror to the simple shepherdes: they will tell you too, that the same motion which upholds and preserves the world, was likewise able to give it a being; that every body has taken the place assign'd to it by nature; that the air encompasses the earth for the same reason; that iron and other metals, become the workmanship of its intrails; that the sun is as much the production of nature as electricity; that it was no more made to give warmth to the earth and its inhabitants, which sometimes it burns, than the rain was form'd to make the fruits of the earth to blossom, which are frequently spoiled thereby; that the mirror and water were no more made to see ourselves in them, than other polish'd bodies which have the same property; that the eye is, in reality, a sort of peep-hole, thro' which the soul can view the images of objects, according as they are represented from different bodies; but that it cannot be demonstrated that this organ has been fram'd on purpose for this particular use, nor expressly ordain'd to be plac'd in any particular situation: and in short that *Lucretius*, doctor *Lamy*, and the rest of the modern as well as antient Epicureans, were in the right when they maintain'd, that the eye sees for no other reason but because it is organized, and placed as it is; that when once the

rules

rules of motion were determin'd, which nature was to observe in the generation and production of bodies, then it was impossible that this wonderful organ could be organized or placed in a different manner than it is.

These are the proofs advanc'd pro and con; this is the sum of all the important arguments which have so long divided our philosophers. As for my own share, I take no part in the dispute.

Non nostrum inter vos tantas componere lites.

This is what I said to a *French* gentleman, one of my friends, as openly profess'd a pyrrhonist as myself; a man of very great merit, and worthy of a better fate. He gave me a very remarkable answer upon this subject: certain it is, said he, that the arguments which are advanced on each side of the question, ought not to disturb the soul of a philosopher, who sees that there can be nothing demonstrated with clearness sufficient to gain his assent; and no sooner are proofs brought on one side, but they are immediately destroy'd by others from the opposite side of the question. In the mean time, said he, mankind can never be esteem'd happy, unless they be atheists. Let us see what were the arguments of this impious man. If atheism, continued he, was universally diffus'd, then all the different branches of religion would be rooted out, and utterly destroy'd. Then farewell to all holy wars, farewell to all the terrible soldiers of religion;

religion ; nature being as it were tainted with the sacred poison, would then resume its rights, and purity every where. Happy mortals, being then deaf to every other vice, would entirely follow the pure dictates of their own individual nature, which we cannot despise with impunity, and which alone lead us to happiness in the pleasing paths of virtue.

Such is the law of nature, and whoever observes it strictly, is a man of honesty, and deserves the esteem and confidence of mankind ; but whoever swerves from it, and affects an outward shew of some other religion, is an impostor as well as a hypocrite, whom I entirely distrust.

After what has been said, let the giddy multitude think otherways : let them affirm that honesty itself must sooner be sacrific'd, than we should withdraw our belief of revelation : in a word, that we must have another religion than that of nature, let it be what it will. What misery ! what pity ! how high is the opinion of every one for that particular religion which he has embraced ! We court not here the applause of the vulgar. He who rears up in his own mind altars to superstition, is born to worship idols, and was not design'd to feel the force and energy of true virtue.

But since all the faculties of the soul depend so much upon the proper organization of the brain, and of the whole body, that they appear evidently to be nothing but this organization itself ; we may well call it an enlighten'd machine.

machine. For in short, tho' man alone had receiv'd the law of nature, would he, for this reason, be less a machine? Some more wheels, some more springs, than are found in other animals the most perfect; the brain in proportion seated more near the heart, and consequently receiving more blood; the same reason likewise given; in fine, some unknown cause or another might have produc'd this conscience which has such delicacy and exquisite feeling, that remorse as foreign to matter as thought; in a word, all that difference or distinction which is here suppos'd. Will organization serve all these purposes? yes, I say once more, it will: since thought evidently unfolds itself with the organs, why may we not allow that matter, of which they are compos'd, to be likewise susceptible of remorse, when once it has by time acquir'd the power of feeling?

The soul then, is nothing but an empty term, of which we have no idea, and which a man of a right understanding ought to make use of, only to express that part which thinks in us. The least principle of motion being granted, then animated bodies will have all that's requisite to make them move, feel, think, repent, in a word, enough to lead them into all the physical and moral consequences which depend thereon.

We want nothing to be granted upon supposition alone. Those who may think that we have not yet remov'd all the difficulties
which

which lie in our way, shall have still stronger proofs to satisfy their doubtful minds.

1. The bodies of all animals undergo a sort of palpitation after death, the longer in proportion as the animal grows colder, and breathes less. Tortoises, lizards, serpents, &c. attest the truth of this observation.

2. The muscles, tho' separated from the body, yet shrink when you prick them.

3. The intrails of animals preserve the peristaltic or vermicular motion for a considerable space of time.

4. A simple injection of warm water reanimates the heart and muscles, according to *Cowper*.

5. The heart of a frog expos'd to the sun, especially on a table, or a warm plate, will move for an hour or more, after it has been taken out of the body. If the motion seems to be irrecoverably lost, you need only prick the heart, and that hollow muscle will again move. *Harvey* has made the same observation upon toads.

6. My lord *Bacon* in his treatise call'd *Sylva Sylvarum*, mentions a man convicted of treason, who was cut up alive, and his heart being thrown into warm water, leap'd several times, always less high, at the perpendicular distance of two feet.

7. Take a chick as yet in the egg, tear out the heart, and you will see the same phenomena, or such as differ but very little. The heat alone of breath revives an animal ready to expire in the air-pump.

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These experiments for which we are indebted to *Boyle* and *Steno*, are likewise to be seen in pidgeons, dogs, and rabbits, the very pieces of whose heart move as well as the entire heart itself. We may observe also the same motion in the intrails of a mole when torn out.

8. The caterpillar, the worm, the spider, the fly, and the eel afford us likewise the same observation; and the motion of the parts cut off encreases in the warm water, because of the heat which is in the water.

9. A drunken soldier with a stroke of his cutlass cut off the head of a turkey. The creature stood still, afterwards walk'd, and then ran; but happening to dash itself against a wall which was in its way, it turn'd short, and clapping its wings, continued to run for some time, till at last it fell. The turkey being extended upon the ground, all the muscles still mov'd. This is what I myself have seen, and we may easily discover the same observations in little cats or dogs, when their heads are cut off.

10. The polypuses do still more than shew motion, after they are cut to pieces; they spring up again into life, and in the space of eight days, there arises a production of as many animals as the pieces into which they were divided. I am dissatisfied with the system of naturalists concerning generation, or I should rather say, I am pleas'd with it, since by it I am instructed, that I ought not to draw general conclusions even from the most evident and decisive experiments.

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Here then are a number of facts, even more than are requisite, to give us the most undeniable proofs that every fibre, that the minutest parts of organized bodies, are put into motion by a principle inherent in themselves; nor does their action depend upon the nerves, as if they were voluntary motions, because these motions, the subject of our present enquiry, are performed whilst the parts in which they happen, have no communication with the general circulation. Since this inward power shews itself so remarkably even in separated parts of the fibres, it follows that the heart, which is a composition of fibres most curiously interwoven, must have the same property. *Bacon's* history was not necessary to persuade me of the truth of this. It was an easy matter to form my judgment, from the exact analogy of the human heart, with that of other animals; and likewise from the bulk of the human heart itself, in which this motion being stifled or confin'd, cannot be perceived; and in fine, because all the vessels become cold and collaps'd in dead bodies. If dissections were to be made upon the bodies of executed criminals, while they were yet warm, then we should see the same motions in the heart, which we observe in the muscles of the faces of persons who have been beheaded.

Such is the nature of this principle, which moves whole bodies, as well as the separated parts, that it produces no irregular motions, as some have imagined, but preserves the utmost regularity, both in animals which are
entire

entire, and retain vital warmth, as well as amongst those which are cold, and imperfect. Our antagonists then, can have nothing to lay hold of, unless perhaps they take upon them to deny the truth of numberless facts, which any one may easily see confirm'd by experience.

If any one asks me where this innate power of the body is seated: I answer that it has its residence in what the ancients call'd *parenchyma*; that is to say in the proper substance of the parts, abstracting from the veins, the arteries, the nerves, in a word from the organization of the whole body; and that consequently every individual part contains within itself springs more or less lively, properly suited to the occasion there is for them.

Let us enter into a sort of detail of those springs which move the human machine; 'tis from these that all the vital, animal, natural, and mechanical motions proceed. Is it not by a certain mechanism that the body retires and shrinks, when frighten'd at the sight of an unexpected precipice? That the eyelids wink when threaten'd with a blow? that the pupil of the eye, in broad day-light, contracts itself to preserve the retina, and in darkness, dilates itself the better to see objects? Is it not by a sort of mechanism that the pores of the body shut themselves up in winter, to prevent the cold from penetrating into the vessels? That the Stomach rises, when provoked by poison, by a certain quantity of

opium, and by all sorts of emetics, &c.? That the heart, the arteries, and muscles have the same contraction when we are asleep, as when awake? That the lungs perform the office of a pair of bellows continually in motion? Is it not by the same sort of mechanism, that the *sphincter vesicae*, of the *rectum intestinum*, &c. all perform their operations? That the heart has a stronger contraction than any other muscle? That the erecting muscles make a man's yard stand, as may be seen likewise amongst quadrupeds, and even in an infant when this part is ever so little irritated? And this by the by, proves that there is a particular spring in this member, as yet, but little understood, which produces effects that have not been thoroughly explained, notwithstanding all the boasted insight into anatomy.

I shall not consider further those inferiour springs or principles, which are known to every body. But there is another more pure and more fine, which infuses life into all the rest. 'Tis this which is the source of all our sentiments, of all our pleasures, passions, and thoughts; for the brain has its proper muscles for thinking, as well as the legs have theirs for walking. I mean that invigorating and impetuous principle which Hypocrates calls *συνεμα* (the soul). This principle exists, and is seated in the brain at the origin of the nerves, by means of which it exercises its dominion over the whole body. By this is explain'd, whatever is capable of
 expla-

explanation, even the surprizing effects proceeding from a distemper'd imagination.

But that we may not be at a loss amidst an abundance and copiousness which we do not well understand, we shall confine ourselves to a small number of questions and reflections.

Why does the sight, nay the very thinking of a fine woman, raise in us particular motions and desires? Does what happens at this juncture in certain organs, proceed from the nature of the organs themselves? Not at all, but from that communication and kind of sympathy which these muscles have with the imagination. The first spring or principle is excited by what the ancients call the *bene placitum*, or the image of beauty, which rouses another spring that lay dormant when the imagination awaked it: And how can this be, if it is not owing to the tumult and disorder of the blood and spirits, which flow with prodigious swiftness, and distend the cavernous bodies?

Since there are evident communications betwixt the mother and the infant*, and it is almost impossible to deny the facts produced by *Tulpius* and other authors of equal credit with him, we will therefore believe that it is by the same means that the foetus feels the force of the mother's imagination, in the same manner as soft wax receives all sort of impressions; and that the same traces, or

* At least by means of the vessels. And are we sure that there is none by the nerves?

longings

longings of the mother, may be imprinted on the foetus, tho' this cannot be comprehended, notwithstanding all that has been said to the contrary by *Blondel* and his adherents. Thus we repair the honour of Father *Mallebranche*, who has been much rallied for his credulity, by authors who have not enquired sufficiently into nature, and who had a mind to make it entirely conformable to their own ideas.

Let us view the picture of the famous Mr. Pope, whom at least we may call the *English* Voltaire. The efforts and nerves of his genius are strongly represented in his physiognomy; it seems to be all in a sort of convulsion; his eyes seem ready to start from their orbit, his eye-brows raise themselves with the muscles of his forehead. Why all this? 'tis because the source of the nerves is, as if it were in labour, and the whole body, if I may so say, feels the pangs of a painful delivery. If there is not an inward cord which thus forcibly pulls those without, how can we account for these surprizing phænomena? In order to explain all this, if we admit a soul, this in effect would be the same as if we were to call in the operation of the holy ghost.

If that which thinks in my brain is not a real part of that organ, and consequently of the whole body, why, when reposed in bed I form in my mind the plan of some work, or am engag'd in some abstract piece of reasoning; why then I say, is the blood heated?

heated? Why does the fever of my mind spread itself into my veins? Put this question to your great wits, to your poets, to those who feel the beauty of a sentiment that is fine and properly express'd, or those who are admirers of delicate taste, who are in raptures when they behold the beauties of nature, and perfectly transported with the native charms of truth and virtue! When you see the enthusiasm of these persons, and when they themselves declare to you what they have felt, then when you may the better trace out the cause by the effects: By this harmony or agreement which one anatomist alone (*Borelli*) understood better than all the followers of *Leibnitz*, you will understand the material unity of man. For in short since too great an extension of the nerves causes pain, and raises a fever, by which the mind is thrown into disorder, and becomes delirious alternately; since in its turn the mind, when too much agitated, communicates the disorder to the body, and kindles that consuming fire which carried off *Bayle* at an age so little advanced; since such a sensation makes me wish for, and raises in me the most ardent desires of what perhaps I did not so much as think of the minute before; since certain traces of the brain likewise excite the same itching, and create the same inclinations; why should we make a difference, or endeavour to make two things of what is apparently but one? It is ridiculous to exclaim against the domination

nion of the will. For one order which it gives, a hundred times does it come under the yoke. And where is the wonder that the body when in health should be subservient, for how can it resist that torrent of blood, and all those spirits which are ready to force obedience, the will having for its ministers an invisible army of fluids, always ready to receive its orders, and as quick as lightening in the execution of them! But as it is by the nerves that the power of the will is exercis'd, so is it likewise by them that it is oftentimes check'd. Can the highest efforts of the will alone, bring aid to the exhausted new married lover, or the greatest warmth of desire bring back his fallen vigour? Alas! they will be of no service; nay, at this time the will must suffer the first punishment, because at such a juncture, it cannot avoid wishing to have a gratification of its pleasure. What I have already said about the palsy, &c. may be likewise understood here.

Do the effects of the jaundice surprize you! Do not you know that the colour of bodies appears to be the same as that of the glass thro' which you look at them? And do not you know that according to the colour of the humours, such is that of the objects, at least with respect to us, who are the vain sport of numberless illusions. But take away this colour from the aqueous humour of the eye, let the bile run in its proper channel, then the soul will have different eyes, nor will every object appear as before,

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to be ting'd with yellow. Is it not in the same manner by couching the cataract, or by injecting *Eustachius's* tube, that sight is restor'd to the blind, and hearing to the deaf. How many are there who perhaps have only been mere quacks in the ages of ignorance, who yet have had the fame of having perform'd the greatest wonders! The soul, and the will tho' powerful, cannot act, but as the dispositions of the body permit; nay, our very tastes become different by the force of a fever, or the effects of age! Need we be surpriz'd then that philosophers have always principally regarded the health of the body, as the only way to preserve that of the soul? Is there any wonder that *Pythagoras* should be so careful in ordering the diet, or that *Plato* should strictly forbid the use of wine? It is the opinion of the most judicious physicians that a proper regimen for the body is the first thing that ought to be settled, when we intend to form the mind, and implant the knowledge of truth and virtue, both which are nothing but empty sound when the body is indisposed and the senses in a tumult! If we do not follow the healthful precepts of *Hygienus*, what will all the fine moral instructions of *Epietetus*, *Socrates* and *Plato* signify? The finest morality will avail nothing to one whom nature has not furnished with temperance, which is the source of all virtues, as intemperance is of all vices.

Need I say any more, (why indeed should I go further to lose myself in the history of

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the passions, all which are comprehended in what *Hippocrates* calls *ενοργανων*.) Is there any further occasion, to prove that man is but an animal, made up of a number of springs, which are all put in motion by each other; and yet we cannot tell to which part of the human structure nature first set her hand. If these springs differ amongst themselves, this arises from their particular situation, from their different degrees of strength, and not from their nature; consequently the soul is only the first principle of motion, or a sensible material part of the brain, which we may certainly look upon as the original spring of the whole machine, which influences the rest, and appears to have been first form'd, so that all the other springs seem to derive their motions from thence, as we may easily perceive from some observations I shall make and which have been made upon many different embryos.

The vibration, resembling that of a pendulum, which is natural, which is proper to our machine, and with which every fibre, or fibrous element is endowed, cannot always exercise itself. It must be renewed in proportion as it spends itself; when languishing it must have a fresh supply of strength, and the celerity of its motion must be likewise check'd when hurry'd on by an excess of force and vigour. In this alone consists the art of true physic.

The body may be consider'd as a clock, and the fresh chyle we may look upon as the former of that clock. The first business of
nature

nature upon the entrance of the chyle into the blood, is to raise a sort of fever, which the chemists (who dream of nothing but furnaces) take to be a fermentation. This fever causes a greater filtration of the spirits, which are about to animate the muscles and the heart, as if they had been sent out on purpose by the order of the will.

These are the causes and principles of life, which sometimes for the space of a hundred years keep up a continual motion equally necessary to the solids as well as fluids of the body. But who can pretend to affirm whether the solids or fluids contribute most to this animal mechanism. All we know is, that the action of the former, if unassisted by the latter, would immediately be utterly extinguished. The fluids, by the rapidity of their motion rouse and preserve the elasticity of the vessels, upon which their circulation depends. Hence it happens, that after instantaneous death, the natural spring of every substance is more or less strong in proportion to the remains of life. So true it is, that this active force of the animal parts may be preserv'd and encreas'd by the circulation, but does not depend upon it, since it often leaves the member or organ when entire, as we may often see.

I am not ignorant that this opinion has not been relish'd by all the learned, and that *Staabl* in particular has very much contemn'd it. This great chemist would persuade us that the soul alone is the cause of all our mo-

tions. But this is rather to speak after the manner of an enthusiast, than a philosopher.

In order to overthrow this hypothesis, I shall not have recourse to so many arguments as others before me have done. We need only cast our eyes upon one who plays on the violin. What plianthness, what agility in his fingers! the motion is so quick, that there hardly appears to be any succession! Now I entreat the adherents of *Staabl*, who pretend so thoroughly to understand the powers and faculties of the human soul, or rather I defy them to shew me how it is possible that the soul can so quickly bring about such a variety of motions, which are perform'd at such a distance from it, and in so many different places. This would be supposing one who plays on the flute to be able to sound harmonious notes thro' holes, with which he is unacquainted, and is incapable to apply his fingers properly to.

But with the Poet, we may say, that every body has not the advantage of going to *Corinth*. And why might not *Staabl* be more favour'd by nature in the quality of a man, than in that of a chymist or practitioner? This happy mortal must have received a soul different from that of the rest of mankind; an absolute soul, which is not content with some share of empire over the muscles subservient to voluntary motion, but holds with ease the reins of all those of the body, and is able to stop, check, or slacken them at pleasure. With a mistress so despo-

tic,

tic, who guides the pulsation of the heart, and has the laws of circulation in her hands, there could be no fever surely, no pain, no weakness, no shameful impotence, nor tormenting priapism. Let the soul give the word of command, then immediately the springs will be put in action, and be bent or slacken'd accordingly. But how come those in the machine of *Staaht* to be so soon out of order? He who has within him so great a physician, ought surely to be immortal.

But *Staaht* is not the only person who has rejected this vibrating principle in organized bodies. Men of greater genius have not made use of it in accounting for the action of the heart, the erection of the *Penis*, &c. We need only read *Boerhaave's* physical institutions to see what mistaken, laborious systems, this great man has been oblig'd to form, by the dint of his powerful genius, and all this because he would not admit that principle which strikes so forcibly upon all bodies.

Willis and *Perrault*, geniuses of a lower class, but indefatigable observers of nature, which the famous professor of *Leyden* has known only, as it were by second hand; seem rather to suppose the soul diffus'd thro' the whole body, than admit according to the principle which we maintain. But this hypothesis, which *Virgil* and all the Epicureans embraced, and which the story of the *Polypus* at first sight, seems to confirm the motions that out-live the subject to which they belong,
come

come from some remainder of the soul which preserves the contracted parts, tho' they are no more acted upon by the blood and spirits. Whence we may perceive, that these authors, whose valuable works eclipse all the empty fables of philosophers, err after the same manner as those who give to matter the power of thinking; I mean, they express themselves in terms which are either ambiguous, or have no meaning at all. In reality, what means this remainder of the soul, if it is not that moving principle maintain'd by the followers of *Leibnitz*, the idea of which is badly convey'd by this expression; tho' *Perrault* has truly seen thro' it: see his book entitled, *a treatise on the mechanism of animals*.

It is now, I think, clearly demonstrated, in opposition to the *Cartesians* the *Stoablians*, the followers of *Mallebranche*, and the divines who are hardly worthy of a place here, that matter is put into motion by itself, not only when it is organiz'd, as for example in an entire heart, but likewise when this organization is destroy'd. Man, prompted by natural curiosity, is anxious to know how a body, after having receiv'd the breath of life, is endow'd with the sense of feeling and becomes capable of thinking. In order to account for this mystery, what efforts have not philosophers made? and what ridiculous stuff have I had the patience to read on this subject.

All that we learn from experience informs us, that as long as the motion subsists, how
little

little soever, either in one or more fibres, we need only to prick them, in order to rouze and revive it; when almost destroy'd, as we may observe in a number of experiments which I think are most proper to illustrate systems. It is certain, then, that motion and feeling mutually excite each other in whole bodies, as well as those which are cut into different parts; I forbear mentioning certain plants which seem to discover to us the same wonderful appearance of the re-union of feeling and motion

Besides, how many excellent Philosophers have demonstrated thought to be nothing but a power of feeling; and the rational soul, to be a sensitive soul employ'd in the contemplation of ideas and reasoning about them; which may be proved from this one circumstance, that when feeling is extinguish'd, so is thought likewise, as we may perceive in apoplexies, lethargies, catalepsies, and such like distempers. There are some, indeed, who have maintain'd, that tho' the soul does not retain the remembrance of the ideas, yet she thinks during these lethargic disorders; but this appears to be quite ridiculous.

It would be the height of folly to lose our time in prying into this hidden curious mechanism. The nature of that motion is unknown to us, as much as that of matter. How can we discover the manner of its production, unless indeed we follow the example of the author of the history of the soul; and, as he has done, endeavour to revive the ancient and
unin-

unintelligible doctrine of substantial forms. I am as well pleas'd, when ignorant how simple and unactive matter becomes active and organiz'd, as I am when I find myself incapable of looking at the sun, unless it is thro' a red glass: nor am I in the least dissatisfy'd tho' unacquainted with the incomprehensible wonders of nature, and the production of thought and feeling, in a being that but a little before seem'd to be but a quantity of clay.

Only let this be granted to me, that organized matter is endowed with a moving principle, and in this alone consists its difference from all other matters; (can this be deny'd when confirm'd by so many repeated observations?) and all the different species of animals proceeds from various degrees of this organization, as has been already proved. This consideration may lead us to form some conjectures about the perplexing obscurity of substances in general, as well as that of man. Wherever we turn our eyes in the whole universe, we can see nothing but one continued wonder and amazing work, of which man is the most perfect. When compared with the monkey, or other animals, which seem to make the nearest approaches to what we call reason, he surpasses all of them as much as the clock which *Huygenius* made to shew the revolution of the planets, exceeds one of *Julien le Roy's* common watches. Since there must be more instruments, more wheels, and more springs in order to mark the planetary motions, than there is occasion for to mark or repeat the hours; since it
required

quired more art in *Vaucanson* to frame his mechanical musician, than in making his duck; sure then it must require still a greater degree of skill to form a speaking machine, which, perhaps, may not be altogether impossible, if we suppose a new *Prometheus* to start up, and put his hands to the work. In the same manner we must suppose it necessary, that nature should make use of more art and preparation in the formation of a machine, which for a whole age is able to mark the throbbings of the heart: for tho' the human pulse is not an index of the hours, yet at least we may look upon it as the barometer of heat and life, by which we may form a judgment of the state of the soul. It can be no mistake if I suppose the body of a man to be a clock, tho' a stupendous one, and the structure of it fram'd with such exquisite workmanship and dexterity, that if the wheel which serves to mark the seconds should stop short, yet this would not obstruct that which discovers the minutes; and the wheel too which is necessary to distinguish the quarters, would still continue to move on in its natural course; and it is in the same manner with all the rest, when the first being rusty or out of order, have stopp'd their course. Thus when there happens to be any obstruction in the vessels, this does not destroy or retard the motions of the heart, which is the chief Instrument in the machine. On the other hand, the fluids, their quantity being lessened, and having a less space to travel thro', move with greater velocity, being hurried on

as it were by a new current, and precipitated by the force of the heart, upon account of the resistance which it finds from the extremities of the vessels. Is it not thus too, that when the optic nerve is unfit for use, and hinders the images of objects from being conveyed, yet still this privation of sight does not likewise hinder us from hearing; in like manner when deprived of the sense of hearing, it does not follow that we should be also destitute of that of seeing. Is it not thus too, that one man has the power of hearing, without the faculty of expressing what he hears, (unless it is in the case of an illness) whilst another can hear nothing, and yet has all the nerves of his tongue in a free and proper condition, and is capable to express, mechanically, all the fleeting dreams of his brain? These phænomena are wonderful and surprizing, yet they are such as skilful physicians are perfectly acquainted with. They know the natural structure of man: and here, by the by, I may take notice, that in my opinion he is the best physician, and most worthy our confidence, who has the greatest knowledge in the physical or mechanical constitution of the human body; who does not trouble himself about the soul, nor all that train of perplexities which this chimera is apt to raise in foolish ignorant brains, but is seriously busied with pure nature.

Let the pretended Mr. *Charp* go on and laugh at those who look upon animals to be nothing but machines; still I remain unshaken in my opinion. I believe that

Descartes,

Descartes, had he been born in a more enlighten'd age, would have met with universal esteem, and reap'd the just reward of his experience and observations. It is but just and reasonable that I should say somewhat in praise of this great man, in opposition to a number of groveling philosophers, bad humourists, and most wretched imitators of *Locke*, who instead of rallying *Descartes* in the most abusive manner, ought to acknowledge, that as we are indebted to *Sir Isaac Newton* for rectifying our knowledge in many particulars, so likewise, that philosophy in general would have remained uncultivated, had it not been for the assistance of *Mr. Descartes*.

It is true, indeed, this great philosopher is mistaken in many particulars, this we freely allow: but it must be own'd that he had a great knowledge in the animal nature; he was the first who perfectly demonstrated animals to be meer machines. Now after so important a discovery, a discovery which shews so much penetration in the discoverer, after this, I say how can we avoid shewing an indulgent and forgiving temper to all his errors? All of them, in my opinion, are fully atton'd for by his declaration of this one truth. For in short, tho' he descants upon the two different substances; yet it appears very plain, that this is only a stroke of policy, a piece of finesse, to make the Divines swallow the poison which was conceal'd in that analogy, of which they alone were ignorant, whilst every

every body else could not help being struck with it. 'Tis this strong analogy alone, which obliges all men of knowledge and true judgment, to acknowledge these vain, haughty mortals, more distinguish'd by their pride, than the name of men, how great soever their desire may be to raise themselves, to be in reality, only animals, or machines. They have all that marvellous instinct, which by education, is formed into understanding, and has always its seat in the brain, and in default thereof, as when there is none, or it happens to be ossified, in the *medulla oblongata*, and never in the *cerebellum*; for I have seen it considerably damaged, and others * have found it skirrous, tho' the soul continued to exercise its functions.

To be a machine, to feel, to think, to be able to distinguish good and evil, as well as the eyes can different colours, in a word, to be born with an understanding and moral sense, yet at the same time, to be but an animal, or machine, in all this there is no more absurdity than in asserting that there is a Monkey, or Parrot, both which are capable of giving and receiving pleasure. Here I may take the opportunity to ask, who at first could have imagined, that one drop of the seminal liquor which is discharg'd in copulation, should be the occasion of such extatic pleasure, and afterwards spring up into a little creature, which in time, certain conditions being

* Haller in the philosophical transactions.

suppos'd,

Suppos'd, should itself feel the same transports? So far then am I from thinking that thought is inconsistent with organized matter, that I look upon it to be a property as much belonging thereto, as electricity, impenetrability, extension, &c.

Is there occasion for more observations? If there is, there are many remaining that are undisputable, all tending to prove that the origin of man perfectly resembles that of other animals, as has been proved from what we have already produced as necessary to that purpose.

I call upon the most curious observers, to give their evidence to determine this point. Let them say if it is not fact, that man at first is but as a mite, from which he springs as the butterfly does from a caterpillar. The most important writers * have inform'd us of a method whereby we may see the animalcule. All the curious, *Hartsoeker* in particular, have seen this in the seed of the man, tho' not in that of the woman; this is a truth, of which none, but the most foolish, make any doubt. Every drop of the seed contains an infinite number of these animalcula, and when these are discharg'd into the ovarium, only the most active or vigorous of them are able to force their way, and to implant themselves in the egg which is furnish'd by the woman, and gives the first nourishment. This egg being for some time lodg'd in the fallopian tubes, is thence con-

* Boerhaave Institut. Med. and a great many others.

vey'd into the womb, where it takes root in the same manner as a grain of corn does in the ground. And tho' in the space of nine months, it grows to a monstrous size, yet it differs in nothing from the eggs of other females, only that its coat (*Amnios*) never hardens, but dilates itself prodigiously, the truth of which we may judge by observing the situation of the Fœtus when ready to be brought forth into light, and I myself have had the satisfaction of seeing it in a woman who died when the time of her delivery was just at hand. Let this be compar'd with other less embryos, and nearer their first beginning, then 'tis the egg always within its shell, and the animal within the egg, which being uneasy in its confinement, by a sort of mechanism strives to see the light, and in order to succeed, the animal with its head breaks thro' this membrane, whence at last it forces its way, as a chicken, or any other bird. I will add here a remark, which I believe has not been made elsewhere; which is, that the *Amnios* does not become thinner, notwithstanding its being stretch'd out to such a degree; in this, resembling the womb, which is distended by the infeltrated juices.

Let us view man when within the shell, and when out of it; let us take a microscope and examine the youngest embryos, those of the growth of four, six, eight, or fifteen days; after this age we may discover them with our naked eyes. Then we can perceive the head only, a round egg with two blackish specks,

specks, which represent the eyes. Before this time, all being unform'd, we can see nothing but a pulp of marrow, which is the brain where the original of the nerves is first form'd, where the principle of feeling is first seated, and the heart which begins already to beat in this soft pulp: This is the *Punctum saliens* of *Malpighi*, part of the liveliness of which does perhaps already proceed from the influence of the nerves. Then we see the head by degrees stretch forth the neck, which being widen'd, first forms the thorax, where the heart immediately descends, and takes up its situation. The belly is framed next, which is divided into two parts by a partition, call'd by anatomists, the Diaphragm. These parts being expanded, furnish the arms, the hands, the fingers, the nails, and the hair; the other gives the thighs, the legs, the feet, &c. with the known difference only of situation, which forms the support and ballance of the body. 'Tis a surprising vegetation. Here you see the hairs that cover the tops of our heads; and there you behold the leaves and flowers; the same luxury of nature shines throughout; and at length the directing spirit of plants is placed, where our soul is, that other quintessence of man.

Such is the sensible uniformity of nature, and the analogy between the animal and vegetable oeconomy, man and plants. Nay, very likely there are animal plants, that is, plants which in their vegetation, either fight with one another

ther like polypus's, or perform other animal functions.

This then is almost all we know of generation. That the parts which attract each other, which are made to be joined together, and to take up their particular places of situation, all unite themselves according to the laws of nature, that after this manner comes the formation of the eyes, the heart, the stomach, and in short, the whole body as has been observed by very great men, all this is possible. But as experience fails us in the midst of these niceties, I shall therefore advance nothing upon supposition, looking upon every thing which does not strike my senses, to be a mystery that cannot be fathom'd. It is so seldom, that both seeds meet in coition, that I am strongly inclined to believe that the seed of the woman is not necessary in generation.

But here some will object, and say, that we must suppose both sexes to have an equal share in generation, otherways, say they, how could we account for that surprizing likeness there is in children, sometimes to the father, and at other times to the mother? On the other hand, tho' I own, that there will be a good deal of perplexity in attempting to explain this phænomenon, yet I think, that a difficulty of this nature ought never to counterballance a real fact. It appears to me that the man does all, whilst the woman as it were enjoys a profound sleep, and is lost in
a sort

a sort of extasy. It seems then, that the parts must have been properly ranged from all eternity in the seed, or perhaps in the animalcule of the man. Yet this infinitely surpasses the comprehension of our most ingenious observers. As they cannot see, or distinguish the particular parts, so they are not capable to judge of the structure, formation, and hidden mechanism of the body, no more than a mole is to form an idea of the space of ground which a stag is able to run over.

In reality, we ourselves are but as moles in the field of nature, and we make the same progression which that animal does; and 'tis our pride which pretends to set bounds to what is boundless. We are like a watch which should speak in this manner, (a writer of fables would make it a character of consequence in one of his performances.)
“What is he but a blockhead, who takes
“upon himself to be my maker? am
“I to be call'd the creature of this silly
“mortal! I who divide the time! I who
“mark the course of the sun so exactly!
“I who repeat aloud the hours which I
“discover! No, no, this cannot be.” In the same manner, we mortals, ungrateful wretches! look down with an air of contempt on the common parent of all kingdoms, as the chymists express it. We conceive, or rather we suppose, a cause superiour to that which we are all indebted to, and which has certainly made every thing in a manner that's wonder-

ful and unconceivable. Matter has nothing contemptible in it, tho' it may appear so to coarse eyes, who despise it in the most shining works; and nature is free and unbounded in all her performances. She produces millions of men with more facility and pleasure, than a watch-maker frames a piece of clock-work. Her power is equally display'd in the production of the lowest insect, as it is in that of the more lofty creature, man. The animal kingdom costs her no more labour than the vegetable, and she can form the greatest genius with the same degree of ease, as she does an ear of corn. Let us not then be carried away by the strength of fancy alone, but let us examine those things which are presented to our eyes, and by this we may form a judgment of others which are beyond our sight, and hidden from our prying curiosity. Let us consider the Monkey, the Beaver, the Elephant, &c. in their actions and behaviour. Since it is evident, that they cannot act in the manner they do, without understanding, why should we refuse it to these animals? And if you grant them a soul, enthusiasts, then you are quite overthrown. You say, that you do not pretend to judge of the nature of this soul, whilst at the same time (O strange contradiction!) you openly affirm it to be deprived of immortality. Who does not at once perceive that it must be mortal, or immortal, according as ours is, and must undergo the same fate whatever it may be? 'Tis in
this

this manner they run upon Scilla, whilst they are endeavouring to shun Charibdis with the utmost precaution.

Dare to throw off those prejudices in which you are fetter'd: assert your liberty, and arm yourselves with the light of experience; then instead of being blinded by ignorance, and drawing inferences derogatory to the honour of nature, you will give her the praise and esteem she really deserves. Open your eyes only, and meddle not with what you are unable to comprehend. You will see that the husbandman whose light and understanding does not go beyond the furrow which he plows, does not essentially differ from the greatest genius, as has been prov'd by dissecting the heads of Descartes and Newton. Upon enquiry you'll be convinc'd that the fool and the idiot are only beasts in a human form, as a sensible monkey is a little man in a different shape; and in short, that all depends upon the different organization. An animal that's properly constructed, and has been taught astronomy, will be able to foretel an eclipse, as one which has been bred up in the school of Hippocrates, and spent some time in visiting the sick, will be able to prescribe a cure, or foretel when the distemper is incurable. 'Tis by this thread of truths and observations that we trace out matter, and affix to it that admirable property of thinking, tho' we cannot indeed, with our eyes, see this connexion, because the essential nature of this attribute is unknown to us.

Let us not pretend to say, that every machine, or animal, is entirely annihilated after death, nor that they put on another form, since we are quite in the dark as to this point. To affirm an immortal machine to be a chimaera, or fiction of our brain appears to be as absurd as it would seem in Caterpillars, when they see the dead bodies of their kind, bitterly to lament the fate of their species, which would seem to them to be utterly destroy'd. The soul of these insects (for every animal has one peculiar to it) is too narrow, and confin'd to be able to comprehend the transformation of their Nature. Never did any one of the acutest amongst them, entertain the least notion that he would become a Butterfly. It is the very same case with us. What do we know of our future destiny, more than we do of our original? Let us then confess our total ignorance, since upon this our happiness is placed.

He who will think thus, shall be wise, just, pleased with his condition, and consequently happy; he will patiently expect death, without fearing, or desiring it; he will cherish life, thinking it unaccountable how disgust should corrupt the heart in a world abounding with so much joy; full of respect for nature; overflowing with gratitude, affection, and love; all which rise in proportion to the bounty which he has received. Happy in short in the enjoyment of life, and pleas'd with being admitted a spectator of the universe, he will never think of attempt-

attempting to destroy his own being, nor that of others; nay, so far from this, that he will have an universal benevolence to all mankind, and will be in love with this principle of humanity, even tho' in his enemies. He will not hate, but will be sorry for the vicious, they will appear to him as deform'd men. But in good nature, bearing with the infirmities of the mind and body, he will at the same time admire their beauty and virtue. Those who have been favoured by nature, will appear to him more worthy of esteem than others whom she has treated with the harshness of a step-mother. 'Tis thus, that the advocate for matter so often thinks and talks, and pays that respect, refus'd by others, to natural abilities, which are certainly the source of all acquired qualifications. In short the materialist, tho' his vanity may murmur against it, in reality is convinced, that he is only a machine, or animal, and he will not abuse any of his fellow creatures. Being instructed by nature how to regulate his actions, which are proportioned to that degree of analogy before-mentioned: In a word, following the law of nature given to all animals, he will not do to another, what he would not choose to be done to himself.

Let us conclude boldly then, that man is a machine; and that there is only one substance, differently modified in the whole universe. This is not an hypothesis raised upon the strength of things required, or suppos'd to
be

be true ; this is not the work of a man of prejudice, nor of my reason alone ; I should have despised any other guide as unsure, had not my senses stepped forth, and if I may so say, holding up a lighted torch, induc'd me to pursue the road which shin'd with light. Experience has spoke to me in behalf of reason, and thus it is, that I have joyn'd them both together.

But it may be observed, that I have not made use of these proofs, or strong inferences, but as deductions immediately drawn from a number of physical observations, the truth of which no men of learning can dispute : and indeed it is them alone whom I acknowledge to be proper judges of the consequences which I have drawn, absolutely refusing to submit to the judgment of any prejudiced person, or of him who is unacquainted with anatomy ; because in effect, he is ignorant of that philosophy which alone we make use of, that is, a knowledge in the structure of the human body. What will all the weak reeds of divinity, metaphysics and nonsense of the schools, avail against the firm and solid oak ? Childish arms like to the foils made use of in fencing schools, which may give the pleasure of fencing, but will never enter the body of our antagonist. Need I here mention that I mean those fantastical, impertinent notions, those thread-bare pitiful reasonings, which as long as there is the least shadow of prejudice, or superstition upon earth, will be made upon
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the pretended incompatibility of two substances touching and moving each other without intermission? This is my system, or rather, this is the truth, if I am not much mistaken. It is short and plain : Let who will dispute it.

F I N I S.



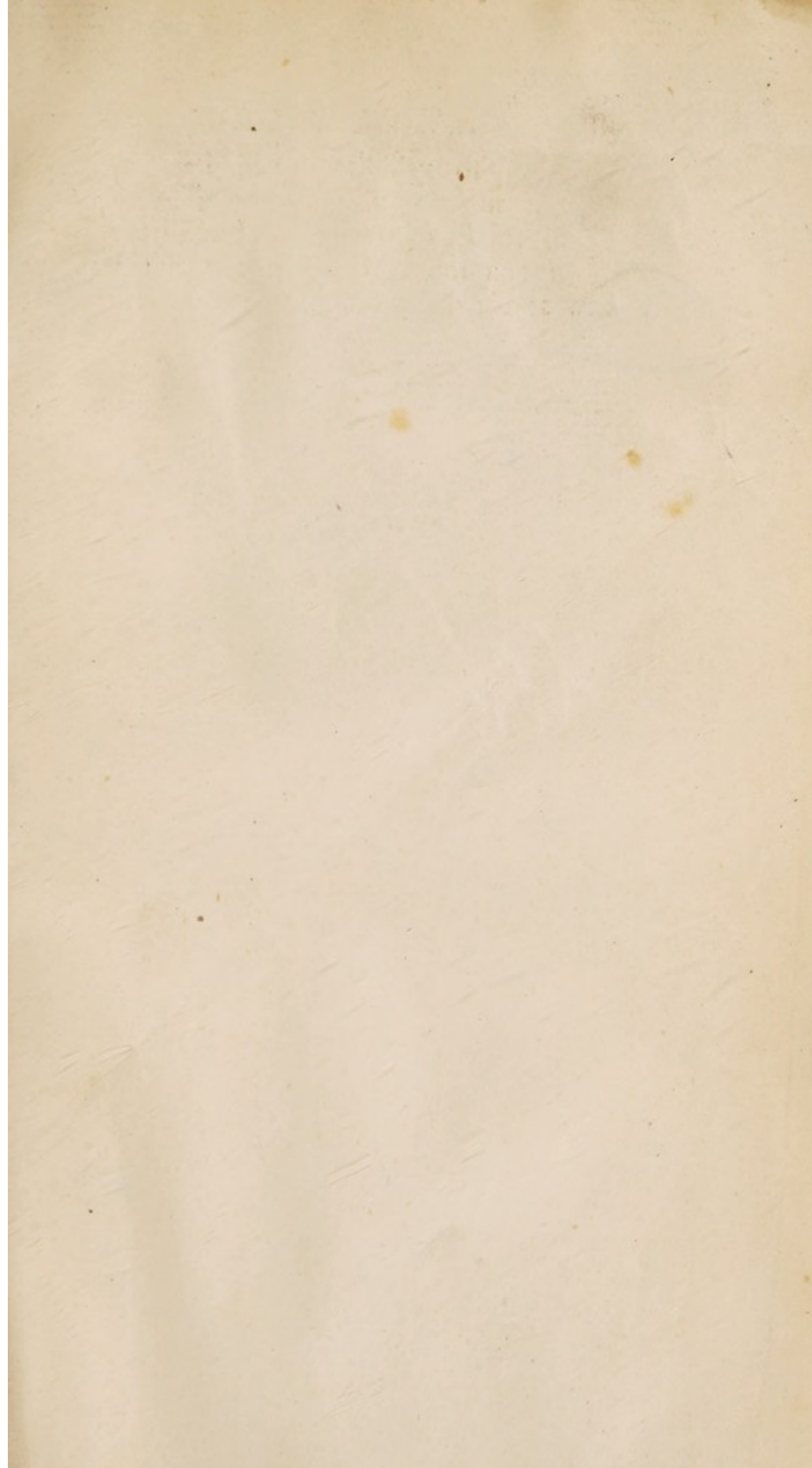
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M. A. W. & M. A. W.

A printed illustration of two
men, one standing and one sitting,
both in military uniforms. The
standing man is on the left, and
the sitting man is on the right.
The illustration is in black and
white, and is a reproduction of
a painting by a French artist.
The illustration is a reproduction
of a painting by a French artist.
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