SECTION 4

SBN 25

Sceptical Doubts concerning the Operations of the Understanding

PART 1

1 ALL the objects of human reason or enquiry may naturally be divided into two kinds, to wit, *Relations of Ideas* and *Matters of Fact*. Of the first kind are the sciences of Geometry, Algebra, and Arithmetic; and in short, every affirmation, which is either intuitively or demonstratively certain. *That the square of the hypothenuse is equal to the square of the two sides*, is a proposition, which expresses a relation between these figures. *That three times five is equal to the half of thirty*, expresses a relation between these numbers. Propositions of this kind are discoverable by the mere operation of thought, without dependence on what is any where existent in the universe. Though there never were a circle or triangle in nature, the truths, demonstrated by EUCLID, would for ever retain their certainty and evidence.

2 Matters of fact, which are the second objects of human reason, are not ascertained in the same manner; nor is our evidence of their truth, however great, of a like nature with the foregoing. The contrary of every matter of fact is still possible; because it can never imply a contradiction, and is conceived by the mind with the same facility and distinctness, as if ever so conformable to reality. *That the sun will not rise to-morrow* is no less intelligible a proposition, and implies no more contradiction, than the affirmation, *that it will rise*. We should in vain, therefore, attempt to demonstrate its falsehood. Were it demonstratively false, it would imply a contradiction, and could never be distinctly conceived by the mind.

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3 It may, therefore, be a subject worthy of curiosity, to enquire what is the nature of that evidence, which assures us of any real existence and matter of fact, beyond the present testimony of our senses, or the records of our memory. This part of philosophy, it is observable, has been little cultivated, either by the ancients or moderns; and therefore our doubts and errors, in the prosecution of so important an enquiry, may be the more excusable; while we march through such difficult paths, without any guide or direction. They may even prove useful, by exciting curiosity, and destroying that implicit faith and security, which is the bane of all reasoning and free enquiry. The

discovery of defects in the common philosophy, if any such there be, will not, I presume, be a discouragement, but rather an incitement, as is usual, to attempt something more full and satisfactory, than has yet been proposed to the public.

4 All reasonings concerning matter of fact seem to be founded on the relation of *Cause* and *Effect*. By means of that relation alone we can go beyond the evidence of our memory and senses. If you were to ask a man, why he believes any matter of fact, which is absent; for instance, that his friend is in the country, or in FRANCE; he would give you a reason; and this reason would be some other fact; as a letter received from him, or the knowledge of his former resolutions and promises. A man, finding a watch or any other machine in a desert island, would conclude, that there had once been men in that island. All our reasonings concerning fact are of the same nature. And here it is *SBN 27* constantly supposed, that there is a connexion between the present fact and that which is inferred from it. Were there nothing to bind them together, the inference would be entirely precarious. The hearing of an articulate voice and rational discourse in the dark assures us of the presence of some person: Why? Because these are the effects of the human make and fabric, and closely connected with it. If we anatomize all the other reasonings of this nature, we shall find, that they are founded on the relation of cause and effect, and that this relation is either near or remote, direct or collateral. Heat and light are collateral effects of fire, and the one effect may justly be inferred from the other.

5 If we would satisfy ourselves, therefore, concerning the nature of that evidence, which assures us of matters of fact, we must enquire how we arrive at the knowledge of cause and effect.

6 I shall venture to affirm, as a general proposition, which admits of no exception, that the knowledge of this relation is not, in any instance, attained by reasonings *a priori*; but arises entirely from experience, when we find, that any particular objects are constantly conjoined with each other. Let an object be presented to a man of ever so strong natural reason and abilities; if that object be entirely new to him, he will not be able, by the most accurate examination of its sensible qualities, to discover any of its causes or effects. ADAM, though his rational faculties be supposed, at the very first, entirely perfect, could not have inferred from the fluidity and transparency of water, that it would suffocate him, or from the light and warmth of fire, that it would consume him. No object ever discovers, by the qualities which appear to the senses, either the causes, which produced it, or the effects, which will arise from it; nor can our reason, unassisted by experience, ever draw any inference concerning real existence and matter of fact.

7 This proposition, *that causes and effects are discoverable, not by reason, but by experience*, will readily be admitted with regard to such objects, as we remember to have once been altogether unknown to us; since we must be conscious of the utter inability, which we then lay under, of foretelling, what would arise from them. Present two smooth pieces of marble to a man, who has no tincture of natural philosophy; he will never discover, that they will adhere together, in such a manner as to require great force to separate them in a direct line, while they make so small a resistance to a lateral pressure. Such events, as bear little analogy to the common course of nature, are also readily confessed to be known only by experience; nor does any man imagine that the explosion of gunpowder, or the attraction of a loadstone, could ever be discovered by arguments *a priori*. In like manner, when an effect is supposed to depend upon an intricate machinery or secret structure of parts, we make no difficulty in attributing all our knowledge of it to experience. Who will assert, that he can give the ultimate reason, why milk or bread is proper nourishment for a man, not for a lion or a tyger? *SBN 28*

8 But the same truth may not appear, at first sight, to have the same evidence with regard to events, which have become familiar to us from our first appearance in the world, which bear a close analogy to the whole course of nature, and which are supposed to depend on the simple qualities of objects, without any secret structure of parts. We are apt to imagine, that we could discover these effects by the mere operation of our reason, without experience. We fancy, that were we brought, on a sudden, into this world, we could at first have inferred, that one billiard-ball would communicate motion to another upon impulse; and that we needed not to have waited for the event, in order to pronounce with certainty concerning it. Such is the influence of custom, that, where it is strongest, it not only covers our natural ignorance, but even conceals itself, and seems not to take place, merely because it is found in the highest degree. *SBN 29*

9 But to convince us, that all the laws of nature, and all the operations of bodies without exception, are known only by experience, the following reflections may, perhaps, suffice. Were any object presented to us, and were we required to pronounce concerning the effect, which will result from it, without consulting past observation; after what manner, I beseech you, must the mind proceed in this operation? It must invent or imagine some event, which it ascribes to the object as its effect; and it is plain that this invention must be entirely arbitrary. The mind can never possibly find the effect in the supposed cause, by the most accurate scrutiny and examination. For the effect is totally different from the cause, and consequently can never be discovered in it. Motion in the second billiard-ball is a quite distinct event from

motion in the first; nor is there any thing in the one to suggest the smallest hint of the other. A stone or piece of metal raised into the air, and left without any support, immediately falls: But to consider the matter *a priori*, is there any thing we discover in this situation, which can beget the idea of a downward, rather than an upward, or any other motion, in the stone or metal?

10 And as the first imagination or invention of a particular effect, in all natural operations, is arbitrary, where we consult not experience; so must we also esteem the supposed tye or connexion between the cause and effect, which binds them together, and renders it impossible, that any other effect could result from the operation of that cause. When I see, for instance, a 10 billiard-ball moving in a straight line towards another; even suppose motion in the second ball should by accident be suggested to me, as the result of their contact or impulse; may I not conceive, that a hundred different events might as well follow from that cause? May not both these balls remain at absolute rest? May not the first ball return in a straight line, or leap off from the second *SBN 30* in any line or direction? All these suppositions are consistent and conceivable. Why then should we give the preference to one, which is no more consistent or conceivable than the rest? All our reasonings *a priori* will never be able to show us any foundation for this preference.

11 In a word, then, every effect is a distinct event from its cause. It could not, 20 therefore, be discovered in the cause, and the first invention or conception of it, *a priori*, must be entirely arbitrary. And even after it is suggested, the conjunction of it with the cause must appear equally arbitrary; since there are always many other effects, which, to reason, must seem fully as consistent and natural. In vain, therefore, should we pretend to determine any single event, or infer any cause or effect, without the assistance of observation and experience.

12 Hence we may discover the reason, why no philosopher, who is rational and modest, has ever pretended to assign the ultimate cause of any natural operation, or to show distinctly the action of that power, which produces any 30 single effect in the universe. It is confessed, that the utmost effort of human reason is, to reduce the principles, productive of natural phænomena, to a greater simplicity, and to resolve the many particular effects into a few general causes, by means of reasonings from analogy, experience, and observation. But as to the causes of these general causes, we should in vain attempt their discovery; nor shall we ever be able to satisfy ourselves, by any particular explication of them. These ultimate springs and principles are totally shut up from human curiosity and enquiry. Elasticity, gravity, cohesion of parts, communication of motion by impulse; these are probably the ultimate causes and principles which we shall ever discover in nature; and we may esteem 40

ourselves sufficiently happy, if, by accurate enquiry and reasoning, we can trace up the particular phænomena to, or near to, these general principles. *SBN 31* The most perfect philosophy of the natural kind only staves off our ignorance a little longer: As perhaps the most perfect philosophy of the moral or metaphysical kind serves only to discover larger portions of our ignorance. Thus the observation of human blindness and weakness is the result of all philosophy, and meets us, at every turn, in spite of our endeavours to elude or avoid it.

13 Nor is geometry, when taken into the assistance of natural philosophy, ever able to remedy this defect, or lead us into the knowledge of ultimate causes, 10 by all that accuracy of reasoning, for which it is so justly celebrated. Every part of mixed mathematics proceeds upon the supposition, that certain laws are established by nature in her operations; and abstract reasonings are employed, either to assist experience in the discovery of these laws, or to determine their influence in particular instances, where it depends upon any precise degree of distance and quantity. Thus, it is a law of motion, discovered by experience, that the moment or force of any body in motion is in the compound ratio or proportion of its solid contents and its velocity; and consequently, that a small force may remove the greatest obstacle or raise the greatest weight, if, by any contrivance or machinery, we can encrease the 20 velocity of that force, so as to make it an overmatch for its antagonist. Geometry assists us in the application of this law, by giving us the just dimensions of all the parts and figures, which can enter into any species of machine; but still the discovery of the law itself is owing merely to experience, and all the abstract reasonings in the world could never lead us one step towards the knowledge of it. When we reason *a priori*, and consider merely any object or cause, as it appears to the mind, independent of all observation, it never could suggest to us the notion of any distinct object, such as its effect; much less, show us the inseparable and inviolable connexion between them. A man must be very sagacious, who could discover by reasoning, that crystal is the *SBN 32* effect of heat, and ice of cold, without being previously acquainted with the operations of these qualities.

PART 2

14 But we have not, as yet, attained any tolerable satisfaction with regard to the question first proposed. Each solution still gives rise to a new question as difficult as the foregoing, and leads us on to farther enquiries. When it is asked, *What is the nature of all our reasonings concerning matter of fact?* the proper

answer seems to be, that they are founded on the relation of cause and effect. When again it is asked, *What is the foundation of all our reasonings and conclusions concerning that relation?* it may be replied in one word, EXPERIENCE. But if we still carry on our sifting humour, and ask, *What is the foundation of all conclusions from experience?* this implies a new question, which may be of more difficult solution and explication. Philosophers, that give themselves airs of superior wisdom and sufficiency, have a hard task, when they encounter persons of inquisitive dispositions, who push them from every corner, to which they retreat, and who are sure at last to bring them to some dangerous dilemma. The best expedient to prevent this confusion, is to be modest in our pretensions; and even to discover the difficulty ourselves before it is objected to us. By this means, we may make a kind of merit of our very ignorance.

I shall content myself, in this section, with an easy task, and shall pretend only to give a negative answer to the question here proposed. I say then, that, even after we have experience of the operations of cause and effect, our conclusions from that experience are *not* founded on reasoning, or any process of the understanding. This answer we must endeavour, both to explain and to defend.

16 It must certainly be allowed, that nature has kept us at a great distance from all her secrets, and has afforded us only the knowledge of a few superficial qualities of objects; while she conceals from us those powers and principles, on which the influence of these objects entirely depends. Our senses inform us of the colour, weight, and consistence of bread; but neither sense nor reason can ever inform us of those qualities, which fit it for the nourishment and support of a human body. Sight or feeling conveys an idea of the actual motion of bodies; but as to that wonderful force or power, which would carry on a moving body for ever in a continued change of place, and which bodies never lose but by communicating it to others; of this we cannot form the most distant conception. But notwithstanding this ignorance of natural powers[7] and principles, we always presume, when we see like sensible qualities, that they have like secret powers, and expect, that effects, similar to those, which we have experienced, will follow from them. If a body of like colour and consistence with that bread, which we have formerly eat, be presented to us, we make no scruple of repeating the experiment, and foresee, with certainty, like nourishment and support. Now this is a process of the mind or thought, of which I would willingly know the foundation. It is

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[7] The word, *power*, is here used in a loose and popular sense. The more accurate explication of it would give additional evidence to this argument. See Section 7.

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allowed on all hands, that there is no known connexion between the sensible qualities and the secret powers; and consequently, that the mind is not led to form such a conclusion concerning their constant and regular conjunction, by any thing which it knows of their nature. As to past *Experience*, it can be allowed to give *direct* and *certain* information of those precise objects only, and that precise period of time, which fell under its cognizance: But why this experience should be extended to future times, and to other objects, which, for aught we know, may be only in appearance similar; this is the main question on which I would insist. The bread, which I formerly eat, nourished me; *SBN 34*
that is, a body of such sensible qualities, was, at that time, endowed with such
secret powers: But does it follow, that other bread must also nourish me at another time, and that like sensible qualities must always be attended with like secret powers? The consequence seems nowise necessary. At least, it must be acknowledged, that there is here a consequence drawn by the mind; that there is a certain step taken; a process of thought, and an inference, which wants to be explained. These two propositions are far from being the same, *I have found that such an object has always been attended with such an effect*, and *I foresee, that other objects, which are, in appearance, similar, will be attended with similar effects*. I shall allow, if you please, that the one proposition may justly be inferred from the other: I know in fact, that it always is
inferred. But if you insist, that the inference is made by a chain of reasoning, I desire you to produce that reasoning. The connexion between these propositions is not intuitive. There is required a medium, which may enable the mind to draw such an inference, if indeed it be drawn by reasoning and argument. What that medium is, I must confess, passes my comprehension; and it is incumbent on those to produce it, who assert, that it really exists, and is the origin of all our conclusions concerning matter of fact.

17 This negative argument must certainly, in process of time, become altogether convincing, if many penetrating and able philosophers shall turn their enquiries this way; and no one be ever able to discover any connecting proposition or intermediate step, which supports the understanding in this conclusion. But as the question is yet new, every reader may not trust so far to his own penetration, as to conclude, because an argument escapes his enquiry, that therefore it does not really exist. For this reason it may be requisite to *SBN 35*
venture upon a more difficult task; and enumerating all the branches of human knowledge, endeavour to show, that none of them can afford such an argument.

18 All reasonings may be divided into two kinds, namely, demonstrative reasoning, or that concerning relations of ideas, and moral reasoning, or that concerning matter of fact and existence. That there are no demonstrative

arguments in the case, seems evident; since it implies no contradiction, that the course of nature may change, and that an object, seemingly like those which we have experienced, may be attended with different or contrary effects. May I not clearly and distinctly conceive, that a body, falling from the clouds, and which, in all other respects, resembles snow, has yet the taste of salt or feeling of fire? Is there any more intelligible proposition than to affirm, that all the trees will flourish in DECEMBER and JANUARY, and decay in MAY and JUNE? Now whatever is intelligible, and can be distinctly conceived, implies no contradiction, and can never be proved false by any demonstrative argument or abstract reasoning *a priori*.

19 If we be, therefore, engaged by arguments to put trust in past experience, and make it the standard of our future judgment, these arguments must be probable only, or such as regard matter of fact and real existence, according to the division above-mentioned. But that there is no argument of this kind, must appear, if our explication of that species of reasoning be admitted as solid and satisfactory. We have said, that all arguments concerning existence are founded on the relation of cause and effect; that our knowledge of that relation is derived entirely from experience; and that all our experimental conclusions proceed upon the supposition, that the future will be conformable to the past. To endeavour, therefore, the proof of this last supposition by probable arguments, or arguments regarding existence, must be *SBN 36* evidently going in a circle, and taking that for granted, which is the very point in question.

20 In reality, all arguments from experience are founded on the similarity, which we discover among natural objects, and by which we are induced to expect effects similar to those, which we have found to follow from such objects. And though none but a fool or madman will ever pretend to dispute the authority of experience, or to reject that great guide of human life; it may surely be allowed a philosopher to have so much curiosity at least, as to examine the principle of human nature, which gives this mighty authority to experience, and makes us draw advantage from that similarity, which nature has placed among different objects. From causes, which appear *similar*, we expect similar effects. This is the sum of all our experimental conclusions. Now it seems evident, that, if this conclusion were formed by reason, it would be as perfect at first, and upon one instance, as after ever so long a course of experience. But the case is far otherwise. Nothing so like as eggs; yet no one, on account of this appearing similarity, expects the same taste and relish in all of them. It is only after a long course of uniform experiments in any kind, that we attain a firm reliance and security with regard to a particular event. Now where is that process of reasoning, which, from one instance,

draws a conclusion, so different from that which it infers from a hundred instances, that are nowise different from that single one? This question I propose as much for the sake of information, as with an intention of raising difficulties. I cannot find, I cannot imagine any such reasoning. But I keep my mind still open to instruction, if any one will vouchsafe to bestow it on me.

21 Should it be said, that, from a number of uniform experiments, we *infer* a connexion between the sensible qualities and the secret powers; this, I must confess, seems the same difficulty, couched in different terms. The question *SBN 37*
still recurs, On what process of argument this *inference* is founded? Where is the medium, the interposing ideas, which join propositions so very wide of 10
each other? It is confessed, that the colour, consistence, and other sensible qualities of bread appear not, of themselves, to have any connexion with the secret powers of nourishment and support. For otherwise we could infer these secret powers from the first appearance of these sensible qualities, without the aid of experience; contrary to the sentiment of all philosophers, and contrary to plain matter of fact. Here then is our natural state of ignorance with regard to the powers and influence of all objects. How is this remedied by experience? It only shows us a number of uniform effects, resulting from certain objects, and teaches us, that those particular objects, at that particular time, were endowed with such powers and forces. When a new object, 20
endowed with similar sensible qualities, is produced, we expect similar powers and forces, and look for a like effect. From a body of like colour and consistence with bread, we expect like nourishment and support. But this surely is a step or progress of the mind, which wants to be explained. When a man says, *I have found, in all past instances, such sensible qualities conjoined with such secret powers*: And when he says, *similar sensible qualities will always be conjoined with similar secret powers*; he is not guilty of a tautology, nor are these propositions in any respect the same. You say that the one proposition is an inference from the other. But you must confess, that the inference is not intuitive; neither is it demonstrative: Of what nature is it then? To say it is 30
experimental, is begging the question. For all inferences from experience suppose, as their foundation, that the future will resemble the past, and that similar powers will be conjoined with similar sensible qualities. If there be any suspicion, that the course of nature may change, and that the past may be *SBN 38*
no rule for the future, all experience becomes useless, and can give rise to no inference or conclusion. It is impossible, therefore, that any arguments from experience can prove this resemblance of the past to the future; since all these arguments are founded on the supposition of that resemblance. Let the course of things be allowed hitherto ever so regular; that alone, without some new argument or inference, proves not, that, for the future, it will continue 40

so. In vain do you pretend to have learned the nature of bodies from your past experience. Their secret nature, and consequently, all their effects and influence, may change, without any change in their sensible qualities. This happens sometimes, and with regard to some objects: Why may it not happen always, and with regard to all objects? What logic, what process of argument secures you against this supposition? My practice, you say, refutes my doubts. But you mistake the purport of my question. As an agent, I am quite satisfied in the point; but as a philosopher, who has some share of curiosity, I will not say scepticism, I want to learn the foundation of this inference. No reading, no enquiry has yet been able to remove my difficulty, or give me satisfaction in a matter of such importance. Can I do better than propose the difficulty to the public, even though, perhaps, I have small hopes of obtaining a solution? We shall at least, by this means, be sensible of our ignorance, if we do not augment our knowledge.

22 I must confess, that a man is guilty of unpardonable arrogance, who concludes, because an argument has escaped his own investigation, that therefore it does not really exist. I must also confess, that, though all the learned, for several ages, should have employed themselves in fruitless search upon any subject, it may still, perhaps, be rash to conclude positively, that the subject must, therefore, pass all human comprehension. Even though we examine all the sources of our knowledge, and conclude them unfit for such a subject, there may still remain a suspicion, that the enumeration is not compleat, or the examination not accurate. But with regard to the present subject, there are some considerations, which seem to remove all this accusation of arrogance or suspicion of mistake. *SBN 39*

23 It is certain, that the most ignorant and stupid peasants, nay infants, nay even brute beasts, improve by experience, and learn the qualities of natural objects, by observing the effects, which result from them. When a child has felt the sensation of pain from touching the flame of a candle, he will be careful not to put his hand near any candle; but will expect a similar effect from a cause, which is similar in its sensible qualities and appearance. If you assert, therefore, that the understanding of the child is led into this conclusion by any process of argument or ratiocination, I may justly require you to produce that argument; nor have you any pretence to refuse so equitable a demand. You cannot say, that the argument is abstruse, and may possibly escape your enquiry; since you confess, that it is obvious to the capacity of a mere infant. If you hesitate, therefore, a moment, or if, after reflection, you produce any intricate or profound argument, you, in a manner, give up the question, and confess, that it is not reasoning which engages us to suppose the past resembling the future, and to expect similar effects from causes,

which are, to appearance, similar. This is the proposition which I intended to enforce in the present section. If I be right, I pretend not to have made any mighty discovery. And if I be wrong, I must acknowledge myself to be indeed a very backward scholar; since I cannot now discover an argument, which, it seems, was perfectly familiar to me, long before I was out of my cradle.

SECTION 5

SBN 40

Sceptical Solution of these Doubts

PART 1

1 THE passion for philosophy, like that for religion, seems liable to this inconvenience, that, though it aims at the correction of our manners, and extirpation of our vices, it may only serve, by imprudent management, to foster a predominant inclination, and push the mind, with more determined resolution, towards that side, which already *draws* too much, by the biass and propensity of the natural temper. It is certain, that, while we aspire to the magnanimous firmness of the philosophic sage, and endeavour to confine our pleasures altogether within our own minds, we may, at last, render our philosophy like that of EPICTETUS, and other STOICS, only a more refined system of selfishness, and reason ourselves out of all virtue, as well as social enjoyment. While we study with attention the vanity of human life, and turn all our thoughts towards the empty and transitory nature of riches and honours, we are, perhaps, all the while, flattering our natural indolence, which, hating the bustle of the world, and drudgery of business, seeks a pretence of reason, to give itself a full and uncontrouled indulgence. There is, however, one species of philosophy, which seems little liable to this inconvenience, and that because it strikes in with no disorderly passion of the human mind, nor can mingle itself with any natural affection or propensity; and that is the ACADEMIC or SCEPTICAL philosophy. The ACADEMICS always talk of doubt and suspence of judgment, of danger in hasty determinations, of confining to very narrow bounds the enquiries of the understanding, and of renouncing all speculations which lie not within the limits of common life and practice. Nothing, therefore, can be more contrary than such a philosophy to the supine indolence of the mind, its rash arrogance, its lofty pretensions, and its superstitious credulity. Every passion is mortified by it, except the love of truth; and that passion never is, nor can be carried to too high a degree. It is surprizing, therefore, that this philosophy, which, in almost every instance, must be harmless and innocent, should be the subject of so much groundless reproach and obloquy. But, perhaps, the very circumstance, which renders it so innocent, is what chiefly exposes it to the public hatred and resentment. By flattering no irregular passion, it gains few partizans: By opposing so many

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vices and follies, it raises to itself abundance of enemies, who stigmatize it as libertine, profane, and irreligious.

2 Nor need we fear, that this philosophy, while it endeavours to limit our enquiries to common life, should ever undermine the reasonings of common life, and carry its doubts so far as to destroy all action, as well as speculation. Nature will always maintain her rights, and prevail in the end over any abstract reasoning whatsoever. Though we should conclude, for instance, as in the foregoing section, that, in all reasonings from experience, there is a step taken by the mind, which is not supported by any argument or process of the understanding; there is no danger, that these reasonings, on which almost all knowledge depends, will ever be affected by such a discovery. If the mind be not engaged by argument to make this step, it must be induced by some other principle of equal weight and authority; and that principle will preserve its influence as long as human nature remains the same. What that principle is, may well be worth the pains of enquiry. *SBN 42*

3 Suppose a person, though endowed with the strongest faculties of reason and reflection, to be brought on a sudden into this world; he would, indeed, immediately observe a continual succession of objects, and one event following another; but he would not be able to discover any thing farther. He would not, at first, by any reasoning, be able to reach the idea of cause and effect; since the particular powers, by which all natural operations are performed, never appear to the senses; nor is it reasonable to conclude, merely because one event, in one instance, precedes another, that therefore the one is the cause, the other the effect. Their conjunction may be arbitrary and casual. There may be no reason to infer the existence of one from the appearance of the other. And in a word, such a person, without more experience, could never employ his conjecture or reasoning concerning any matter of fact, or be assured of any thing beyond what was immediately present to his memory and senses.

4 Suppose again, that he has acquired more experience, and has lived so long in the world as to have observed similar objects or events to be constantly conjoined together; what is the consequence of this experience? He immediately infers the existence of one object from the appearance of the other. Yet he has not, by all his experience, acquired any idea or knowledge of the secret power, by which the one object produces the other; nor is it, by any process of reasoning, he is engaged to draw this inference. But still he finds himself determined to draw it: And though he should be convinced, that his understanding has no part in the operation, he would nevertheless continue in the same course of thinking. There is some other principle, which determines him to form such a conclusion.

This principle is CUSTOM or HABIT. For wherever the repetition of any *SBN 43*
particular act or operation produces a propensity to renew the same act or operation, without being impelled by any reasoning or process of the understanding; we always say, that this propensity is the effect of *Custom*. By employing that word, we pretend not to have given the ultimate reason of such a propensity. We only point out a principle of human nature, which is universally acknowledged, and which is well known by its effects. Perhaps, we can push our enquiries no farther, or pretend to give the cause of this cause; but must rest contented with it as the ultimate principle, which we can assign, of all our conclusions from experience. It is sufficient satisfaction, that we can go so far; without repining at the narrowness of our faculties, because they will carry us no farther. And it is certain we here advance a very intelligible proposition at least, if not a true one, when we assert, that, after the constant conjunction of two objects, heat and flame, for instance, weight and solidity, we are determined by custom alone to expect the one from the appearance of the other. This hypothesis seems even the only one, which explains the difficulty, why we draw, from a thousand instances, an inference, which we are not able to draw from one instance, that is, in no respect, different from them. Reason is incapable of any such variation. The conclusions, which it draws from considering one circle, are the same which it would form upon surveying all the circles in the universe. But no man, having seen only one body move after being impelled by another, could infer, that every other body will move after a like impulse. All inferences from experience, therefore, are effects of custom, not of reasoning.[8]

[8] Nothing is more usual than for writers, even on *moral*, *political*, or *physical* subjects, to distin- *SBN 43*
guish between *reason* and *experience*, and to suppose, that these species of argumentation are entirely different from each other. The former are taken for the mere result of our intellectual faculties, *SBN 44*
which, by considering *a priori* the nature of things, and examining the effects, that must follow from their operation, establish particular principles of science and philosophy. The latter are supposed to be derived entirely from sense and observation, by which we learn what has actually resulted from the operation of particular objects, and are thence able to infer, what will, for the future, result from them. Thus, for instance, the limitations and restraints of civil government, and a legal constitution, may be defended, either from *reason*, which, reflecting on the great frailty and corruption of human nature, teaches, that no man can safely be trusted with unlimited authority; or from *experience* and history, which inform us of the enormous abuses, that ambition, in every age and country, has been found to make of so imprudent a confidence.

The same distinction between reason and experience is maintained in all our deliberations concerning the conduct of life; while the experienced statesman, general, physician, or merchant is trusted and followed; and the unpractised novice, with whatever natural talents endowed, neglected, and despised. Though it be allowed, that reason may form very plausible conjectures with regard to the consequences of such a particular conduct in such particular circumstances; it is still supposed imperfect, without the assistance of experience, which is alone able to give stability and certainty to the maxims, derived from study and reflection.

But notwithstanding that this distinction be thus universally received, both in the active and speculative scenes of life, I shall not scruple to pronounce, that it is, at bottom, erroneous, or at least, superficial.

If we examine those arguments, which, in any of the sciences above-mentioned, are supposed to

6 Custom, then, is the great guide of human life. It is that principle alone, *SBN 44*
which renders our experience useful to us, and makes us expect, for the future, a similar train of events with those which have appeared in the past. Without the influence of custom, we should be entirely ignorant of every *SBN 45*
matter of fact, beyond what is immediately present to the memory and senses. We should never know how to adjust means to ends, or to employ our natural powers in the production of any effect. There would be an end at once of all action, as well as of the chief part of speculation.

7 But here it may be proper to remark, that though our conclusions from experience carry us beyond our memory and senses, and assure us of matters of fact, which happened in the most distant places and most remote ages; yet some fact must always be present to the senses or memory, from which we may first proceed in drawing these conclusions. A man, who should find in a desert country the remains of pompous buildings, would conclude, that the country had, in ancient times, been cultivated by civilized inhabitants; but did nothing of this nature occur to him, he could never form such an infer- *SBN 46*
ence. We learn the events of former ages from history; but then we must peruse the volumes, in which this instruction is contained, and thence carry up our inferences from one testimony to another, till we arrive at the eye-witnesses and spectators of these distant events. In a word, if we proceed not upon some fact, present to the memory or senses, our reasonings would be merely hypothetical; and however the particular links might be connected

be the mere effects of reasoning and reflection, they will be found to terminate, at last, in some general principle or conclusion, for which we can assign no reason but observation and experience. The only difference between them and those maxims, which are vulgarly esteemed the result of pure experience, is, that the former cannot be established without some process of thought, and some reflection on what we have observed, in order to distinguish its circumstances, and trace its consequences: Whereas in the latter, the experienced event is exactly and fully similar to that which we infer as the result of any particular situation. The history of a Tiberius or a Nero makes us dread a like tyranny, were our monarchs freed from the restraints of laws and senates: But the observation of any fraud or cruelty in private life is sufficient, with the aid of a little thought, to give us the same *SBN 45*
apprehension; while it serves as an instance of the general corruption of human nature, and shows us the danger which we must incur by reposing an entire confidence in mankind. In both cases, it is experience which is ultimately the foundation of our inference and conclusion.

There is no man so young and unexperienced, as not to have formed, from observation, many general and just maxims concerning human affairs and the conduct of life; but it must be confessed, that, when a man comes to put these in practice, he will be extremely liable to error, till time and farther experience both enlarge these maxims, and teach him their proper use and application. In every situation or incident, there are many particular and seemingly minute circumstances, which the man of greatest talents is, at first, apt to overlook, though on them the justness of his conclusions, and consequently the prudence of his conduct, entirely depend. Not to mention, that, to a young beginner, the general observations and maxims occur not always on the proper occasions, nor can be immediately applied with due calmness and distinction. The truth is, an unexperienced reasoner could be no reasoner at all, were he absolutely unexperienced; and when we assign that character to any one, we mean it only in a comparative sense, and suppose him possessed of experience, in a smaller and more imperfect degree.

with each other, the whole chain of inferences would have nothing to support it, nor could we ever, by its means, arrive at the knowledge of any real existence. If I ask, why you believe any particular matter of fact, which you relate, you must tell me some reason; and this reason will be some other fact, connected with it. But as you cannot proceed after this manner, *in infinitum*, you must at last terminate in some fact, which is present to your memory or senses; or must allow that your belief is entirely without foundation.

8 What then is the conclusion of the whole matter? A simple one; though, it must be confessed, pretty remote from the common theories of philosophy. All belief of matter of fact or real existence is derived merely from some object, present to the memory or senses, and a customary conjunction between that and some other object. Or in other words; having found, in many instances, that any two kinds of objects, flame and heat, snow and cold, have always been conjoined together; if flame or snow be presented anew to the senses, the mind is carried by custom to expect heat or cold, and to *believe*, that such a quality does exist, and will discover itself upon a nearer approach. This belief is the necessary result of placing the mind in such circumstances. It is an operation of the soul, when we are so situated, as unavoidable as to feel the passion of love, when we receive benefits; or hatred, when we meet with injuries. All these operations are a species of natural instincts, which no reasoning or process of the thought and understanding is able, either to produce, or to prevent. *SBN 47*

9 At this point, it would be very allowable for us to stop our philosophical researches. In most questions, we can never make a single step farther; and in all questions, we must terminate here at last, after our most restless and curious enquiries. But still our curiosity will be pardonable, perhaps commendable, if it carry us on to still farther researches, and make us examine more accurately the nature of this *belief*, and of the *customary conjunction*, whence it is derived. By this means we may meet with some explications and analogies, that will give satisfaction; at least to such as love the abstract sciences, and can be entertained with speculations, which, however accurate, may still retain a degree of doubt and uncertainty. As to readers of a different taste; the remaining part of this section is not calculated for them, and the following enquiries may well be understood, though it be neglected.

PART 2

10 Nothing is more free than the imagination of man; and though it cannot exceed that original stock of ideas, furnished by the internal and external senses, it has unlimited power of mixing, compounding, separating, and

dividing these ideas, in all the varieties of fiction and vision. It can feign a train of events, with all the appearance of reality, ascribe to them a particular time and place, conceive them as existent, and paint them out to itself with every circumstance, that belongs to any historical fact, which it believes with the greatest certainty. Wherein, therefore, consists the difference between such a fiction and belief? It lies not merely in any peculiar idea, which is annexed to such a conception as commands our assent, and which is wanting to every known fiction. For as the mind has authority over all its *SBN 48*
ideas, it could voluntarily annex this particular idea to any fiction, and consequently be able to believe whatever it pleases; contrary to what we find by 10
daily experience. We can, in our conception, join the head of a man to the body of a horse; but it is not in our power to believe, that such an animal has ever really existed.

11 It follows, therefore, that the difference between *fiction* and *belief* lies in some sentiment or feeling, which is annexed to the latter, not to the former, and which depends not on the will, nor can be commanded at pleasure. It must be excited by nature, like all other sentiments; and must arise from the particular situation, in which the mind is placed at any particular juncture. Whenever any object is presented to the memory or senses, it immediately, by the force of custom, carries the imagination to conceive that 20
object, which is usually conjoined to it; and this conception is attended with a feeling or sentiment, different from the loose reveries of the fancy. In this consists the whole nature of belief. For as there is no matter of fact which we believe so firmly, that we cannot conceive the contrary, there would be no difference between the conception assented to, and that which is rejected, were it not for some sentiment, which distinguishes the one from the other. If I see a billiard-ball moving towards another, on a smooth table, I can easily conceive it to stop upon contact. This conception implies no contradiction; but still it feels very differently from that conception, by which I represent to myself the impulse, and the communication of motion from one ball to 30
another.

12 Were we to attempt a *definition* of this sentiment, we should, perhaps, find it a very difficult, if not an impossible task; in the same manner as if we should endeavour to define the feeling of cold or passion of anger, to a creature who never had any experience of these sentiments. *Belief* is the true and *SBN 49*
proper name of this feeling; and no one is ever at a loss to know the meaning of that term; because every man is every moment conscious of the sentiment represented by it. It may not, however, be improper to attempt a *description* of this sentiment; in hopes we may, by that means, arrive at some analogies, which may afford a more perfect explication of it. I say then, that belief 40

is nothing but a more vivid, lively, forcible, firm, steady conception of an object, than what the imagination alone is ever able to attain. This variety of terms, which may seem so unphilosophical, is intended only to express that act of the mind, which renders realities, or what is taken for such, more present to us than fictions, causes them to weigh more in the thought, and gives them a superior influence on the passions and imagination. Provided we agree about the thing, it is needless to dispute about the terms. The imagination has the command over all its ideas, and can join and mix and vary them, in all the ways possible. It may conceive fictitious objects with all the circumstances of place and time. It may set them, in a manner, before our eyes, in their true colours, just as they might have existed. But as it is impossible, that this faculty of imagination can ever, of itself, reach belief, it is evident, that belief consists not in the peculiar nature or order of ideas, but in the *manner* of their conception, and in their *feeling* to the mind. I confess, that it is impossible perfectly to explain this feeling or manner of conception. We may make use of words, which express something near it. But its true and proper name, as we observed before, is *belief*; which is a term, that every one sufficiently understands in common life. And in philosophy, we can go no farther than assert, that *belief* is something felt by the mind, which distinguishes the ideas of the judgment from the fictions of the imagination. It gives them more weight and influence; makes them appear of *SBN 50* greater importance; enforces them in the mind; and renders them the governing principle of our actions. I hear at present, for instance, a person's voice, with whom I am acquainted; and the sound comes as from the next room. This impression of my senses immediately conveys my thought to the person, together with all the surrounding objects. I paint them out to myself as existing at present, with the same qualities and relations, of which I formerly knew them possessed. These ideas take faster hold of my mind, than ideas of an enchanted castle. They are very different to the feeling, and have a much greater influence of every kind, either to give pleasure or pain, joy or sorrow.

13 Let us, then, take in the whole compass of this doctrine, and allow, that the sentiment of belief is nothing but a conception more intense and steady than what attends the mere fictions of the imagination, and that this *manner* of conception arises from a customary conjunction of the object with something present to the memory or senses: I believe that it will not be difficult, upon these suppositions, to find other operations of the mind analogous to it, and to trace up these phænomena to principles still more general.

14 We have already observed, that nature has established connexions among particular ideas, and that no sooner one idea occurs to our thoughts than it

introduces its correlative, and carries our attention towards it, by a gentle and insensible movement. These principles of connexion or association we have reduced to three, namely, *Resemblance*, *Contiguity*, and *Causation*; which are the only bonds, that unite our thoughts together, and beget that regular train of reflection or discourse, which, in a greater or less degree, takes place among all mankind. Now here arises a question, on which the solution of the present difficulty will depend. Does it happen, in all these relations, that, when one of the objects is presented to the senses or memory, the mind is not *SBN 51*
only carried to the conception of the correlative, but reaches a steadier and stronger conception of it than what otherwise it would have been able to attain? This seems to be the case with that belief, which arises from the relation of cause and effect. And if the case be the same with the other relations or principles of association, this may be established as a general law, which takes place in all the operations of the mind.

15 We may, therefore, observe, as the first experiment to our present purpose, that, upon the appearance of the picture of an absent friend, our idea of him is evidently enlivened by the *resemblance*, and that every passion, which that idea occasions, whether of joy or sorrow, acquires new force and vigour. In producing this effect, there concur both a relation and a present impression. Where the picture bears him no resemblance, or at least was not intended for him, it never so much as conveys our thought to him: And where it is absent, as well as the person; though the mind may pass from the thought of the one to that of the other; it feels its idea to be rather weakened than enlivened by that transition. We take a pleasure in viewing the picture of a friend, when it is set before us; but when it is removed, rather choose to consider him directly, than by reflection in an image, which is equally distant and obscure.

16 The ceremonies of the Roman Catholic religion may be considered as instances of the same nature. The devotees of that superstition usually plead in excuse for the mummeries, with which they are upbraided, that they feel the good effect of those external motions, and postures, and actions, in enlivening their devotion and quickening their fervour, which otherwise would decay, if directed entirely to distant and immaterial objects. We shadow out the objects of our faith, say they, in sensible types and images, and *SBN 52*
render them more present to us by the immediate presence of these types, than it is possible for us to do, merely by an intellectual view and contemplation. Sensible objects have always a greater influence on the fancy than any other; and this influence they readily convey to those ideas, to which they are related, and which they resemble. I shall only infer from these practices, and this reasoning, that the effect of resemblance in enlivening the ideas is very

common; and as in every case a resemblance and a present impression must concur, we are abundantly supplied with experiments to prove the reality of the foregoing principle.

17 We may add force to these experiments by others of a different kind, in considering the effects of *contiguity* as well as of *resemblance*. It is certain, that distance diminishes the force of every idea, and that, upon our approach to any object; though it does not discover itself to our senses; it operates upon the mind with an influence, which imitates an immediate impression. The thinking on any object readily transports the mind to what is contiguous; but it is only the actual presence of an object, that transports it with a superior vivacity. When I am a few miles from home, whatever relates to it touches me more nearly than when I am two hundred leagues distant; though even at that distance the reflecting on any thing in the neighbourhood of my friends or family naturally produces an idea of them. But as in this latter case, both the objects of the mind are ideas; notwithstanding there is an easy transition between them; that transition alone is not able to give a superior vivacity to any of the ideas, for want of some immediate impression.[9]

18 No one can doubt but causation has the same influence as the other *SBN 53* two relations of resemblance and contiguity. Superstitious people are fond of the relicts of saints and holy men, for the same reason, that they seek after types or images, in order to enliven their devotion, and give them a more intimate and strong conception of those exemplary lives, which they desire to imitate. Now it is evident, that one of the best relicts, which a devotee could procure, would be the handywork of a saint; and if his cloaths and furniture are ever to be considered in this light, it is because they were once at his disposal, and were moved and affected by him; in which respect they are to be considered as imperfect effects, and as connected with him by a shorter chain of consequences than any of those, by which we learn the reality of his existence.

19 Suppose, that the son of a friend, who had been long dead or absent, were presented to us; it is evident, that this object would instantly revive its correlative idea, and recall to our thoughts all past intimacies and familiarities, in more lively colours than they would otherwise have appeared to us. This

[9] "Naturane nobis, inquit, datum dicam, an errore quodam, ut, cum ea loca videamus, in quibus *SBN 52* memoria dignos viros acceperimus multum esse versatos, magis moveamur, quam siquando eorum ipsorum aut facta audiamus aut scriptum aliquod legamus? Velut ego nunc moveor. Venit enim mihi *SBN 53* PLATONIS in mentem, quem accepimus primum hic disputare solitum: Cujus etiam illi hortuli propinqui non memoriam solum mihi afferunt, sed ipsum videntur in conspectu meo hic ponere. Hic SPEUSIPPUS, hic XENOCRATES, hic ejus auditor POLEMO; cujus ipsa illa sessio fuit, quam videmus. Equidem etiam curiam nostram, HOSTILIAM dico, non hanc novam, quae mihi minor esse videtur postquam est major, solebam intuens, SCIPIONEM, CATONEM, LÆLIUM, nostrum vero in primis avum cogitare. Tanta vis admonitionis inest in locis; ut non sine causa ex his memoriae ducta sit disciplina." CICERO, de finibus. lib. 5.

is another phænomenon, which seems to prove the principle above-mentioned.

20 We may observe, that, in these phænomena, the belief of the correlative object is always presupposed; without which the relation could have no effect. The influence of the picture supposes, that we *believe* our friend to have once existed. Contiguity to home can never excite our ideas of home, *SBN 54* unless we *believe* that it really exists. Now I assert, that this belief, where it reaches beyond the memory or senses, is of a similar nature, and arises from similar causes, with the transition of thought and vivacity of conception here explained. When I throw a piece of dry wood into a fire, my mind is immedi- 10 ately carried to conceive, that it augments, not extinguishes the flame. This transition of thought from the cause to the effect proceeds not from reason. It derives its origin altogether from custom and experience. And as it first begins from an object, present to the senses, it renders the idea or conception of flame more strong and lively than any loose, floating reverie of the imagination. That idea arises immediately. The thought moves instantly towards it, and conveys to it all that force of conception, which is derived from the impression present to the senses. When a sword is levelled at my breast, does not the idea of wound and pain strike me more strongly, than when a glass of wine is presented to me, even though by accident this idea should 20 occur after the appearance of the latter object? But what is there in this whole matter to cause such a strong conception, except only a present object and a customary transition to the idea of another object, which we have been accustomed to conjoin with the former? This is the whole operation of the mind, in all our conclusions concerning matter of fact and existence; and it is a satisfaction to find some analogies, by which it may be explained. The transition from a present object does in all cases give strength and solidity to the related idea.

21 Here, then, is a kind of pre-established harmony between the course of nature and the succession of our ideas; and though the powers and forces, by 30 which the former is governed, be wholly unknown to us; yet our thoughts and conceptions have still, we find, gone on in the same train with the other works *SBN 55* of nature. Custom is that principle, by which this correspondence has been effected; so necessary to the subsistence of our species, and the regulation of our conduct, in every circumstance and occurrence of human life. Had not the presence of an object instantly excited the idea of those objects, commonly conjoined with it, all our knowledge must have been limited to the narrow sphere of our memory and senses; and we should never have been able to adjust means to ends, or employ our natural powers, either to the producing of good, or avoiding of evil. Those, who delight in the discovery and 40

contemplation of *final causes*, have here ample subject to employ their wonder and admiration.

22 I shall add, for a further confirmation of the foregoing theory, that, as this operation of the mind, by which we infer like effects from like causes, and *vice versa*, is so essential to the subsistence of all human creatures, it is not probable, that it could be trusted to the fallacious deductions of our reason, which is slow in its operations; appears not, in any degree, during the first years of infancy; and at best is, in every age and period of human life, extremely liable to error and mistake. It is more conformable to the ordinary wisdom of nature to secure so necessary an act of the mind, by some instinct or me- 10
chanical tendency, which may be infallible in its operations, may discover itself at the first appearance of life and thought, and may be independent of all the laboured deductions of the understanding. As nature has taught us the use of our limbs, without giving us the knowledge of the muscles and nerves, by which they are actuated; so has she implanted in us an instinct, which carries forward the thought in a correspondent course to that which she has established among external objects; though we are ignorant of those powers and forces, on which this regular course and succession of objects totally depends.

SECTION 6

SBN 56

Of Probability[10]

1 THOUGH there be no such thing as *Chance* in the world; our ignorance of the real cause of any event has the same influence on the understanding, and begets a like species of belief or opinion.

2 There is certainly a probability, which arises from a superiority of chances on any side; and according as this superiority encreases, and surpasses the opposite chances, the probability receives a proportionable encrease, and begets still a higher degree of belief or assent to that side, in which we discover the superiority. If a dye were marked with one figure or number of spots on four sides, and with another figure or number of spots on the two remaining sides, it would be more probable, that the former would turn up than the latter; though if it had a thousand sides marked in the same manner, and only one side different, the probability would be much higher, and our belief or expectation of the event more steady and secure. This process of the thought or reasoning may seem trivial and obvious; but to those who consider it more narrowly, it may, perhaps, afford matter for curious speculation.

SBN 57

3 It seems evident, that, when the mind looks forward to discover the event, which may result from the throw of such a dye, it considers the turning up of each particular side as alike probable; and this is the very nature of chance, to render all the particular events, comprehended in it, entirely equal. But finding a greater number of sides concur in the one event than in the other, the mind is carried more frequently to that event, and meets it oftener, in revolving the various possibilities or chances, on which the ultimate result depends. This concurrence of several views in one particular event begets immediately, by an inexplicable contrivance of nature, the sentiment of belief, and gives that event the advantage over its antagonist, which is supported by a smaller number of views, and recurs less frequently to the mind. If we allow, that belief is nothing but a firmer and stronger conception of an object than what attends the mere fictions of the imagination, this operation may, perhaps, in some measure, be accounted for. The concurrence of these

[10] Mr. LOCKE divides all arguments into demonstrative and probable. In this view, we must say, that it is only probable all men must die, or that the sun will rise to-morrow. But to conform our language more to common use, we ought to divide arguments into *demonstrations*, *proofs*, and *probabilities*. By *proofs* meaning *such arguments from experience as leave no room for doubt or opposition*.

SBN 56

several views or glimpses imprints the idea more strongly on the imagination; gives it superior force and vigour; renders its influence on the passions and affections more sensible; and in a word, begets that reliance or security, which constitutes the nature of belief and opinion.

4 The case is the same with the probability of causes, as with that of chance. There are some causes, which are entirely uniform and constant in producing a particular effect; and no instance has ever yet been found of any failure or irregularity in their operation. Fire has always burned, and water suffocated every human creature: The production of motion by impulse and gravity is an universal law, which has hitherto admitted of no exception. But there are other causes, which have been found more irregular and uncertain; nor has rhubarb always proved a purge, or opium a soporific to every one, who *SBN 58* has taken these medicines. It is true, when any cause fails of producing its usual effect, philosophers ascribe not this to any irregularity in nature; but suppose, that some secret causes, in the particular structure of parts, have prevented the operation. Our reasonings, however, and conclusions concerning the event are the same as if this principle had no place. Being determined by custom to transfer the past to the future, in all our inferences; where the past has been entirely regular and uniform, we expect the event with the greatest assurance, and leave no room for any contrary supposition. But where different effects have been found to follow from causes, which are to *appearance* exactly similar, all these various effects must occur to the mind in transferring the past to the future, and enter into our consideration, when we determine the probability of the event. Though we give the preference to that which has been found most usual, and believe that this effect will exist, we must not overlook the other effects, but must assign to each of them a particular weight and authority, in proportion as we have found it to be more or less frequent. It is more probable, in almost every country of Europe, that there will be frost sometime in January, than that the weather will continue open throughout that whole month; though this probability varies according to the different climates, and approaches to a certainty in the more northern kingdoms. Here then it seems evident, that, when we transfer the past to the future, in order to determine the effect, which will result from any cause, we transfer all the different events, in the same proportion as they have appeared in the past, and conceive one to have existed a hundred times, for instance, another ten times, and another once. As a great number of views do here concur in one event, they fortify and confirm it to the imagination, beget that sentiment which we call *belief*, and give its object the preference above the contrary event, which is not supported by an equal number of experiments, *SBN 59* and recurs not so frequently to the thought in transferring the past to the

future. Let any one try to account for this operation of the mind upon any of the received systems of philosophy, and he will be sensible of the difficulty. For my part, I shall think it sufficient, if the present hints excite the curiosity of philosophers, and make them sensible how defective all common theories are, in treating of such curious and such sublime subjects.

SECTION 7

SBN 60

Of the Idea of Necessary Connexion

PART 1

1 THE great advantage of the mathematical sciences above the moral consists in this, that the ideas of the former, being sensible, are always clear and determinate, the smallest distinction between them is immediately perceptible, and the same terms are still expressive of the same ideas, without ambiguity or variation. An oval is never mistaken for a circle, nor an hyperbola for an ellipsis. The isosceles and scalenum are distinguished by boundaries more exact than vice and virtue, right and wrong. If any term be defined in geometry, the mind readily, of itself, substitutes, on all occasions, the definition for the term defined: Or even when no definition is employed, the object itself may be presented to the senses, and by that means be steadily and clearly apprehended. But the finer sentiments of the mind, the operations of the understanding, the various agitations of the passions, though really in themselves distinct, easily escape us, when surveyed by reflection; nor is it in our power to recall the original object, as often as we have occasion to contemplate it. Ambiguity, by this means, is gradually introduced into our reasonings: Similar objects are readily taken to be the same: And the conclusion becomes at last very wide of the premises.

2 One may safely, however, affirm, that, if we consider these sciences in a proper light, their advantages and disadvantages nearly compensate each other, and reduce both of them to a state of equality. If the mind, with greater facility, retains the ideas of geometry clear and determinate, it must carry on a much longer and more intricate chain of reasoning, and compare ideas much wider of each other, in order to reach the abstruser truths of that science. And if moral ideas are apt, without extreme care, to fall into obscurity and confusion, the inferences are always much shorter in these disquisitions, and the intermediate steps, which lead to the conclusion, much fewer than in the sciences which treat of quantity and number. In reality, there is scarcely a proposition in EUCLID so simple, as not to consist of more parts, than are to be found in any moral reasoning which runs not into chimera and conceit. Where we trace the principles of the human mind through a few steps, we may be very well satisfied with our progress; considering how soon

SBN 61

nature throws a bar to all our enquiries concerning causes, and reduces us to an acknowledgment of our ignorance. The chief obstacle, therefore, to our improvement in the moral or metaphysical sciences is the obscurity of the ideas, and ambiguity of the terms. The principal difficulty in the mathematics is the length of inferences and compass of thought, requisite to the forming of any conclusion. And, perhaps, our progress in natural philosophy is chiefly retarded by the want of proper experiments and phænomena, which are often discovered by chance, and cannot always be found, when requisite, even by the most diligent and prudent enquiry. As moral philosophy seems hitherto to have received less improvement than either geometry or physics, we may conclude, that, if there be any difference in this respect among these sciences, the difficulties, which obstruct the progress of the former, require superior care and capacity to be surmounted.

3 There are no ideas, which occur in metaphysics, more obscure and uncer- *SBN 62*
tain, than those of *power*, *force*, *energy*, or *necessary connexion*, of which it is every moment necessary for us to treat in all our disquisitions. We shall, therefore, endeavour, in this section, to fix, if possible, the precise meaning of these terms, and thereby remove some part of that obscurity, which is so much complained of in this species of philosophy.

4 It seems a proposition, which will not admit of much dispute, that all our ideas are nothing but copies of our impressions, or, in other words, that it is impossible for us to *think* of any thing, which we have not antecedently *felt*, either by our external or internal senses. I have endeavoured[11] to explain and prove this proposition, and have expressed my hopes, that, by a proper application of it, men may reach a greater clearness and precision in philosophical reasonings, than what they have hitherto been able to attain. Complex ideas may, perhaps, be well known by definition, which is nothing but an enumeration of those parts or simple ideas, that compose them. But when we have pushed up definitions to the most simple ideas, and find still some ambiguity and obscurity; what resource are we then possessed of? By what invention can we throw light upon these ideas, and render them altogether precise and determinate to our intellectual view? Produce the impressions or original sentiments, from which the ideas are copied. These impressions are all strong and sensible. They admit not of ambiguity. They are not only placed in a full light themselves, but may throw light on their correspondent ideas, which lie in obscurity. And by this means, we may, perhaps, attain a new microscope or species of optics, by which, in the moral sciences, the most minute, and most simple ideas may be so enlarged as to fall readily under our apprehension, and

[11] Section 2. *SBN 62*

be equally known with the grossest and most sensible ideas, that can be the object of our enquiry.

5 To be fully acquainted, therefore, with the idea of power or necessary connexion, let us examine its impression; and in order to find the impression with greater certainty, let us search for it in all the sources, from which it may possibly be derived. *SBN 63*

6 When we look about us towards external objects, and consider the operation of causes, we are never able, in a single instance, to discover any power or necessary connexion; any quality, which binds the effect to the cause, and renders the one an infallible consequence of the other. We only find, that the one does actually, in fact, follow the other. The impulse of one billiard-ball is attended with motion in the second. This is the whole that appears to the *outward* senses. The mind feels no sentiment or *inward* impression from this succession of objects: Consequently, there is not, in any single, particular instance of cause and effect, any thing which can suggest the idea of power or necessary connexion.

7 From the first appearance of an object, we never can conjecture what effect will result from it. But were the power or energy of any cause discoverable by the mind, we could foresee the effect, even without experience; and might, at first, pronounce with certainty concerning it, by the mere dint of thought and reasoning.

8 In reality, there is no part of matter, that does ever, by its sensible qualities, discover any power or energy, or give us ground to imagine, that it could produce any thing, or be followed by any other object, which we could denominate its effect. Solidity, extension, motion; these qualities are all compleat in themselves, and never point out any other event which may result from them. The scenes of the universe are continually shifting, and one object follows another in an uninterrupted succession; but the power or force, which actuates the whole machine, is entirely concealed from us, and never discovers itself in any of the sensible qualities of body. We know, that, in fact, heat is a constant attendant of flame; but what is the connexion between them, we have no room so much as to conjecture or imagine. It is impossible, therefore, that the idea of power can be derived from the contemplation of bodies, in single instances of their operation; because no bodies ever discover any power, which can be the original of this idea.[12] *SBN 64*

[12] Mr. Locke, in his chapter of power, says, that, finding from experience, that there are several new productions in matter, and concluding that there must somewhere be a power capable of producing them, we arrive at last by this reasoning at the idea of power. But no reasoning can ever give us a new, original, simple idea; as this philosopher himself confesses. This, therefore, can never be the origin of that idea. *SBN 64*

9 Since, therefore, external objects, as they appear to the senses, give us no idea of power or necessary connexion, by their operation in particular instances, let us see, whether this idea be derived from reflection on the operations of our own minds, and be copied from any internal impression. It may be said, that we are every moment conscious of internal power; while we feel, that, by the simple command of our will, we can move the organs of our body, or direct the faculties of our mind. An act of volition produces motion in our limbs, or raises a new idea in our imagination. This influence of the will we know by consciousness. Hence we acquire the idea of power or energy; and are certain, that we ourselves and all other intelligent beings are 10 possessed of power. This idea, then, is an idea of reflection, since it arises from reflecting on the operations of our own mind, and on the command which is exercised by will, both over the organs of the body and faculties of the soul.

10 We shall proceed to examine this pretension; and first with regard to the influence of volition over the organs of the body. This influence, we may observe, is a fact, which, like all other natural events, can be known only by experience, and can never be foreseen from any apparent energy or power in *SBN 65* the cause, which connects it with the effect, and renders the one an infallible consequence of the other. The motion of our body follows upon the 20 command of our will. Of this we are every moment conscious. But the means, by which this is effected; the energy, by which the will performs so extraordinary an operation; of this we are so far from being immediately conscious, that it must for ever escape our most diligent enquiry.

11 For *first*, is there any principle in all nature more mysterious than the union of soul with body; by which a supposed spiritual substance acquires such an influence over a material one, that the most refined thought is able to actuate the grossest matter? Were we empowered, by a secret wish, to remove mountains, or controul the planets in their orbit; this extensive authority would not be more extraordinary, nor more beyond our comprehension. But if by con- 30 sciousness we perceived any power or energy in the will, we must know this power; we must know its connexion with the effect; we must know the secret union of soul and body, and the nature of both these substances; by which the one is able to operate, in so many instances, upon the other.

12 *Secondly*, We are not able to move all the organs of the body with a like authority; though we cannot assign any reason besides experience, for so remarkable a difference between one and the other. Why has the will an influence over the tongue and fingers, not over the heart or liver? This question would never embarrass us, were we conscious of a power in the former case,

not in the latter. We should then perceive, independent of experience, why the authority of will over the organs of the body is circumscribed within such particular limits. Being in that case fully acquainted with the power or force, by which it operates, we should also know, why its influence reaches precisely to such boundaries, and no farther.

13 A man, suddenly struck with a palsy in the leg or arm, or who had newly *SBN 66*
lost those members, frequently endeavours, at first, to move them, and employ them in their usual offices. Here he is as much conscious of power to command such limbs, as a man in perfect health is conscious of power to actuate any member which remains in its natural state and condition. But 10
consciousness never deceives. Consequently, neither in the one case nor in the other, are we ever conscious of any power. We learn the influence of our will from experience alone. And experience only teaches us, how one event constantly follows another; without instructing us in the secret connexion, which binds them together, and renders them inseparable.

14 *Thirdly*, We learn from anatomy, that the immediate object of power in voluntary motion, is not the member itself which is moved, but certain muscles, and nerves, and animal spirits, and, perhaps, something still more minute and more unknown, through which the motion is successively propagated, ere it reach the member itself whose motion is the immediate 20
object of volition. Can there be a more certain proof, that the power, by which this whole operation is performed, so far from being directly and fully known by an inward sentiment or consciousness, is, to the last degree, mysterious and unintelligible? Here the mind wills a certain event: Immediately another event, unknown to ourselves, and totally different from the one intended, is produced: This event produces another, equally unknown: Till at last, through a long succession, the desired event is produced. But if the original power were felt, it must be known: Were it known, its effect must also be known; since all power is relative to its effect. And *vice versa*, if the effect be not known, the power cannot be known nor felt. How indeed can we be con- 30
scious of a power to move our limbs, when we have no such power; but only that to move certain animal spirits, which, though they produce at last the motion of our limbs, yet operate in such a manner as is wholly beyond our *SBN 67*
comprehension?

15 We may, therefore, conclude from the whole, I hope, without any temerity, though with assurance; that our idea of power is not copied from any sentiment or consciousness of power within ourselves, when we give rise to animal motion, or apply our limbs to their proper use and office. That their motion follows the command of the will is a matter of common experience, like other

natural events: But the power or energy by which this is effected, like that in other natural events, is unknown and inconceivable.[13]

16 Shall we then assert, that we are conscious of a power or energy in our own minds, when, by an act or command of our will, we raise up a new idea, fix the mind to the contemplation of it, turn it on all sides, and at last dismiss it for some other idea, when we think that we have surveyed it with sufficient accuracy? I believe the same arguments will prove, that even this command of the will gives us no real idea of force or energy.

17 *First*, It must be allowed, that, when we know a power, we know that very circumstance in the cause, by which it is enabled to produce the effect: For *SBN 68* these are supposed to be synonimous. We must, therefore, know both the cause and effect, and the relation between them. But do we pretend to be acquainted with the nature of the human soul and the nature of an idea, or the aptitude of the one to produce the other? This is a real creation; a production of something out of nothing: Which implies a power so great, that it may seem, at first sight, beyond the reach of any being, less than infinite. At least it must be owned, that such a power is not felt, nor known, nor even conceivable by the mind. We only feel the event, namely, the existence of an idea, consequent to a command of the will: But the manner, in which this operation is performed; the power, by which it is produced; is entirely beyond our 20 comprehension.

18 *Secondly*, The command of the mind over itself is limited, as well as its command over the body; and these limits are not known by reason, or any acquaintance with the nature of cause and effect; but only by experience and observation, as in all other natural events and in the operation of external objects. Our authority over our sentiments and passions is much weaker than that over our ideas; and even the latter authority is circumscribed within very narrow boundaries. Will any one pretend to assign the ultimate reason of these boundaries, or show why the power is deficient in one case and not in another. 30

[13] It may be pretended, that the resistance which we meet with in bodies, obliging us frequently *SBN 67* to exert our force, and call up all our power, this gives us the idea of force and power. It is this *nisus* or strong endeavour, of which we are conscious, that is the original impression from which this idea is copied. But, *first*, we attribute power to a vast number of objects, where we never can suppose this resistance or exertion of force to take place; to the Supreme Being, who never meets with any resistance; to the mind in its command over its ideas and limbs, in common thinking and motion, where the effect follows immediately upon the will, without any exertion or summoning up of force; to inanimate matter, which is not capable of this sentiment. *Secondly*, This sentiment of an endeavour to overcome resistance has no known connexion with any event: What follows it, we know by experience; but could not know it *a priori*. It must, however, be confessed, that the animal *nisus*, 10 which we experience, though it can afford no accurate precise idea of power, enters very much into that vulgar, inaccurate idea, which is formed of it.

19 *Thirdly*, This self-command is very different at different times. A man in health possesses more of it, than one languishing with sickness. We are more master of our thoughts in the morning than in the evening: Fasting, than after a full meal. Can we give any reason for these variations, except experience? Where then is the power, of which we pretend to be conscious? Is there not here, either in a spiritual or material substance, or both, some secret mechanism or structure of parts, upon which the effect depends, and which, being entirely unknown to us, renders the power or energy of the will equally *SBN 69* unknown and incomprehensible?

20 Volition is surely an act of the mind, with which we are sufficiently 10 acquainted. Reflect upon it. Consider it on all sides. Do you find any thing in it like this creative power, by which it raises from nothing a new idea, and with a kind of FIAT, imitates the omnipotence of its Maker, if I may be allowed so to speak, who called forth into existence all the various scenes of nature? So far from being conscious of this energy in the will, it requires as certain experience, as that of which we are possessed, to convince us, that such extraordinary effects do ever result from a simple act of volition.

21 The generality of mankind never find any difficulty in accounting for the more common and familiar operations of nature; such as the descent of heavy bodies, the growth of plants, the generation of animals, or the nour- 20 ishment of bodies by food: But suppose, that, in all these cases, they perceive the very force or energy of the cause, by which it is connected with its effect, and is for ever infallible in its operation. They acquire, by long habit, such a turn of mind, that, upon the appearance of the cause, they immediately expect with assurance its usual attendant, and hardly conceive it possible, that any other event could result from it. It is only on the discovery of extraordinary phænomena, such as earthquakes, pestilence, and prodigies of any kind, that they find themselves at a loss to assign a proper cause, and to explain the manner, in which the effect is produced by it. It is usual for men, in such difficulties, to have recourse to some invisible intelligent principle,[14] 30 as the immediate cause of that event, which surprizes them, and which, they think, cannot be accounted for from the common powers of nature. But philosophers, who carry their scrutiny a little farther, immediately perceive, *SBN 70* that, even in the most familiar events, the energy of the cause is as unintelligible as in the most unusual, and that we only learn by experience the frequent CONJUNCTION of objects, without being ever able to comprehend any thing like CONNEXION between them. Here then, many philosophers think themselves obliged by reason to have recourse, on all occasions, to the same

[14] Θεὸς ἀπὸ μηχανῆς. *SBN 69*

principle, which the vulgar never appeal to but in cases, that appear miraculous and supernatural. They acknowledge mind and intelligence to be, not only the ultimate and original cause of all things, but the immediate and sole cause of every event, which appears in nature. They pretend, that those objects, which are commonly denominated *causes*, are in reality nothing but *occasions*; and that the true and direct principle of every effect is not any power or force in nature, but a volition of the Supreme Being, who wills, that such particular objects should, for ever, be conjoined with each other. Instead of saying, that one billiard-ball moves another, by a force, which it has derived from the author of nature; it is the Deity himself, they say, who, by a particular volition, moves the second ball, being determined to this operation by the impulse of the first ball; in consequence of those general laws, which he has laid down to himself in the government of the universe. But philosophers, advancing still in their enquiries, discover, that, as we are totally ignorant of the power, on which depends the mutual operation of bodies, we are no less ignorant of that power, on which depends the operation of mind on body, or of body on mind; nor are we able, either from our senses or consciousness, to assign the ultimate principle in one case, more than in the other. The same ignorance, therefore, reduces them to the same conclusion. They assert, that the Deity is the immediate cause of the union between soul and body; and that they are not the organs of sense, which, being agitated by external objects, produce sensations in the mind; but that it is a particular *SBN 71* volition of our omnipotent Maker, which excites such a sensation, in consequence of such a motion in the organ. In like manner, it is not any energy in the will, that produces local motion in our members: It is God himself, who is pleased to second our will, in itself impotent, and to command that motion, which we erroneously attribute to our own power and efficacy. Nor do philosophers stop at this conclusion. They sometimes extend the same inference to the mind itself, in its internal operations. Our mental vision or conception of ideas is nothing but a revelation made to us by our Maker. When we voluntarily turn our thoughts to any object, and raise up its image in the fancy; it is not the will which creates that idea: It is the universal Creator, who discovers it to the mind, and renders it present to us.

22 Thus, according to these philosophers, every thing is full of God. Not content with the principle, that nothing exists but by his will, that nothing possesses any power but by his concession: They rob nature, and all created beings, of every power, in order to render their dependence on the Deity still more sensible and immediate. They consider not, that, by this theory, they diminish, instead of magnifying, the grandeur of those attributes, which they affect so much to celebrate. It argues surely more power in the Deity to delegate a certain degree of power to inferior creatures, than to produce

every thing by his own immediate volition. It argues more wisdom to contrive at first the fabric of the world with such perfect foresight, that, of itself, and by its proper operation, it may serve all the purposes of providence, than if the great Creator were obliged every moment to adjust its parts, and animate by his breath all the wheels of that stupendous machine.

23 But if we would have a more philosophical confutation of this theory, perhaps the two following reflections may suffice.

24 *First*, It seems to me, that this theory of the universal energy and operation *SBN 72*
of the Supreme Being, is too bold ever to carry conviction with it to a man, sufficiently apprized of the weakness of human reason, and the narrow 10
limits, to which it is confined in all its operations. Though the chain of arguments, which conduct to it, were ever so logical, there must arise a strong suspicion, if not an absolute assurance, that it has carried us quite beyond the reach of our faculties, when it leads to conclusions so extraordinary, and so remote from common life and experience. We are got into fairy land, long ere we have reached the last steps of our theory; and *there* we have no reason to trust our common methods of argument, or to think that our usual analogies and probabilities have any authority. Our line is too short to fathom such immense abysses. And however we may flatter ourselves, that we are guided, in every step which we take, by a kind of verisimilitude and experience; we 20
may be assured, that this fancied experience has no authority, when we thus apply it to subjects, that lie entirely out of the sphere of experience. But on this we shall have occasion to touch afterwards.[15]

25 *Secondly*, I cannot perceive any force in the arguments, on which this theory is founded. We are ignorant, it is true, of the manner in which bodies operate on each other: Their force or energy is entirely incomprehensible: But are we not equally ignorant of the manner or force by which a mind, even the supreme mind, operates either on itself or on body? Whence, I beseech you, do we acquire any idea of it? We have no sentiment or consciousness of this power in ourselves. We have no idea of the Supreme Being but what we 30
learn from reflection on our own faculties. Were our ignorance, therefore, a good reason for rejecting any thing, we should be led into that principle of *SBN 73*
denying all energy in the Supreme Being as much as in the grossest matter. We surely comprehend as little the operations of one as of the other. Is it more difficult to conceive, that motion may arise from impulse, than that it may arise from volition? All we know is our profound ignorance in both cases.[16]

[15] Section 12. *SBN 72*

[16] I need not examine at length the *vis inertiæ* which is so much talked of in the new philosophy, *SBN 73*
and which is ascribed to matter. We find by experience, that a body at rest or in motion continues for ever in its present state, till put from it by some new cause; and that a body impelled takes as much

PART 2

26 But to hasten to a conclusion of this argument, which is already drawn out to too great a length: We have sought in vain for an idea of power or necessary connexion, in all the sources from which we could suppose it to be derived. It appears, that, in single instances of the operation of bodies, we never can, by our utmost scrutiny, discover any thing but one event following another; without being able to comprehend any force or power, by which the cause operates, or any connexion between it and its supposed effect. The same difficulty occurs in contemplating the operations of mind on body; where we observe the motion of the latter to follow upon the volition of the former; but are not able to observe or conceive the tye, which binds together the motion and volition, or the energy by which the mind produces this effect. The authority of the will over its own faculties and ideas is not a whit more comprehensible: So that, upon the whole, there appears not, throughout all nature, any one instance of connexion, which is conceivable by us. All events seem entirely loose and separate. One event follows another; but we never can observe any tye between them. They seem *conjoined*, but never *connected*. And as we can have no idea of any thing, which never appeared to our outward sense or inward sentiment, the necessary conclusion *seems* to be, that we have no idea of connexion or power at all, and that these words are absolutely without any meaning, when employed either in philosophical reasonings, or common life. *SBN 74*

27 But there still remains one method of avoiding this conclusion, and one source which we have not yet examined. When any natural object or event is presented, it is impossible for us, by any sagacity or penetration, to discover, or even conjecture, without experience, what event will result from it, or to carry our foresight beyond that object, which is immediately present to the memory and senses. Even after one instance or experiment, where we have

motion from the impelling body as it acquires itself. These are facts. When we call this a *vis inertiæ*, we only mark these facts, without pretending to have any idea of the inert power; in the same manner as, when we talk of gravity, we mean certain effects, without comprehending that active power. It was never the meaning of Sir Isaac Newton to rob second causes of all force or energy; though some of his followers have endeavoured to establish that theory upon his authority. On the contrary, that great philosopher had recourse to an etherial active fluid to explain his universal attraction; though he was so cautious and modest as to allow, that it was a mere hypothesis, not to be insisted on, without more experiments. I must confess, that there is something in the fate of opinions a little extraordinary. Des Cartes insinuated that doctrine of the universal and sole efficacy of the Deity, without insisting on it. Malebranche and other Cartesians made it the foundation of all their philosophy. It had, however, no authority in England. Locke, Clarke, and Cudworth, never so much as take notice of it, but suppose all along, that matter has a real, though subordinate and derived power. By what means has it become so prevalent among our modern metaphysicians?

observed a particular event to follow upon another, we are not entitled to form a general rule, or foretel what will happen in like cases; it being justly esteemed an unpardonable temerity to judge of the whole course of nature from one single experiment, however accurate or certain. But when one particular species of event has always, in all instances, been conjoined with another, we make no longer any scruple of foretelling one upon the appear- *SBN 75*
ance of the other, and of employing that reasoning, which can alone assure us of any matter of fact or existence. We then call the one object, *Cause*; the other, *Effect*. We suppose, that there is some connexion between them; some power in the one, by which it infallibly produces the other, and operates with
the greatest certainty and strongest necessity.

28 It appears, then, that this idea of a necessary connexion among events arises from a number of similar instances, which occur, of the constant conjunction of these events; nor can that idea ever be suggested by any one of these instances, surveyed in all possible lights and positions. But there is nothing in a number of instances, different from every single instance, which is supposed to be exactly similar; except only, that after a repetition of similar instances, the mind is carried by habit, upon the appearance of one event, to expect its usual attendant, and to believe, that it will exist. This connexion, therefore, which we *feel* in the mind, this customary transition of the imagination from one object to its usual attendant, is the sentiment or impression, from which we form the idea of power or necessary connexion. Nothing farther is in the case. Contemplate the subject on all sides; you will never find any other origin of that idea. This is the sole difference between one instance, from which we can never receive the idea of connexion, and a number of similar instances, by which it is suggested. The first time a man saw the communication of motion by impulse, as by the shock of two billiard-balls, he could not pronounce that the one event was *connected*; but only that it was *conjoined* with the other. After he has observed several instances of this nature, he then pronounces them to be *connected*. What alteration has happened to give rise to this new idea of *connexion*? Nothing but that he now *feels* these events to be *connected* in his imagination, and can readily foretel the *SBN 76*
existence of one from the appearance of the other. When we say, therefore, that one object is connected with another, we mean only, that they have acquired a connexion in our thought, and give rise to this inference, by which they become proofs of each other's existence: A conclusion, which is somewhat extraordinary; but which seems founded on sufficient evidence. Nor will its evidence be weakened by any general diffidence of the understanding, or sceptical suspicion concerning every conclusion, which is new and extraordinary. No conclusions can be more agreeable to scepticism than such as

make discoveries concerning the weakness and narrow limits of human reason and capacity.

29 And what stronger instance can be produced of the surprizing ignorance and weakness of the understanding, than the present? For surely, if there be any relation among objects, which it imports to us to know perfectly, it is that of cause and effect. On this are founded all our reasonings concerning matter of fact or existence. By means of it alone we attain any assurance concerning objects, which are removed from the present testimony of our memory and senses. The only immediate utility of all sciences, is to teach us, how to controul and regulate future events by their causes. Our thoughts and enquiries are, therefore, every moment, employed about this relation. Yet so imperfect are the ideas which we form concerning it, that it is impossible to give any just definition of *cause*, except what is drawn from something extraneous and foreign to it. Similar objects are always conjoined with similar. Of this we have experience. Suitably to this experience, therefore, we may define a cause to be *an object, followed by another, and where all the objects, similar to the first, are followed by objects similar to the second*. Or in other words, *where, if the first object had not been, the second never had existed*. The appearance of a cause always conveys the mind, by a customary transition, to the idea of the effect. *SBN 77* Of this also we have experience. We may, therefore, suitably to this experience, form another definition of *cause*; and call it, *an object followed by another, and whose appearance always conveys the thought to that other*. But though both these definitions be drawn from circumstances foreign to the cause, we cannot remedy this inconvenience, or attain any more perfect definition, which may point out that circumstance in the cause, which gives it a connexion with its effect. We have no idea of this connexion; nor even any distinct notion what it is we desire to know, when we endeavour at a conception of it. We say, for instance, that the vibration of this string is the cause of this particular sound. But what do we mean by that affirmation? We either mean, *that this vibration is followed by this sound, and that all similar vibrations have been followed by similar sounds*: Or, *that this vibration is followed by this sound, and that upon the appearance of one, the mind anticipates the senses, and forms immediately an idea of the other*. We may consider the relation of cause and effect in either of these two lights; but beyond these, we have no idea of it.[17]

[17] According to these explications and definitions, the idea of *power* is relative as much as that of *cause*; and both have a reference to an effect, or some other event constantly conjoined with the former. When we consider the *unknown* circumstance of an object, by which the degree or quantity of its effect is fixed and determined, we call that its power: And accordingly, it is allowed by all philosophers, that the effect is the measure of the power. But if they had any idea of power, as it is in itself, why could not they measure it in itself? The dispute whether the force of a body in motion *SBN 77*

To recapitulate, therefore, the reasonings of this section: Every idea is *SBN 78*
copied from some preceding impression or sentiment; and where we cannot find any impression, we may be certain that there is no idea. In all single instances of the operation of bodies or minds, there is nothing that produces any impression, nor consequently can suggest any idea, of power or necessary connexion. But when many uniform instances appear, and the same object is always followed by the same event; we then begin to entertain the notion of cause and connexion. We then *feel* a new sentiment or impression, to wit, a customary connexion in the thought or imagination between one object and its usual attendant; and this sentiment is the original of that idea which we seek for. For as this idea arises from a number of similar instances, and not from any single instance; it must arise from that circumstance, in which the number of instances differ from every individual instance. But this customary connexion or transition of the imagination is the only circumstance, in which they differ. In every other particular they are alike. The first instance which we saw of motion, communicated by the shock of two billiard-balls (to return to this obvious illustration) is exactly similar to any instance that may, at present, occur to us; except only, that we could not, at first, *infer* one event from the other; which we are enabled to do at present, *SBN 79*
after so long a course of uniform experience. I know not, whether the reader will readily apprehend this reasoning. I am afraid, that, should I multiply words about it, or throw it into a greater variety of lights, it would only become more obscure and intricate. In all abstract reasonings, there is one point of view, which, if we can happily hit, we shall go farther towards illustrating the subject, than by all the eloquence and copious expression in the world. This point of view we should endeavour to reach, and reserve the flowers of rhetoric for subjects which are more adapted to them.

be as its velocity, or the square of its velocity; this dispute, I say, needed not be decided by comparing its effects in equal or unequal times; but by a direct mensuration and comparison.

As to the frequent use of the words, *force*, *power*, *energy*, &c. which every where occur in common conversation, as well as in philosophy; that is no proof, that we are acquainted, in any instance, with the connecting principle between cause and effect, or can account ultimately for the production of one thing by another. These words, as commonly used, have very loose meanings annexed to them; *SBN 78*
and their ideas are very uncertain and confused. No animal can put external bodies in motion without the sentiment of a *nisus* or endeavour; and every animal has a sentiment or feeling from the stroke or blow of an external object, that is in motion. These sensations, which are merely animal, and from which we can *a priori* draw no inference, we are apt to transfer to inanimate objects, and to suppose, that they have some such feelings, whenever they transfer or receive motion. With regard to energies, which are exerted, without our annexing to them any idea of communicated motion, we consider only the constant experienced conjunction of the events; and as we *feel* a customary connexion between the ideas, we transfer that feeling to the objects; as nothing is more usual than to apply to external bodies every internal sensation, which they occasion.

SECTION 4

SECTION 4] This section shows similarities to *THN* 1.3.1, 6; see also *Abstract*, *passim*.

24.2 ***Relations of Ideas* and *Matters of Fact*]** Similarities to Hume's distinction between these two objects of reason and inquiry are apparent in the distinction in Malebranche[B] between (1) relations between ideas, (2) relations between things, and (3) relations between ideas and things (*Search after Truth* 6.1.5). The first falls into the category of necessary truths, whereas the second and third fall into the category of contingent truths. See related distinctions in Arnauld[B] and Nicole,[B] *Logic or the Art of Thinking*, fourth part, ch. 13 (Buroker, 263–5); Locke[B] on certainty, intuition, and demonstration (see ann. 32.30); and the criticisms of Malebranche in French philosopher Simon Foucher (1644–96), *Critique of the Search for the Truth* (Watson and Grene, 21–4, 30–1). See *THN* 1.3.1 for Hume's earlier treatment of this distinction.

24.3 **Geometry, Algebra, and Arithmetic]** Hume and Malebranche[B] (*Search after Truth* 6.1.5) both list geometry, algebra, and arithmetic as exemplars of relations of ideas and the demonstrative sciences. Hume's inclusion of geometry does

not follow the precedent in *THN* (see 1.3.1.4; cf. 1.4.1). Compare parallels in Locke,[B] *Essay* 4.1.1–5, 4.2.1, 4.4.18.

24.9 **never were a circle]** Compare Locke,[B] *Essay* 3.3.19, 4.4.8.

24.10 **Euclid[B]]** See ann. 49.28.

24.15 **imply a contradiction]** For discussions of this criterion, see *Dialogues* 9.5; and *Abstract* 11, 18. See also Glanvill, *Scepsis scientifica* 23 (144); and John Wilkins, *Of the Principles and Duties of Natural Religion* 1.3.4 (cf. 1.1.3).

24.17 ***sun will not rise to-morrow***] See ann. n. 10; *THN* 1.3.11.2; and *Letter from a Gentleman* 26. This example of the sun, and observations similar to Hume's, are found in English philosopher William Wollaston (1659–1724), *Religion of Nature Delineated* 3.16 (57). The example was widely used in discussions of probability, evidence, and proof. See Hobbes, *Elements of Philosophy . . . concerning Body* 10.5 (*Works*, 1: 129–31), and *Questions concerning Liberty, Necessity, and Chance* 14 (5: 150–1); Butler, *Analogy*, introduction; John Wilkins, *Of the Principles and Duties of Natural Religion* 1.3.4; Dutch mathematician and philosopher W. James s' Gravesande (1688–1742), *Mathematical Elements of Natural Philosophy*, 'An Oration concerning Evidence', especially 1: xxxvi.

24.25 **little cultivated, either by the ancients or moderns]** To say 'little cultivated' is not to say there were no predecessors. Among the ancients Sextus Empiricus (*Outlines of Pyrrhonism* 2.204–8 (ch. 15)) rejects induction on grounds that particulars omitted in the induction may invalidate the universal. Among modern philosophers questions about evidence had been prominently discussed by Descartes[B] (*Meditations*) and Locke[B] (*Essay*); a clear statement about the nature of evidence is found in W. James s' Gravesande, 'An Oration concerning Evidence', in *Mathematical Elements of Natural Philosophy*.

24.29 **implicit faith]** An implicit faith is a belief based on the judgement or authority of faculties, sentiments, or parties that one deeply trusts. For other uses of 'implicit faith' in Hume's writings, see *Letters*, 1: 473 (to Gilbert Elliot of Minto); *History of England*, vol. 1, ch. 4, and vol. 4, ch. 40; *THN* 1.4.2.56; *NHR* 12.15; 'Of Parties in General' 13; and 'Of National Characters', n. 2. For philosophical and theological uses of the notion, see Hobbes, *Leviathan* 32.2, and *An Answer to Dr. Bramhall*, *Works*, 4: 382; Locke,[B] *Essay* 1.4.22, 2.33.17, 4.12.6, 4.17.4; Leibniz,[B] *New Essays* (pub. 1765) 4.17.4, 4.20.18; French counsellor and philosopher François de la Mothe Le Vayer (1588–1669), *De la vertu des payens*, 'De Pyrrhon' (298); Berkeley,[B] *Alciphron*, dialogue 6.18, 32; and Chambers, *Cyclopædia*, 'faith'. See also George Campbell's use (in commenting on Hume) in *A Dissertation on Miracles*, 77.

25.5 **All reasonings]** The nature of reasoning—here connected to the earlier account of ideas and their relations—is likely informed in this section by the treatment of reasoning in Locke,[B] Descartes,[B] and Arnauld[B] and Nicole.[B] See also ann. 32.30 on intuition and demonstration and the discussion of probability in ann. Section 6.

25.33 **examination of its sensible qualities]** Several of Hume's predecessors had observed that causality is unperceivable, that it is known only by repetition in experience, or that necessary connections are not present in sensory experience. See Glanvill, *Scepsis scientifica* 23 (142), 25 (154), and *Essays*, 'Against Confidence in Philosophy', 16 ff.; Berkeley,[B] *Principles* 1.32, 103, and *Three Dialogues*, dials. 1–2; English natural philosopher Robert Boyle (1627–91), *The Christian Virtuoso* (*Works*, 5: 526–8).

25.34 **Adam]** Compare discussions of Adam or similar 'persons' in *Abstract* 11–14; *DIS* 2.47; *NHR* 1.6; and *THN* 2.1.6.9.

26.5 **pieces of marble]** This example of two smooth pieces of marble was widely mentioned as an instance of adherence—also called 'cohesion' at *EHU* 4.12. Hume uses the same example in *THN* 2.3.1.8. Boyle dealt theoretically and mechanically with the phenomenon of cohesion in two smooth bodies of marble (*New Experiments Physico-Mechanical, touching the Spring of the Air*, which gives a reference to *The History of Fluidity and Firmness*—both in *Works*, 1: 1–117, 377–442); *New Experiments* is one of the few works by Boyle found in the Hume Library. See also Hume's tribute to Boyle in *History of England*, ch. 71 (6: 541).) Locke[B] used the example several times (*Essay* 2.4.4–5, 2.23.23–4). It is also mentioned by Hobbes, *Seven Philosophical Problems* 3; and Italian natural philosopher Galileo Galilei (1564–1642), *Two New Sciences*, 19–20.

26.6 **natural philosophy]** 'Natural philosophy' is the study of causation in nature, the description of phenomena, and the properties and operations of natural bodies (see ann. 5.1 and 50.6). By the late 17th century Cartesian theory (see Descartes,[B] *Principles* 2–4) and the controversies it engendered were staple parts of university curricula. In the early 18th century leaders of the Royal Society were influential in replacing Cartesian theory with Newtonian theory and experimental philosophy.

For a range of examples of natural philosophy—all discussed elsewhere in these annotations—see Newton,[B] *Mathematical Principles* and *Opticks*; *Leibniz–Clarke Correspondence*; Boyle, *The Sceptical Chymist* and *Origin of Forms and Qualities According to the Corpuscular Philosophy*; English philosopher Kenelme Digby (1603–65), *Treatises*, First Treatise; Galileo, *Two New Sciences*; Scottish mathematician Colin Maclaurin (1698–1746), *An Account of Sir Isaac Newton's Philosophical Discoveries* (published after *EHU* was at the press); French natural philosopher Jacques Rohault (1620–72), *System of Natural Philosophy*; Scottish physician and philosopher George Cheyne (1671–1743), *Philosophical Principles of Natural Religion: Containing the Elements of Natural Philosophy*; and s' Gravesande, *Mathematical Elements of Natural Philosophy*.

26.11 **loadstone]** A loadstone, or lodestone, is an iron oxide mineral known for natural magnetic qualities. In free position, it aligns itself to the earth's poles. Early compasses were constructed from pieces of a lodestone, as Hume implies in a passage in *Dialogues* 8.10. Locke[B] used the lodestone as an example of a natural power (*Essay*

2.23.7); and Arnauld[B] and Nicole[B] present a speculative problem about the earth's rotation and the properties of the lodestone (*Logic or the Art of Thinking*, fourth part, ch. 2 (Buroker, 234, 236)). Treatments of magnetism and the lodestone are found in Descartes[B] (*Principles* 4.133–83); Malebranche[B] (*Search after Truth* 6.2.8); Kenelme Digby, *Treatises*, First Treatise 22.1–9; Boyle, *Some Considerations about the Reconcileableness of Reason and Religion* and *Experiments and Notes about the Mechanical Production of Magnetism* (*Works*, 4: 179–80, 340–5); English author and physician Thomas Browne (1605–82), *Pseudodoxia epidemica* 2.2; and many others. The classic *On the Loadstone and Magnetic Bodies* (1600) by English physician William Gilbert (1540–1603) deeply influenced this literature.

26.24 **billiard-ball]** This passage may be influenced by the thesis in Malebranche[B] that persons 'should not judge that a ball in motion is the true and principal cause of the movement of the ball it finds in its path. They can judge only that the collision of the two balls is the occasion for the Author of all motion in matter to carry out the decree of His will, which is the universal cause of all things' (*Search after Truth* 3.2.3 (224–5)). At 6.2.3 (448–50), Malebranche uses the example of the mind willing an arm to move, which Hume uses at *EHU* 7.13. See also Malebranche, *Dialogues on Metaphysics* 7.11. Hume first uses billiard-balls to illustrate the causal relation at *Abstract* 9.

26.25 **impulse]** collision or impact—a contact that causes motion. See also *EHU* 4.10, 12; 5.5, 11; 6.4; 7.6, 21, 25, 28. For Newton[B] on impulse, see *Mathematical Principles*, definition 8 (explanation, 4–6), and bk. 1, prop. 69, theor. 29, scholium. See also Locke,[B] *Essay* 2.8.11–13. Locke—influenced by Newton to modify his account of impulse—said that a moving billiard-ball 'by impulse . . . sets another Ball in motion' by communicating its motion to the second ball (*Essay* 2.21.4).

27.28 **no philosopher, who is rational and modest]** This paragraph presents a number of themes in experimental philosophy; see the next annotation for themes in Newton[B] and others.

27.29 **ultimate cause]** Natural philosophers were divided about the nature of ultimate causes, forces in nature, and the like. In *Letter from a Gentleman* 32 Hume (or his expository editor, Henry Home) offers the following opinions on the history of the problem: 'all the antient Philosophers agreed, that there was a real Force in Matter. . . . The Schoolmen supposed also a real Power in Matter. . . . No one, till *Des Cartes* and *Malbranche*, ever entertained an Opinion that Matter had no Force either *primary* or *secondary*, and *independent* or *concurrent*.' In *THN* Hume discusses Cartesians who believe that 'the ultimate force and efficacy of nature is perfectly unknown to us' and who place all ultimate causation in the deity (*THN* 1.3.14.8–9). See ann. Section 7.21–4 and the discussion of ultimate causes and principles three annotations below.

27.33 **greater simplicity]** a reference to the methodological principle called 'Ockham's Razor'. In *Dialogues* 5.9 (cf. *THN* 3.3.1.10) Hume portrays the principle as follows: 'To multiply causes, without necessity, is indeed contrary to true

philosophy.' Hume mentions Newton's rules below (*EHU* 8.4); the principle of simplicity is rule 1 in Newton's list.

27.38 **cohesion]** 'Cohesion of parts' of matter refers to the phenomenon of the parts of solid bodies adhering or sticking together; see ann. 26.5 on Hume's example of pieces of marble. Newton[B] was a basic source for these scientific concepts, and many philosophers had offered theories of the phenomenon. See ann. nn. 16–17 for Hume's interests in the scientific literature.

27.39 **ultimate causes and principles]** Experimental philosophy could be interpreted as rooted in methods designed to determine nature's ultimate causes and principles in so far as they can be discovered. In *Opticks* 3.1 (400–2) Newton[B] provides a summary of his views:

> permanent Particles . . . have not only a *Vis inertiæ* [see ann. n. 16 below] . . . but . . . are moved by certain active Principles, such as is that of Gravity, and that which causes Fermentation, and the Cohesion of Bodies. These Principles I consider, not as occult Qualities, supposed to result from the specifick Forms of Things, but as general Laws of Nature, by which the Things themselves are form'd; their Truth appearing to us by Phænomena, though their Causes be not yet discover'd. For these are manifest Qualities, and their Causes only are occult. And the *Aristotelians* gave the Name of occult Qualities, not to manifest Qualities, but to such Qualities only as they supposed to lie hid in Bodies, and to be the unknown Causes of manifest Effects: Such as would be the Causes of Gravity. . . . To tell us that every Species of Things is endow'd with an occult specifick Quality by which it acts and produces manifest Effects, is to tell us nothing: But to derive two or three general Principles of Motion from Phænomena, and afterwards to tell us how the Properties and Actions of all corporeal Things follow from those manifest Principles, would be a very great step in Philosophy, though the Causes of those Principles were not yet discover'd.

See, further, Newton,[B] *Mathematical Principles* 3, general scholium (Motte–Cajori, 547).

28.2 **trace up the particular phænomena]** Compare *THN* Introduction 8 on 'tracing . . . to the utmost', meaning following the direction of experiments where they take us in the attempt to understand a phenomenon.

28.4 **ignorance . . . ignorance]** These themes about ignorance resemble themes in Locke,[B] *Essay* 1.1.4–7, 4.3.22–9; Malebranche,[B] *Search after Truth* 3.4.1.2, 5; and Chambers, *Cyclopædia*, 'ignorance'. See related discussions of ignorance in Montaigne, 'On Experience' (*Essays* 3.13) and 'Apology for Raymond Sebond' (*Essays* 2.12; Screech, 634); Boyle, 'Of Men's Great Ignorance' (*Works*, 3: 470 ff.); Glanvill, *Scepsis scientifica: or Confest Ignorance* 1–6, 9–16; Arnauld[B] and Nicole,[B] *Logic or the Art of Thinking* (fourth part, ch. 1; Buroker, 227–33); s' Gravesande, *Mathematical Elements of Natural Philosophy*, preface, pp. ii–iii; Browne, *Pseudodoxia epidemica* 1 ff.; and French mathematician and scientist Marin Mersenne (1588–1648), *La*

Vérité des sciences 1.2–3. Hume offers numerous comments on causal ignorance in his *Dialogues*.

28.12 **mixed mathematics]** 'Mixed mathematics' refers to mathematical applications in physical theory, as in mechanics. 'Mixed' contrasts with 'pure'. Galileo and Descartes[B] had envisioned natural philosophy fashioned on mixed mathematics, but Newton[B] was the first to quantify a sizeable realm of phenomena. See the Newtonian explanation of mixed mathematics in s' Gravesande, *Mathematical Elements of Natural Philosophy*, preface, 1: ii, and 'An Oration concerning Evidence', 1: xxxix.

28.18 **compound ratio . . . solid contents]** See Newton,[B] *Mathematical Principles*, definition 2; Maclaurin, *Newton's Philosophical Discoveries* 1.12 (2: 105–6). Hume's formulation is close to that of Maclaurin, who adds that 'There appears to be no ground for making a distinction between the *quantity of motion* [the term in Newton's second definition] and the *force* of a body in motion.' However, it is unlikely that Hume had seen Maclaurin's manuscript, published in 1748. For Maclaurin's teaching of Newton at Edinburgh, see Henderson, 'Short Account', 372.

28.21 **Geometry . . . discovery of the law]** Newton[B] insists that even if confirmed, *exact* mathematical formulations do not ensure the truth of a physical theory. Newton's rule 4 prescribes that:

> In experimental philosophy we are to look upon propositions inferred by general induction from phenomena as accurately or very nearly true, notwithstanding any contrary hypotheses that may be imagined, till such time as other phenomena occur, by which they may either be made more accurate, or liable to exceptions. (*Mathematical Principles* (400); see also definition 2, laws 1 and 3, and rules 1–3 (1, 13–14, 398–400).)

For other possible historical precedents for Hume's reflections in this paragraph, see Locke,[B] *Essay* 4.3.14, 26.

29.22 **powers . . . bread]** Malebranche[B] had used the example of bread (*Search after Truth* 6.2.2) to explicate causal relations without recourse to powers or to an intricate mechanism of parts. Hume initiated the example of bread at 4.7 above and pursues it at 4.21 below.

29.27 **wonderful force . . . distant conception]** Compare Malebranche,[B] *Search after Truth* 6.2.3; and see ann. 26.24 on billiard-ball collision. See also Newton,[B] *Mathematical Principles*, laws 1 and 3. Maclaurin's *An Account of Sir Isaac Newton's Philosophical Discoveries* (pp. 112–16) is instructive, though not a likely source of Hume's knowledge of the relevant science.

30.23 **medium]** This term possibly refers to the middle term or proposition in a syllogism (Aristotelian syllogistic); see the useful body of definitions in Chambers, *Cyclopædia*, 'medium'. Hume's usage seems particularly close to the notion of intermediate ideas in demonstration and probability in Locke[B] (*Essay* 4.17.15–16); see *EHU* 4.21 below.

30.38 **two kinds]** See ann. 24.2 for this division of two types of reasoning and proposition, namely *relations of ideas* and *matters of fact*.

31.13 **probable only]** Compare Gassendi's arguments to show that it is not possible to demonstrate the universality of propositions arrived at by induction (*Exercises Against the Aristotelians* 2.5.5, citing Aristotle[B] and Porphyry); see also his views about probability and the criterion of truth (*Syntagma*: Logic 2.5). Bacon[B] held that induction determines various 'degrees of certainty' (see *Novum organum* 1 and preface); compare Hume's idea of 'proofs' (see n. 10). See also the related use of probability in Locke[B] (*Essay* 4.15), who rejects the language of 'certainty'. Hume's *Abstract* contains a succinct statement of his views on induction.

31.18 **experimental conclusions]** See ann. 5.1 and *THN* Introduction 7 and 1.3.15.11; this work bears the subtitle *An Attempt to introduce the experimental Method of Reasoning into Moral Subjects*. Hume uses 'experimental' to include observation as well as experimentation. On *experimental conclusions*, compare Locke,[B] *Essay* 4.3.29; and Hobbes, *Leviathan* 3.7–8, 10.

31.28 **guide of human life]** Cf. *EHU* 5.6. Hume may have been influenced by Cicero[B] and Butler. Cicero maintained that 'many sensations are *probable*, that is, though not amounting to a full perception they are yet possessed of a certain distinctness and clearness, and so can serve to direct the conduct of the wise man' (*De natura deorum* 1.5.12). Compare Butler's celebrated thesis about probability as 'the very guide of life' (*Analogy*, introduction); Wollaston, *Religion of Nature Delineated* 3.16; and Hume, *Abstract* 4, which mentions the insights of Leibniz,[B] Locke,[B] Malebranche,[B] and Arnauld[B] and Nicole.[B]

32.30 **intuitive . . . demonstrative]** The intuitive is that which is known immediately to the apprehending mind; it is self-evident and independent of inference or reasoning (though in some theories known through reason). The demonstrative is an uninterrupted sequence of self-evident steps in reasoning. For an influential treatment, see Descartes's *Rules for the Direction of the Mind*, esp. rule 3 (1: 14–15), and *Discourse on the Method* 2. See also Locke's definitions of *intuition* and *demonstration* and his use of the expressions 'intuitive Knowledge' and 'demonstrative Knowledge', *Essay* 4.2.1–14. Descartes[B] and Locke,[B] like Hume (in some passages, esp. in *THN*), excluded probable belief from the category of knowledge. See Hume's use of the various interconnected notions at *EHU* 4.1, 16, 18, 21; n. 10; n. 18; *THN* 1.3.1.2, 1.3.7.3, 1.3.14.35, 1.4.1.1; and *Abstract* 18.

SECTION 5

35.7 **philosophic sage]** For philosophical writings on the ideal wise person or sage, see the Stoic Seneca (1st c. AD), especially 'On Tranquillity of Mind' 2.4 (in *Moral Essays*), and Epicurus[B] (*Epicurus Reader*, texts 3.85–7; 4.128–31; 9; 16.53). For

further information on Hume's views, see 'Epictetus . . .', immediately below; *EPM* 7.16; *NHR* 12.22; 'The Stoic' 5, 12–13, 18.

35.9 **Epictetus,[B] and other Stoics]** The Stoics, among them Epictetus, recommended freedom from control by the passions and the demands of public life. Epictetus' teaching centred on reflective self-examination (*Discourses* 1.6) and moral purpose (*Discourses* 1.4, 1.18.15–20); on tranquillity and the sage, see *Discourses* 2.2. See also ann. 76.24 and 91.4; Hume's comments on the Stoics and Epictetus at *EPM* 7.16–17 and Appx. 4.14; and *NHR* 12.22.

35.9 **system of selfishness]** The reference is to the Stoic preference, especially in Epictetus,[B] for a focus on cultivation of the self (self-mastery, self-salvation, and the like). For Epictetus' views, see the previous annotation and *Discourses* 2.11; *Fragments* 14. For Seneca's views, see 'De beneficiis' 4.1–3, in *Moral Essays*, where he criticizes Epicureans for viewing virtue as the vehicle of pleasure. In *EPM* Appx. 2.3–4 Hume refers to Hobbes, Locke,[B] and other philosophers, including 'Epicurus and his sect', as proponents of 'the selfish system of morals'.

35.18 **Academic or Sceptical philosophy]** See *EHU* 12. 'Academics' is here a term for a type of sceptic and does not merely designate those such as Arcesilas (4th–3rd c. BC) and Carneades (3rd–2nd c. BC), who shaped the history of Plato's Academy. Cicero,[B] one of Hume's most frequently cited authors, was influenced by teachings of the Academics. See especially *Academica* and *De natura deorum* 1.5.11–12.

35.19 **talk of doubt and suspence of judgment]** See Cicero,[B] *Academica* 1.12.45, 2.18.59, 2.31, 2.32.103–4, 2.46.141, on the academic sceptics' position.

35.28 **groundless reproach and obloquy]** Ancient philosophers such as Epictetus[B] (*Discourses* 1.5, 'Against the Academics') and modern philosophers such as Malebranche[B] (*Search after Truth* 1.20.3, 2.3.5) harshly judged academic sceptics.

36.17 **sudden into this world]** Compare the example of Adam at *EHU* 4.6; *Abstract* 11–14; *DIS* 2.47; *THN* 2.1.6.9.

37.1 **custom or habit]** In *Abstract* 15–21 Hume connects his account of custom to what he calls in the subtitle of that work the 'chief argument' of his *Treatise*. See also *THN* 1.3.6, 1.3.8.10–14, 1.3.13.9–11, 1.3.14, 2.3.1.16, 2.3.5. Compare the treatments of custom (and habit) in Blaise Pascal,[B] *Pensées* 67, 94, 158–9, 454, 661, 680 (Levi nos.); Locke,[B] *Essay* 2.33.6–7; and Hutcheson, *Inquiry into the Original*, Treatise 1, 7.

37.13 **constant conjunction]** Hume makes related comments on constant conjunction in *THN* 1.1.1.8; 1.3.6.3–4, 8, 11–16; 1.3.11.11; 1.3.12.25; 1.3.14.12, 31–3; 1.3.15.1.

n. 8 **Tiberius[B] or a Nero[B]]** The reign of the Julio-Claudian emperors began with Tiberius' ascendancy in AD 14 and ended with Nero's death in AD 68. In *EPM* 5.34 Hume makes a related comment and invokes accounts of these emperors found in

Suetonius[B] (see *Lives of the Caesars* 3, 'Tiberius', and 6, 'Nero') and Tacitus[B] (see *Annals* 16.21–35).

39.20 **natural instincts]** This controversy about the roles of instinct and reason is explored below in Section 9, especially 9.6). See also *Abstract* 6, where Hume proposes that 'all our passions are a kind of natural instincts, derived from nothing but the original constitution of the human mind'. Hume may have been influenced by many since Aristotle[B] who have employed the language of 'natural instinct'. For a spectrum of modern opinion, see Lord Herbert of Cherbury, *De veritate*, 'Instinctus naturalis'; Montaigne, 'Apology for Raymond Sebond', *Essays* 2.12 (Screech, 512); Gassendi, 'Letter to Diodati' (Brush, 111); Leibniz,[B] *New Essays* (pub. 1765) 1.2.3, 9; Pascal,[B] *Pensées* 25 and 176 (Levi nos.); and French philosopher Julien Offray de La Mettrie (1709–51), *Machine Man*, 13. See also the uses of 'natural instinct' in *EHU* 9.3, 12.7, 12.16, and 12.25.

39.35 **PART 2]** Excepting the final two paragraphs in part 2, the theory of belief in this part is related to material in *THN* 1.3.5, 7–8 (see also Appendix 2–9) and *Abstract* 16–22.

40.6 **fiction and belief]** In some works, but not *EHU*, Hume uses 'fiction' to refer to an invention of mind that is neither voluntary nor arbitrary. For a theory of non-voluntary invention, see *THN* 1.1.6.2 and 1.4.3.5; see also *THN* 1.4.3.1, 4–7; 1.4.4.2; 1.4.5.3.

40.9 **voluntarily annex . . . not in our power to believe]** This thesis that belief is involuntary may be a challenge to the Cartesian theory (with less extreme predecessors in the Stoics and St Augustine) that judgement is a matter of voluntary assent. In Descartes's account affirming or denying propositions (as well as abstaining from making judgements) is free activity traceable to the will. See *Meditations* 4 (*Philosophical Works*, 1: 39–42).

40.11 **man . . . horse]** Hobbes (*Leviathan* 2.4) and Berkeley[B] (*Principles*, introduction 10) discuss combining man and horse in the imagination. See also the opening lines of Roman poet Horace (1st c. BC), *Art of Poetry*, on connecting a human head to the neck of a horse and the discussion of joining parts of man and horse in Locke,[B] *Essay* 2.32.25.

40.40 **belief . . . vivid, lively]** For a fuller development of these ideas about the nature of belief, see *THN* 1.3.7.5–7; 1.3.8.11, 15; 1.3.9.8. At 1.3.7.5 Hume says that the notion of belief 'may be most accurately defin'd [as] A LIVELY IDEA RELATED TO OR ASSOCIATED WITH A PRESENT IMPRESSION'.

42.29 **plead in excuse for the mummeries]** refers to the defence of certain religious rituals, ceremonies, rites, or performances. Protestants used the term 'mummeries' derogatorily to suggest ceremonial masquerading. This notion was associated with Roman Catholic beliefs and rituals that seemed superstitious to Protestants, such as the belief that the Host (the wafer) becomes the body of Christ when consecrated. A virtually identical passage occurs at *THN* 1.3.8.4.

n. 9 **de finibus]** Footnote reference: Cicero,[B] *De finibus bonorum et malorum* 5.1.2. While passing an afternoon at the Academy, Piso (a character in Cicero's dialogue) discusses the power of the setting to intensify emotions and focus thinking. Hume quotes Piso's comments on the stimulation of his ideas of historical figures while near the Academy and the senate building:

> Why are we more affected, asked Piso, when we learn that the places we see were often frequented by famous men than we are when we hear a report of the same men's exploits or read a written account of them? Is it a natural endowment we have, or is it some sort of aberration? I feel the effect now, for example. For I am put in mind of Plato, who we are told was the first to practise disputation here; indeed the adjoining gardens not only bring him back to mind but seem to place the man himself before my eyes. Here is Speusippus, here Xenocrates, and here his follower Polemo: The bench we see over there was Polemo's. In the same way, even when looking at our own senate building—I mean the Hostilia, not the new building, which looks slighter to me since it was enlarged—I used to think of Scipio, Cato, Laelius, and especially my grandfather. So great is the suggestive power of places, that it is no accident that they shape our memory training.

Speusippus,[B] Xenocrates,[B] and Polemo[B] were, in the order listed, the three immediate successors of Plato[B] as heads of the Academy in Athens, from 347 to 313. Scipio Aemelianus,[B] Cato the Elder,[B] and Laelius[B] were Roman military and political figures admired by Cicero for their outstanding qualities.

A virtually identical paragraph and an identical passage from Cicero's *De finibus* appears in *THN* 1.3.8.5 n. (originally published in the Appendix), although variants appear in the Latin.

43.19 **relicts of saints and holy men]** Several books on this subject were available to Hume, among them Edward Gee, *The Texts Examined which Papists cite . . . concerning the Worship of Images and Relics* (originally published 1688) and the famous work by Jean Calvin, *Traitté des reliques*, which had been translated into English. Relics were discussed in several works referred to below in the annotations for Section 10.

44.29 **pre-established harmony]** a term derived from the 'harmonie préetablie' of Leibniz.[B] In *Dialogues* 10.6 Hume appends (in a similar context) the footnote 'That sentiment had been maintained by Dr KING and some few others before LEIBNITZ; though by none of so great fame as that GERMAN philosopher.' The first reference is to William King (1650–1729), archbishop of Dublin; see his *Essay on the Origin of Evil* 2–3, 5.5.2–3. Leibniz held that God created every individual atomic unit in the universe so that whatever happens to each such unit is the result of its nature. See *Leibniz–Arnauld Correspondence*, 23 Mar. 1690, and *Theodicy* (Farrer–Huggard, 133, 157, 245, 304, 337).

45.1 ***final causes***] a term derived from Aristotle's account of the four causes or four types of change in nature (*Physics*, 198^{a}14–^{b}19; *Metaphysics* 1013^{a}24–^{b}28). Like

'pre-established harmony', 'final cause' can refer to the purposes, ends, goals, or designs in nature. For 'those, who delight' in final causes, see Boyle, *A Disquisition about the Final Causes of Natural Things* (*Works*, 5: 392–444). Gassendi, Leibniz,[B] and Newton[B] discussed final causes favourably, as did Keill in *An Examination of Dr. Burnet's Theory of the Earth* . . . (63–4) and French mathematician Abraham de Moivre (1667–1754), in *The Doctrine of Chances* (252); but no treatment rivals Boyle's for comprehensiveness. See, further, Hume's mention of final causes in *Dialogues* 2.9, 14; 3.7; 4.13; 6.4; 10.37.

45.2 **wonder and admiration]** Pope (*Essay on Man*, epistle 1, especially lines 281–94; epistle 3, lines 1–26, 111–14) was one of those who shared features of the optimistic outlook on harmony found in Leibniz.[B]

SECTION 6

PROBABILITY] *THN* 1.3 also treats the subject of knowledge and probability; *EHU* 6 corresponds in important respects to *THN* 1.3.11–13. See also *THN* 1.3.2 and passages on probability beginning 1.3.6.4. The notion of probability had a rich history in philosophy, mathematics, and science, and several controversies surrounded the interpretation of probability and chance during the 17th and 18th centuries. Prominent figures included Pascal[B] and Pierre de Fermat (1601–65) ('Letters between Fermat and Pascal'), Arnauld[B] and Nicole[B] (*Logic or the Art of Thinking*), French mathematician J. Bernoulli (1654–1705) (*Ars conjectandi* 3), French mathematician Pierre Rémond de Montmort (1678–1719) (*Essay d'analyse sur les jeux de hazard*), and de Moivre (*Doctrine of Chances*). See also Locke,[B] *Essay* 4.15, and the 'Correspondence between Leibnitz and Bernoulli', in *Translations from James Bernoulli* (on estimating probabilities). Hume's positions are in the tradition descending from Arnauld–Nicole and Locke.

For modern scholarship on the development of theories of probability, see Lorraine Daston, *Classical Probability in the Enlightenment*; Ian Hacking, *The Emergence of Probability*; Barbara Shapiro, *Probability and Certainty in Seventeenth-Century England*; Anders Hald, *A History of Probability and Statistics and their Applications before 1750*; and F. N. David, *Games, Gods and Gambling*.

n. 10 **Mr. Locke[B] divides all arguments]** Footnote reference: John Locke, *An Essay concerning Human Understanding* 4.15–16. See also *Essay* 4.1–3 on knowledge, probability, and evidence. Prior to the publication of Locke's *Essay* in 1690 several British thinkers had examined divisions of arguments, degrees of evidence, and legitimate grounds of assent. Their purposes were often grounded in religious interests. Examples include Wilkins, *Of the Principles and Duties of Natural Religion* 1.1 and 1.3; physician and philosopher Walter Charleton (1619/20–1707), *The Immortality of the Soul Demonstrated by the Light of Nature*, 'Dialogue the Second', 186–8; Boyle, *Reconcileableness of Reason and Religion* 8 (*Works*, 4: 93–7); Glanvill, sermon 3: 'Moral Evidence of a Life to Come', in *Seasonable Reflections and Discourses*; and John Tillotson,[B] 'The Wisdom of Being Religious' (*Works*, sermon 1).

n. 10 ***demonstrations, proofs*, and *probabilities***] See Locke[B] on the distinction between 'proofs' and 'demonstrations' and analysis of 'demonstration' (*Essay* 4.2.1–4, 4.15.1–4, 4.16.6–9). Locke regards 'demonstration' as necessarily including 'proof' as an element; unlike Hume's treatment, Locke's is not a distinction between two degrees of the same sort of thing. Locke uses 'proof' to refer to what we might consider the steps in a proof. Hume's distinction therefore does not entirely parallel Locke's.

John Laird (relying in part on Baxter) maintained that Hume 'borrowed this threefold division from the Chevalier Ramsay' (Laird, *Hume's Philosophy*, 90 and n.). This hypothesis is based on *The Travels of Cyrus* 6, where expatriate Scottish philosopher and tutor Andrew Michael Ramsay (1686–1743) used similar terminology and ideas. (Hume obliquely refers to this book by Ramsay at *NHR*, n. 87. A 1757 edn. is in the Hume Library.) Ramsay's hierarchy of three degrees (see *Travels of Cyrus*, 1: xix–xxiv; 2: 52–3, 62) is closer to Hume's usage than Locke's two degrees, suggesting that Hume may be following Ramsay rather than Locke. However, no additional evidence confirms that Hume was indebted to Ramsay for the distinction.

Some of Hume's predecessors offered similar distinctions. See, for example, Wilkins, *Principles and Duties of Natural Religion* 1.3.3–5 (where '*indubitable* certainty' is contrasted to infallible certainty and fallibility). In Wilkins and other figures, such as Tillotson,[B] this view is related to the distinction between metaphysical and moral certainty, elaborated in ann. Section 10.3–4.

In *THN* 1.3.11.2 Hume proposes that we 'distinguish human reason into three kinds, viz. *that from knowledge* [rational demonstration or truths of reason], *from proofs* [causal arguments free of doubt and uncertainty], *and from probabilities* [arguments from probability, which are inferior in certainty and evidence to those causal arguments that are free of doubt and uncertainty]'. He notes that although the gradation from proofs to probabilities is 'insensible' in many cases, they are distinct categories.

46.1 ***Chance***] The ancient contrast between chance and causation diminished with the rise of modern accounts of probability. 'Chance' became associated with unpredictability, luck, fortune, risk, and hazard, rather than the absence of causes. The thesis that 'chance' and related terms are mere words without corresponding realities is found in Collins, *Human Liberty*, 107; Chambers, *Cyclopædia*, 'chance'; English clergyman, classical scholar, and master of Trinity College, Cambridge, Richard Bentley (1662–1742), 'A Confutation of Atheism . . . Third and Last Part' (Fifth Boyle Lecture), 6–13; and Clarke,[B] *Sermons on Several Subjects*, sermon 98 (*Works*, 1: 619). Variants of the same thesis are found in Wollaston, *Religion of Nature Delineated* 5.14; and de Moivre, *Doctrine of Chances* (252–3; compare preface). See also *EHU* 8.25; *Dialogues* 9.3 ('*Chance* is a word without a meaning'); and *THN* 1.3.11.4–7, 1.3.12.1.

46.1 **ignorance of the real cause**] Probability theorists often assumed determinism (what Hume treats in Section 8 as 'necessity') and condemned belief in the real existence of chance or fortune. Paradoxically, figures such as Bernoulli, de Moivre,

and French mathematician and political theorist the marquis de Condorcet (Marie-Jean-Antoine-Nicolas Caritat; 1743–94) gave meaning to 'chance', and allowed for a theory of chance, only to deny that it exists in reality.

46.4 **superiority of chances on any side]** Games of chance and underlying probabilities were subjects of both intellectual and moral interest in the 18th century. Mathematicians such as Bernoulli (*Ars conjectandi* 3) and de Moivre (*Doctrine of Chances*) investigated the superiority of chances. See Chambers, *Cyclopædia*, 'gaming', and *THN* 1.3.11, 'Of the probability of chances'.

46.13 **process of the thought or reasoning]** Hume is discussing quantitative computation and belief proportional to past frequency. Often, however, 'probability' is linked to reasoning, reasonableness, and reasonable belief. See the accounts in Gassendi, Arnauld,[B] Boyle, Bernoulli, Pascal,[B] Butler, and Wilkins, to list figures mentioned elsewhere in these annotations. See also 'probabilité' in the *Encyclopédie* of Diderot and D'Alembert.

46.17 **dye . . . particular side]** Compare Hume's discussion of dice, sides, probability, and related topics in *THN* 1.3.11.6. For similar views about probability and the use of dice in a work with which Hume was familiar, see Wollaston, *Religion of Nature Delineated* 3.16 (56, 59).

Numerous works on probability and gaming had used the example of dice to illustrate basic problems, propositions, and theories. Early and influential treatments of dice in probability theory included Gerolamo Cardano (1501–76), *Liber de ludo aleæ* (*The Book on Games of Chance*, in *Cardano: The Gambling Scholar*), especially chs. 7–13. Later and more expansive treatises of imposing historical importance in which the example appears include Montmort, *Essay*, preface and third part, 'Explication de ce jeu' (1713 2nd edn., pp. iii–xxiv, 173–215); Bernoulli, *Ars conjectandi* 3; and de Moivre, *Doctrine of Chances*, 9–24, 37-8, 41, 44-5, 51–5, 123–8, 160–1. See also the discussions of dice in Pascal[B] and Fermat ('Letters between Fermat and Pascal', especially 229–50).

46.19 **entirely equal]** The thesis that chances are equal when frequencies are equal is presented in more detail in *THN* 1.3.11.5, 8, 12; 1.3.12.15.

47.5 **probability of causes, as with that of chance]** See *THN* 1.3.12, which is entitled 'Of the probability of causes'; and *THN* 1.3.11, entitled 'Of the probability of chances'.

47.10 **universal law]** See the quotation from Newton,[B] *Opticks* 3.1, in ann. 27.39. *THN* 1.3.12.16 presents an account of gravity that resembles Cotes's 1713 preface to Newton's *Mathematical Principles* (2nd edn.):

> the attractive force of the entire bodies arises from and is composed of the attractive forces of the parts, because . . . if the bulk of the matter be augmented or diminished, its power is proportionately augmented or diminished. We must therefore conclude that the action of the earth is composed of the united actions of its parts, and therefore that all terrestrial bodies must attract one

another mutually. . . . This is the nature of gravity upon earth. (Motte–Cajori, p. xxii.)

47.12 **rhubarb . . . purge, or opium a soporific]** A purge is a cathartic (cleansing) or scouring medicine, here a laxative. Rhubarb was sometimes used as a purge to produce evacuations of the bowels, but it did not always bring about the desired effect. Opium contains morphine and acts as a narcotic. Opium was sometimes given to patients, but it too did not always bring about the desired effect. Exactly the same examples of opium and rhubarb were used to illustrate irregularity and uncertainty in Locke, *Essay* 4.3.25, and Chambers, *Cyclopædia*, 'ignorance'. Leibniz[B] then reproduced the same examples from Locke in *New Essays* (pub. 1765) 4.3.25. See also Johnson's *Dictionary* ('opium') and Hume's use of these examples in *Abstract* 32.

47.14 **irregularity . . . secret causes . . . prevented the operation]** Compare Clarke,[B] *Sermons on Several Subjects*, sermon 98 (*Works*, 1: 617–21); Bernoulli, *Ars conjectandi* 4.1–3; and de Moivre, *Doctrine of Chances*. On secret causes, see the similar view in Locke,[B] *Essay* 4.16.12.

47.29 **frost . . . open]** 'Open' here means clear and free from frost. Butler used the example of expecting frost in England in January and the role of probable judgements (*Analogy*, introduction) during his discussion of the Indian prince example that Hume presents at *EHU* 10.10.

47.31 **approaches to a certainty]** presumably a conclusion based on exceptionless evidence (not merely high probability) of a phenomenon. See the exposition, with a similar emphasis, in Locke,[B] *Essay* 4.16.6–9; and Wollaston, *Religion of Nature Delineated* 3.16 (57).

48.4 **common theories]** 'Received systems' are presumably here identical to the 'common theories'. These theories treated *knowledge*, *understanding*, and *demonstration*, but lacked serious treatment of *probability*, which falls short of knowledge. At *Abstract* 4 Hume indicates that the 'common systems' of Locke,[B] Malebranche[B] (see previous citations for both), and Arnauld[B] and Nicole,[B] *Logic or the Art of Thinking* (fourth part, chs. 6–15; Buroker, 246–73) all emphasize understanding and demonstration, while failing to address questions of 'probabilities, and those other measures of evidence on which life and action entirely depend, and which are our guides even in most of our philosophical speculations'. Hume there attributes to Leibniz[B] insights about defects in these theories.

SECTION 7

49.2 **clear and determinate]** Hume is presumably following Locke,[B] who had decided that the Cartesian language of 'clear and distinct ideas' was inexact. He declared that he had '*in most places chose to put* determinate *or* determined, *instead of* clear *and* distinct. . . . *By* determinate, *when applied to a* simple Idea, *I mean that*

simple appearance, which the Mind has in its view, or perceives in it self, when that Idea is said to be in it' (*Essay*, Epistle to the Reader, 13). Locke used the language of 'clear and distinct ideas' regularly in his first three editions, and never succeeded in entirely removing it from his text.

49.6 **ellipsis . . . scalenum**] An ellipsis is an oval figure cut obliquely from the section of a cone (not parallel to the base, which would be a circle). A scalenum is a scalene triangle, which has sides of unequal length.

49.28 **Euclid**[B]] 'Geometry' was sometimes referred to as 'Euclid', and Euclid's *Elements* was still a standard manual in Hume's era. Hume mentions Euclid in several works; in *THN* 1.2.4 he uses Euclidean notions and definitions (of 'point', 'surface', 'rectilineal figure', etc.), but does not name Euclid.

50.6 **natural philosophy . . . physics**] 'Natural philosophy' (see ann. 5.1) and 'physics' were sometimes used as synonyms in the 18th century.

50.14 **obscure and uncertain . . . *power*, *force*, *energy*, or *necessary connexion***] In *THN* 1.3.14.7 Hume complained of the 'prodigious diversity' of philosophical opinions on this issue—citing Malebranche,[B] *Search after Truth* 6.2.3. Malebranche denies both that objective necessary connections between items in nature can be discovered and that there is real causal interaction between these items; true connections are between the will of God and created (or re-created) entities. When Hume criticizes the notion of objective necessary connection, he may be criticizing this doctrine in Malebranche. None the less, as *THN* 1.3.14.7 and 1.4.5.31 suggest, Hume's account of necessary connection may be most heavily indebted to Malebranche.

50.26 **Complex ideas . . . simple ideas**] For the philosophical background of Hume's views on simple and complex ideas, see Locke,[B] *Essay* 2.2, 2.11.6–7, 2.12, 3.4.6–7. Locke discussed how the mind compounds ideas, as did Addison[B] (*Spectator* 416). Both mention an associationist theory that in some respects resembles Hume's in Section 3; see ann. 17.1 and the more extended analysis in *THN* 1.1.1.2–10; 1.1.4.1, 7; 1.1.6.3; 1.1.7.14.

51.12 **the whole that appears to the *outward* senses**] This theme is found in Malebranche[B] and other occasionalists (see ann. Section 7.21); sceptical origins are found in Sextus Empiricus, *Outlines of Pyrrhonism* 3.13–19 (chs. 4–5). Locke[B] acknowledged that we do not observe causal powers through the outward senses, but was confident that these powers exist, that we can detect them in our own agency, and that they are needed to explain causal relations; see ann. n. 12 and 52.5.

51.25 **Solidity**] Compare Locke,[B] *Essay* 2.4. Solidity is a spatio-temporal primary quality (though Cartesians disputed its existence)—see ann. Section 12.15 below and the numerous uses of this notion in *THN*.

51.29 **machine . . . concealed from us**] Theses about the overambitious claims of some writers to discover hidden causes are basic to Hume's arguments about science (the present context) and religious belief (in Section 11 below). On the

'whole machine'—that is, the entire universe—see Hume's *Dialogues* 2.5, 18; 7.14; 11.11; 12.5.

n. 12 **Locke[B] . . . chapter of power]** Footnote reference: John Locke, *An Essay concerning Human Understanding* 2.21. See especially sects. 1–16. Hume gives a near-identical reference to Locke in a note in *THN* 1.3.14.5. At 2.21.1 (see also 2.2.2 and 2.7.8) Locke discusses how the mind 'comes by that *Idea* which we call *Power*'.

52.5 **internal power]** See 7.16 below. For the thesis that the 'operations of our own minds' furnish a basis for 'the idea of power', see Locke,[B] *Essay* 2.1.2–4; 2.7.8; 2.21.1–5; 2.22.2, 10; 2.23.28, 33; 3.6.11; English clergyman Henry Lee (d. 1713), *Anti-Scepticism: Or, Notes upon Each Chapter of Mr. Lock's Essay* 2.19.2–3; Leibniz,[B] *New Essays* (pub. 1765) 2.21–3; Irish philosopher and Anglican bishop Peter Browne (d. 1735), *The Procedure, Extent, and Limits of Human Understanding*, 387–8. On Locke[B] and felt power, compare ann. n. 12.

52.26 **supposed spiritual substance]** Compare *THN* 1.4.6 on personal identity and *Dialogues* 6.5 on spiritual substance. See also the struggle between Hylas and Philonous over 'spiritual substance' in Berkeley,[B] *Dialogues* 3 (also *Principles* 1.139). Hume may be directing these statements primarily at Descartes[B] and his followers for their views on substance, continuance, identity, and interaction. Presumably anyone who accepted Cartesian dualism is a target, including Locke.[B]

52.33 **nature of both these substances]** Hume's discussion of substance is here directed to the 'secret union of soul and body'. Broader discussions of substance appear in *THN* 1.1.6, 1.4.3.1–8, 1.4.5.2–6; see also *Abstract* 28 and 'Of the Immortality of the Soul' 3, 5–6. Hume's belief that experience does not penetrate to a deeper substance had been anticipated by Locke,[B] *Essay* 2.13.18–9; 2.23.1–4, 37; 3.5.3—and developed on Lockean assumptions in Irish philosopher John Toland (1670–1722), *Christianity Not Mysterious* 3.2.

53.16 **anatomy . . . power in voluntary motion]** Paris and Edinburgh had emerged as centres of instruction in anatomy. However, Hume's argument here may rely on passages in Malebranche.[B] See *Search after Truth* 6.2.3, Elucidation 15. See also ann. 8.15.

53.18 **animal spirits]** nerves or nervous spirits; the system that makes sensation and voluntary motion possible—a thin nerve fluid or humour inside narrow tubes and pores. This fluid was thought to be the material source of nervous transmission in animals and humans. See references and definitions in Chambers, *Cyclopædia*: 'animal spirits', 'brain', 'memory', 'passion', and 'spirits' (and eight appearances of 'animal spirits' in *THN*). Many ancient physicians believed in animal spirits. A modern proponent in the medical community was English physician and professor of natural philosophy Thomas Willis (1621–75), who is discussed below in ann. Section 9; see his *Cerebri anatome* 11. Cheyne, by contrast, maintained that the 'contriv'd' and 'dark' hypothesis of animal spirits is unconfirmed (*The English Malady* 1.9).

Hume's source could have been Malebranche,[B] who used 'animal spirits' in the passage cited immediately above and in a related discussion of anatomy and volition; see *Search after Truth* 2.1.2, 2.1.5, 5.1, with a favourable citation of Descartes's 'treatise *De l'homme*'. See Descartes,[B] *Treatise on Man* (*Philosophical Writings*, 1: 100–7); *Passions of the Soul* 1.7–16, 34–49; and Letter to Vorstius (*Philosophical Writings*, 3: 225–6). Étienne Gilson's *Index Scolastico-Cartésien* ('esprits animaux') contains a useful body of references on animal spirits.

54.20 **power . . . entirely beyond our comprehension]** This argument concerning power and actions of mind resembles arguments in Malebranche,[B] though the reference to an infinite being does not follow Malebranche's view on divine causation (see *Search after Truth* 6.2.3 and Elucidation 15). Hume might be using Malebranche's premisses to turn the argument against him.

n. 13 ***nisus***] impulse or effort. *Nisus* is defined in Hume's Index (below) as 'strong endeavour'. The concept of *nisus* was developed by Aristotelian philosophers, who held that movement throughout nature derives from the operation of a principle that is analogous to desire or endeavour. This *nisus* drives objects to develop. See also n. 17.

55.30 **invisible intelligent principle]** See Hume's introduction to *NHR* (and also *NHR* 2.2, 2.5, 3.4, 4.1, 5.2, 8.2, 15.5), where he presents the thesis that, with a few exceptions, belief in 'invisible, intelligent power' has been 'diffused over all persons in all nations and ages'.

n. 14 *Θεὸς ἀπὸ μηχανῆς*] This phrase means 'god out of a machine'. The expression derives from Hellenic and Roman drama, in which a 'deity', represented by an actor, interceded in human affairs. Some playwrights, including Euripides (5th c. BC), ended certain dramas by using a mechanical device to lower to the stage a god who solved problems generated by human situations by using superior judgement and commands. See Plato,[B] *Cratylus* 425d–426a; Aristotle,[B] *Poetics* 1454[b].

Leibniz[B] uses the equivalent Latin expression, 'deus ex machina', to denounce the metaphysical hypothesis that Hume here has under consideration. Leibniz regarded the God of the occasionalists as a *deus ex machina* for resolving the mind–body problem. He maintained that occasionalists lack an 'explanation drawn from the order of secondary causes' and take 'recourse to miracle' (*Primary Truths* and *A New System of the Nature and Communication of Substances*, in *Philosophical Essays*, 33, 143–5). See also reports on Leibniz and this problem in Bayle,[B] *Dictionary*, 'Rorarius' [H].

The expression *Θεὸς ἀπὸ μηχανῆς* is of unknown origins, though it apparently became proverbial in post-Renaissance literature. In his 1748 (first) edition, Hume used in the text the phrase '*quasi Deus ex machina*'—like a god out of a machine. In 1750 this Latin version was moved to a footnote ('*Quasi Deus ex machina*. Cic. de Nat. Deorum'), then deleted in subsequent editions. This reference was apparently to Cicero's *De natura deorum* 1.20.53. However, Cicero[B] does not use either 'Quasi deus ex machina' or 'Deus ex machina'. His text reads: 'Quod quia quem ad modum

natura efficere sine aliqua mente possit non videtis, ut tragici poetae cum explicare argumenti exitum non potestis confugitis ad deum' ('For in so far as you cannot see how nature can cause this without some intelligent mind, you have recourse to a god, like the tragic poets when unable to arrange the conclusion of a plot'). Hume apparently viewed Cicero as referring to the phenomenon, not as using the phrase.

55.37 **many philosophers]** In a similar passage in *THN* 1.4.5.31 Hume provides a footnote to 'Father *Malebranche* and other *Cartesians*'. His reference there, and here, is to Malebranche,[B] *Search after Truth* (6.2.3 and Elucidations 1 and 15, especially reply to the sixth proof) and to other occasionalists; see also ann. n. 16. Philosophers who thought that 'the energy of the cause is . . . unintelligible' in the relevant sense include Berkeley.[B]

56.3 **sole cause of every event]** Occasionalists who held this or a closely related view about divine causation included Malebranche,[B] *Search after Truth* 6.2.3 (cf. 3.2.3 and *Dialogues on Metaphysics*, dial. 7); French occasionalist philosopher Gerauld (Géraud) de Cordemoy (*c*.1620–84), *Six discours sur la distinction & l'union du corps & de l'ame*, 'Discours 4—De la première cause du mouvement' (*Œuvres*, 136–40, 143–4, especially conclusions 3–4 and axiom 5); French physician and philosopher Louis de La Forge (1632–66), *Traitté de l'esprit de l'homme* 16, especially pp. 251–9 (1666 edn.); German Cartesian philosopher Johannes Clauberg (1622–65), *Disputationes physicæ* 13, 17–18, in *Opera omnia philosophica*. These occasionalists were building on Descartes,[B] who suggests that God is the cause of both the motion of bodies (and that this moving force is not in the bodies themselves) and the acts and effects of the human will; see *Principles of Philosophy*, 1: 24, 40–1 (*Philosophical Writings*, 1: 201, 206); *Objections and Replies* 3 (*Philosophical Writings*, 2: 134). See Hume's interpretation of Descartes in n. 16 (and ann. n. 16).

56.5 ***causes* . . . nothing but *occasions*]** In *Letter from a Gentleman* 32 Hume (or his editor, Kames) expressed the following opinions on the problem:

> These Philosophers last-mentioned substituted the Notion of *occasional Causes*, by which it was asserted that a Billiard Ball did not move another by its Impulse, but was only the Occasion why the Deity, in pursuance of general Laws, bestowed Motion on the second Ball. But, tho' this Opinion be very innocent, it never gained great Credit, especially in *England*.

See also *THN* 1.3.14.32 on the 'cause'–'occasion' distinction.

Occasionalists seldom straightforwardly described causes as mere occasions. More commonly, they assumed or implied that this is so in the course of an argument that nothing that is finite has the power to necessitate an effect. All motion is therefore generated by God. See Malebranche,[B] *Search after Truth* 3.2.3, 6.2.3; Elucidation 15; Louis de La Forge, *Traitté de l'esprit de l'homme* 16, especially pp. 246–7, 251–8, 263–4 (1666 edn.); Cordemoy, *Six discours sur la distinction & l'union du corps & de l'ame*, 'Discours 4—De la première cause du mouvement' (*Œuvres*,

136–9, 142–4); and Clauberg, *Metaphysica de ente* 13, 15 (setting forth the principles of cause and action), and *Disputationes physicæ* 18 (on divine causation), in *Opera omnia philosophica*.

56.7 **volition of the Supreme Being]** In occasionalist philosophy, when an event is thought to causally affect another event, an action of God is required; contra Descartes,[B] body and mind do not causally interact. See Malebranche,[B] *Search after Truth* 3.2.6, 6.2.3; Elucidations 1, 15; Clauberg, *Corporis et animæ in homine conjunctionis* 4, 7, 52 (on mind and body), and *Disputationes physicæ* 17 (on movement of the body), in *Opera omnia philosophica*; and Flemish philosopher Arnold Geulincx (1624–69), *Opera philosophica*, 2: 186–90.

56.16 **operation of mind on body]** In *Search after Truth*, Elucidation 15, Malebranche[B] argues that the sole cause is God, who establishes a union between mind and body and operates on the basis of laws of the conjunction of mind and body. See also Clauberg, *Opera omnia philosophica*, *Corporis et animæ in homine conjunctionis* 14, 52, in *Opera omnia philosophica*; Geulincx, *Opera philosophica*, 2: 150–3, 261–5; and the next annotation.

56.26 **second our will]** The theory that the human will is merely the occasion of movement in the body is found in Malebranche[B] (*Search after Truth* 6.2.3); La Forge, *Traitté de l'esprit de l'homme*, 131–4, 196–7, 251–9, 264 (1666 edn.); Cordemoy, *Six discours sur la distinction & l'union du corps & de l'ame*, 'Discours 4—De la première cause du mouvement' (*Œuvres*, 140–3); Clauberg, *Corporis et animæ in homine conjunctionis* 14, and *Theoria corporum viventium* 32, in *Opera omnia philosophica*; Geulincx, *Opera philosophica*, 2: 176–7, 196–7.

57.5 **stupendous machine]** As a possible way of extricating occasionalists (and perhaps other believers in divine providence), Hume here presents the alternative of deism for consideration.

57.17 **analogies and probabilities have any authority]** Hume discusses this problem in *Dialogues* 2, 6–7, 12. The passage may be an allusion to Butler's *Analogy*.

n. 16 **I need not examine]** This footnote substantially overlaps with a passage in *Letter from a Gentleman* 32, which Hume was drafting (later modified by Kames) at approximately the same time that he was drafting the first or 1748 edition of *EHU*. For exact differences, see the collation in the Introduction.

n. 16 ***vis inertiæ*]** force of inertia (also force of inactivity). Though Kepler introduced the Latin term, Newton's treatment would more likely have attracted Hume's attention. Departing from Descartes,[B] Newton[B] began to use the term 'inertia' to refer to the internal force of a body (*vis interna corporis*) that resists change. He incorporated the Cartesian conception in definition 3 of the *Mathematical Principles*: 'The vis insita, or innate force of matter, is a power of resisting, by which every body, as much as in it lies, continues in its present state, whether it be of rest, or of moving uniformly forwards in a right line' (*Mathematical Principles*, 2). Newton subsequently reformulated this *vis insita* as *vis inertiae* and made it proportional to the mass of a

body. This reformulation enabled him to use mathematical calculations and made the *vis inertiae* more than merely a force in the explanation of motion. He placed this new account in a broader theory of motion in *Opticks* 3.1 (397):

> The *Vis inertiæ* is a passive Principle by which Bodies persist in their Motion or Rest, receive Motion in proportion to the Force impressing it, and resist as much as they are resisted. By this Principle alone there never could have been any Motion in the World. Some other Principle was necessary for putting Bodies into Motion; and now they are in Motion, some other Principle is necessary for conserving the Motion.

Vis inertiae is discussed in simplified terms in Cheyne, *Philosophical Principles of Natural Religion* 1, especially 1.7 (citing Newton). Clarke[B] criticizes Leibniz[B] for an inadequate understanding of the notion in their correspondence (Clarke, Fifth Reply, in *Works*, 4: 690–1). Scottish philosopher Andrew Baxter (1686–1750), a follower of Clarke and near-neighbour of Hume's (though contact between them is undocumented), published one of the most comprehensive theories of the *vis inertiae* in Hume's day. He defined *vis inertiae* as 'resistance to a change of [matter's] present state of rest or motion' (p. 77) and held that this property is essential to matter. He maintained that material beings (unlike God and human souls) lack active powers and have only the power to resist change. See *An Enquiry into the Nature of the Human Soul*, sect. 1, especially pp. 11, 22–7 (and the note on 27–9). Baxter may be under criticism in n. 16, but, if so, Hume would seem to be reading him as a Cartesian or an occasionalist.

n. 16 **the new philosophy]** The reference is to modern natural philosophy or experimental philosophy, as influenced by developments in many advancing sciences. The new philosophy arose in the work of figures such as Galileo, Bacon,[B] Gassendi, Descartes,[B] Hobbes, Wilkins, Boyle, and Newton.[B] The philosophy was considered 'new' because it replaced prevailing scholastic views and embraced experimental methods. Boyle, a forceful supporter, discusses what are 'called the new philosophers' in the preface to *The Christian Virtuoso*. Bayle[B] links 'the new philosophy' to theories of perception and scepticism in natural philosophy (*Dictionary*, 'Pyrrho' [B]).

n. 16 **acquires itself]** Scientific laws of inertia first arose as scientists began to depart from classical physics, which had construed motion as requiring external agency for both initiation and continuation. Without using the term 'inertia', Galileo formulated the hypothesis that once a body is in motion, it continues in that motion until affected by an external source of resistance. Descartes[B] developed Galileo's hypothesis as the law of inertia; see *Principles of Philosophy* 2.37.

n. 16 **Newton[B] . . . second causes]** Chambers (*Cyclopædia*, 'cause') defines 'second causes' as 'those which derive the power, and faculty of acting, from a first cause. Such Causes don't properly act at all; but are acted on: and therefore are improperly called causes: of which kind are all those that we call natural causes. . . .

[S]econd Cause . . . is acted upon by some superior or first cause, to produce any effect.' See Hume's gloss on 'second causes' in *THN* 1.3.14.11.

Maclaurin presented the following interpretation of Newton.[B]

> Tho' [God] is the source of all efficacy, yet we find that place is left for second causes to act in subordination to him. . . . [Powers] are not to be considered as mere immediate volitions of his (as they are often represented) but rather as instruments made by him, to perform the purposes for which he intended them. If, for example, the most noble phænomena in nature be produced by a rare elastic *ætherial medium*, as Sir *Isaac Newton* conjectured, the whole efficacy of this medium must be resolved into his power and will, who is the supreme cause. . . . (*An Account of Sir Isaac Newton's Philosophical Discoveries*, 388–9 (published after *EHU* went to press)).

In the 1750 or second edition of *EHU* Hume formulated his statement of Newton's view in n. 16 so that Newton accepted 'an etherial active Matter' (*EHU*, 1750 edn., 118n.). In 1754 physician and natural philosopher John Stewart (1715?–59) criticized Hume's thesis in a paper discussed in the Introduction to this volume (see 'Reception in the 1750s'). This paper led Hume to change 'matter' to either 'second causes' or 'fluid'. Newton struggled with some of the relevant distinctions in his *Opticks*, and Clarke[B] (see ann. n. 16) pursued issues in his correspondence with Leibniz.[B] On Malebranche,[B] likely another of Hume's sources, see below. This dispute, especially at the hands of Clarke, Maclaurin, and Stewart, had theological implications. For theological problems and metaphysical distinctions preceding and informing the literature on second causes, see Gassendi, *Syntagma*: Physics 1.4.8.

n. 16 **etherial active fluid]** Before the *Mathematical Principles* Newton[B] offered a theory of the ether similar to that of Descartes.[B] He hypothesized mediated action at a distance, but did not advance hypotheses regarding the *nature* of the medium. In the *Mathematical Principles* Newton suspended hypotheses about both the ether and the causal mechanism in gravitation, maintaining that gravitational attraction can be explained in terms of a universal mathematical law that does not presume action at a distance. His strategy led to his famous statement that

> hitherto I have not been able to discover the cause of those properties of gravity from phenomena, and I frame no hypotheses [*hypotheses non fingo*]; for whatever is not deduced from the phenomena is to be called an hypothesis; and hypotheses, whether metaphysical or physical, whether of occult qualities or mechanical, have no place in experimental philosophy. . . . [I]t is enough that gravity does really exist, and act according to the laws which we have explained. (*Mathematical Principles* 3, general scholium (547)).

n. 16 **Des Cartes[B] insinuated . . . Malebranche[B] and other Cartesians]** Descartes's philosophy suggests, without concluding, that God is the moving force of bodies. This moving force is not in the bodies themselves. His recondite views on

divine causation and the dependence of all events on God are not easily situated within the paradigm of the occasionalist model. See *Principles of Philosophy* 1.21; 2.36, 39, 42; *Objections and Replies* 5 (*Philosophical Writings*, 2: 253–5) and 6 (*Philosophical Writings*, 2: 293–4); and 'Letter to Princess Elizabeth' of 6 Oct. 1645 (*Philosophical Writings*, 3: 272). In Malebranche's theory, everything takes place because of the intervention of God; no causes other than God exist in nature. See Malebranche, *Search after Truth* 6.2.3 and Elucidation 15. See the explication of his and other Cartesians' views about the efficacy of the Deity in ann. Section 7.21 ff.

n. 16 **Locke,[B] Clarke,[B] and Cudworth[B]]** English philosophers Locke, Clarke, and Ralph Cudworth discussed philosophical issues about whether matter has force, but none adopted occasionalism. Cudworth was a significant figure in metaphysics, but not in the scientific controversies discussed in this footnote. Clarke was a Newtonian who did not have a supplementary ether theory and left matter wholly passive. These philosophers are mentioned in *Letter from a Gentleman* 32: '*Cudworth*, *Lock[e]* and *Clark* make little or no mention of [occasionalist doctrines of causation]. Sir *Isaac Newton* (tho' some of his Followers have taken a different Turn of thinking) plainly rejects it, by substituting the Hypothesis of an Æthereal Fluid, not the immediate Volition of the Deity, as the Cause of Attraction.'

n. 16 **modern metaphysicians]** The modern metaphysicians are those continental or British writers who (subsequent to the time of Locke[B] and Clarke[B]) embrace occasionalism. Besides the occasionalists, Berkeley[B] is the most prominent modern metaphysician not specifically listed. Though prominent, he never had any 'authority in England', where his views were universally rejected.

59.20 **customary transition]** In his discussion of necessary connection Malebranche[B] anticipated Hume's idea that the mind projects necessity onto objects and events; see ann. n. 17 below ('apply to external bodies' . . .). Other philosophers had commented on the human capacity to project sentiments onto objects in the case of heat, sound, colour, and the like. See the discussion of 'translating . . . our Passions to things without us' in Glanvill, *Scepsis scientifica* 12. See also *THN* 1.3.14.24–5.

n. 17 **square of its velocity]** The dispute here mentioned is between Leibniz[B] (and his followers), on the one hand, and the Cartesians and Newtonians, on the other. Leibniz argued that the force (*vis viva*, or living force) of a body in motion is properly measured by the formula mv^2—that is, the product of mass (m) and velocity (v) squared. Cartesians and Newtonians defended the simpler formula mv, the product of mass and velocity, and held that mv is the quantity conserved. These formulae vied for status in mechanics. Eventually it was appreciated that mv^2 described the force of a moving body over a given distance, whereas mv described the force over a given time. Part of the problem in the dispute arose from what the opponents were attempting to measure. Similarly, there was a variation in the experiments used to confirm their hypotheses: Leibniz used examples such as raising weights, whereas Newtonians and Cartesians appealed to colliding bodies.

n. 17 ***nisus* or endeavour]** See ann. n. 13.

n. 17 **apply to external bodies every internal sensation]** Malebranche[B] spoke of the mind's tendency 'to spread itself onto the objects it considers by clothing them with what it has stripped from itself' (*Search after Truth* 1.12.5, 5.6), thereby leading to 'error'. In *THN* 1.3.14.25 Hume discusses the mind's 'great propensity to spread itself on external objects'. Many philosophers held that objects are not themselves coloured, cold, or odorous; rather, such properties are in our minds and projected onto events or objects.

61.21 **readily apprehend this reasoning]** This conclusion about necessary connection prompted Hume to say in *THN* 1.3.14.24 that 'of all the paradoxes, which I have had, or shall hereafter have occasion to advance . . . the present one is the most violent, and that 'tis merely by dint of solid proof and reasoning I can ever hope it will have admission, and overcome the inveterate prejudices of mankind'. See also *Abstract* 32–4.