

Joseph Priestley (1733-1804)

Joseph Priestley's range of intellectual interests was great, even by the standards of the eighteenth century. He was a Dissenting minister, and his chief concerns were theological. His scientific work, for which he is now best known, occupied much of his remaining time. In addition he wrote extensively on history, education, rhetoric, and politics. In his day Priestley was also a philosopher of some importance. He argued the case for materialism perhaps more cogently than did any British thinker before recent times. He presented determinism vigorously, with a focus on the central issue of the nature of causation. He speculated interestingly, following Jesuit scientist Roger Joseph Boscovich, on the nature of matter. He defended scientific realism against Thomas Reid's Common Sense realism and against (as he saw it) David Hume's phenomenalism. He articulated, against Hume, a working scientist's account of causation, induction, and scientific progress. He defended the argument from design against Hume's penetrating criticisms. His attempt to combine theism, materialism, and determinism is audacious and original. He tried to show that such a system does not lapse into pantheism.

As a political thinker he distinguished usefully between civil and political liberty and argued the case for extensive civil liberties. His liberalism is closely bound up with his account of historical progress. He was perhaps the most thorough British exponent of a Providentialist account of progress. His ultimate aim was to combine Enlightenment principles with a modernized Christian theism.

Three notable philosophers of Priestley's generation held him in some regard. One, Richard Price, was his lifelong friend, despite their different moral and metaphysical outlooks. Reid, by contrast, had no liking for Priestley, but he was much occupied by Priestley's doctrines, and his writings are often directed against him. More surprisingly, Priestley is complimented in

Immanuel Kant's *Critique of Pure Reason* (1781) with the remark that he "knew how to combine his paradoxical teaching with the interests of religion." The paradox, Kant says, is that of a man who, though "a pious and zealous teacher of religion," has striven to "pull down two such pillars of religion as the freedom and immortality of the soul (the hope of a future life is for him only the expectation of the miracle of a future resurrection)." Priestley, in Kant's judgment, "was concerned for the interests of reason, which must suffer when we seek to exempt certain objects from the laws of material nature, the only laws which we can know and determine with exactitude." Furthermore, Priestley's political writings had the dubious distinction of provoking the wrath of Edmund Burke. At the time of the American Revolution, Burke and Priestley were philosophical allies; by the 1790s they had parted company, arguing opposite positions on the French Revolution, both with considerable force.

Priestley was born not far from Leeds in 13 March 1733. The family was Yorkshire Calvinist, or Independent. His father was a cloth-dresser. His mother died when Joseph was still young, and he went to live with a childless aunt, Sarah Keighley, also staunchly Calvinist, whose home was nevertheless a center for Dissenting ministers of all persuasions. As a young, largely self-taught philosopher, Priestley's heroes were John Locke, Sir Isaac Newton, and David Hartley. He was educated at Daventry Academy, where, he said, "the students were about equally divided upon every question of much importance, such as liberty and necessity, the sleep of the soul, and all the articles of theological orthodoxy and heresy; in consequence of which, all these topics were the subject of continual discussion." He was a quick student of history, languages, and the sciences, but his deepest early lessons concerned the value of tolerance and open argument.

The strict Calvinism of Priestley's circle taught that it was necessary to experience a "new birth" if salvation is to be obtained. Priestley found to his dismay that he lacked any such experience, but he

continued to consider himself a good Christian, which caused a rift with his aunt, his family, and his local parish. He continued throughout life to cast off doctrines others thought essential to Christianity, while yet retaining a deep attachment to the faith as he saw it. Unorthodoxy and controversy were his vocations; after an Arminian and an Arian period, he became eventually the chief exponent of Unitarianism in Britain. A deep intellectual and personal belief in divine Providence sustained him throughout; there is no sign that he was simply an intellectual in incomplete transit to deism, pantheism, or agnosticism.

After six difficult years as an unknown Dissenting clergyman and schoolteacher, in 1761 Priestley was offered the position of tutor in languages and literature at Warrington Academy. In the 1760s Warrington was lively and prosperous, earning the title of the "Athens" of northern England. There he lectured on modern history, rhetoric, literary criticism, and aesthetics. He first made his name as an author with three works: a textbook on English grammar, *The Rudiments of English Grammar; Adapted to the Use of Schools. With Observations on Style* (1761); a study of the theory of language; and an essay on the aims and practice of education. At Warrington he found time to start a new career as an historian of science, beginning with *The History and Present State of Electricity, with Original Experiments* (1767), a well-received history of discoveries in electricity, for which he conducted many experiments of his own. The project led him to membership in the Royal Society and to a friendship with Benjamin Franklin that lasted until Franklin's death. It also set him on the path toward his brilliant experimental career.

Success as a lecturer and promise as a scientist did not satisfy Priestley's deeper desire to be a Dissenting minister. In 1767 he accepted an invitation to a chapel at Mill Hill, Leeds. In this period he wrote his most substantial political work, *An Essay on the First Principles of Government; and on the Nature of Political, Civil, and*

Religious Liberty (1768), which is also his first philosophical essay. It is a defense of civil liberty, including the religious liberty of Dissenters, against John Brown's proposal for a system of uniform state education devoted to producing a more law-abiding citizenry. Against this "Spartanism" Priestley was a convinced "Athenian," and he mustered many of the arguments in favor of social and intellectual diversity later used by John Stuart Mill in *On Liberty* (1859). Some have thought that *An Essay on the First Principles of Government* prefigures utilitarianism, because Jeremy Bentham recollected finding in it the phrase "the greatest happiness of the greatest number." The phrase is not in Priestley's text, though. He does say that "the good and happiness of the members" of society, "that is, the majority of the members of any state, is the great standard by which every thing relating to that state must finally be determined."

The importance of *An Essay on the First Principles of Government* lies mainly in its restatement of a Lockean political philosophy of natural rights and in its clear distinction between political and civil liberty. Political liberty is "the power which the members of the state reserve to themselves, of arriving at the public offices, or, at least, of having votes in the nomination of those who fill them." Civil liberty is "that power over their own actions, which the members of the state reserve to themselves, and which their officers must not infringe." To leave one's "natural" condition and enter the state of society is to sacrifice part of one's civil liberty. The consent of the governed is "the only true and proper foundation of all governments subsisting in the world," and any people has the right to remove a government that is deemed oppressive. There are no natural political rights, however. Political rights vary in place and time. No one form of government--from absolute monarchy to radical democracy--is naturally better than any other. Good government is not a matter of form but of the moderation of the rulers, of uniform laws, and of respect for civil liberties. Priestley regards the civil sphere as far

more important than politics to a people's happiness, for it is in the civil sphere that truth is discovered, material progress is cultivated, and genuine religion is practiced. His later radicalism arose not from any marked philosophical change but from coming to think the British government immoderate and intrusive.

In 1773 Priestley was employed as the librarian and companion of William Petty, Lord Shelburne, with much free time to pursue his scientific and other writings. During this period he entered into the metaphysical disputes of his day. He began conventionally enough, setting out the case for "natural religion" in his three-volume theological primer, *Institutes of Natural and Revealed Religion* (1772-1774). Priestley's theism is based on the argument from design. He sees nature as everywhere exhibiting order, and yet as not in any way self-ordering, since nothing seen in nature shows order arising naturally. The order must come from "outside," and since it resembles human productions it must derive from intelligence, indeed, a supreme intelligence. He reinforces this position with an appeal to the cosmological argument. Nothing in *Institutes of Natural and Revealed Religion* suggests the controversies that soon followed.

Priestley's most remarkable philosophical work is his defense of materialism, which he wrote while with Shelburne. English philosophy had long been dominated by dualism. The few extant versions of materialism had almost no influence on Priestley's version. He admired Hobbes but did not borrow from him. He discussed materialism with Paul-Henri Dietrich, Baron d'Holbach, on a visit to Paris in 1774--d'Holbach's *Système de la Nature* (The System of Nature) had appeared in 1770-- but the beginnings of his own version predate that visit; and his later defenses of the doctrine bear little resemblance to d'Holbach's. The French materialists of the 1770s were using materialism to attack Christianity; Priestley's intentions were to defend Christianity by making its metaphysical framework more

intelligible, even if doing so entailed denial of free will and the soul.

Priestley's materialism rests on three main arguments, each of which bears interesting scientific connections. He first arrived at the doctrine in the course of defining the Lockean theory of ideas--the theory that perceptions are mediated by sensations--against Reid's Common Sense attack on that theory in his *An Inquiry into the Human Mind* (1764). Reid believed that Berkeley and Hume had destroyed the claim that ideas represent reality by showing that sensations do not in fact resemble the qualities of external objects. From these assumptions Berkeley and Hume had concluded that there is no access to external reality, while Reid concluded that, since reality is indeed apprehended, that apprehension occurs without the aid of the philosophers' fictitious ideas. Priestley's response, in his *An Examination of Dr. Reid's Inquiry into the Human Mind on the Principles of Common Sense, Dr. Beattie's Essay on the Nature and Immutability of Truth, and Dr. Oswald's Appeal to Common Sense on Behalf of Religion* (1774), was to reject the assumption that sensations or ideas must resemble their objects in order to represent them. For him ideas are not images, and the theory of ideas is not a theory of pictures in the brain. His theory, rather, requires only that objects and ideas stand to each other as cause to effect.

Reid's main contention had been that representation requires resemblance, but he also had been inclined to attack the claim that objects can cause ideas. Mind and matter, he says in *An Inquiry into the Human Mind*, are so different that "we can find no handle by which one may lay hold of the other." He takes this lack of association to show that perception is a process causally independent of its objects. Priestley seized upon this argument as showing Reid to be an occasionalist, or unwitting idealist. In making this argument he is accepting Reid's suggestion that totally dissimilar substances cannot interact. He takes as given, however, that objects do produce ideas. From this contention follows that ideas and

objects must be of the same substance. He rejects Berkeley's idealism because it supposes that every act of perception is produced by a divine intervention, which he regards as not consonant with the simplicity usually displayed in God's actions. Following this logic, Priestley had no alternative but to declare himself a materialist.

Underlying this debate is an issue about causal relations. Priestley's view contrasts with that of his near-contemporary Hume, whom Priestley regarded as insufficiently acquainted with real science to have any useful opinions on the philosophy of science. Priestley agreed with Hume that causal relations indicate regularities between events, but he denied that they are merely regularities. Causally related events are not for him thus "loose and separate": they are bound together by the productive agency of some mechanism. His rejection of interactionist dualism stems from its admitted inability to supply such a mechanism for interaction.

The second source of Priestley's materialism is to be found in his theory of matter, which he made a central theme of his *Disquisitions relating to Matter and Spirit. To which is added the History of the Philosophical Doctrine concerning the Origin of the Soul, and the Nature of Matter; with its Influence on Christianity, especially with respect to the doctrine of the Pre-existence of Christ* (1777). Newtonian dualists such as Price, Reid, and Andrew Baxter had urged that matter and mind are irreconcilable because one is intrinsically passive and the other intrinsically active. Priestley thought that talk of matter as a "dead and torpid substance" betrayed the influence of ancient Gnosticism, a religion that regarded matter as evil. According to the Newtonians, the apparent activity of matter is to be wholly ascribed to the action of immaterial forces. Priestley asks, however, if matter is wholly powerless, then what use is it, and why suppose it to exist at all? He follows John Michell--a fellow scientist-clergyman--in likening the Newtonian theory of matter and force to a structure of material bricks and immaterial mortar in which the mortar is doing all the work. Priestley and

Michell were themselves indebted to Boscovich, whom they had both met.

Closer scrutiny reveals some differences between Boscovich and Priestley. Priestley wholly accepted Boscovich's insistence on the powerfulness of matter. Boscovich had reached this conclusion by arguing that the Newtonian account of mechanical impulse required finite velocities to be lost and gained in a single instant of time, thus violating the Leibnizian law of continuity. This argument is never mentioned by Priestley. For him mechanical impulse may or may not be theoretically intelligible; his objection is that the Newtonians have not shown that it actually occurs. Rather, the phenomena show clear instances of forces acting at a distance and exhibit nothing that cannot be readily explained by forces. In his view the first of Newton's "Rules of Reasoning in Philosophy" in the *Philosophiæ Naturalis Principia Mathematica* (1687)--that "we are to admit no more causes of things than such as are both true and sufficient to explain appearances"--requires arguing that matter consists of "powers of attraction and repulsion" and doing without the hypothesis of solid, impenetrable atoms.

For Priestley the great theoretical weakness of the atomic theory is that it cannot account for the internal cohesion of the atom. He is attracted to Boscovich's theory of the microstructure of matter as infinite powers of repulsion located at dimensionless point-particles, but he treats that theory as no more than a valuable speculation. The theory is consistent with all data, but it lacks confirmation from experience or analogy. By contrast, the more general theory of matter as "powers of attraction and repulsion" does command assent, for simplicity and analogy count in its favor.

Priestley diagnoses the Newtonian notion of the passivity of matter as arising from what might be termed the "billiard table illusion." That billiard balls do not move without first being struck does not show that they are not powerful agents, for the table is level and thus neutralizes the natural

tendency of the balls to move downward. The fact that bodies are sometimes in equilibrium shows only that sometimes their natural powers balance each other out, not that they have no natural powers. Priestley concludes that if matter can have these natural powers, there is no reason in principle why they might not have others, such as the power of consciousness.

Priestley's third and main argument for materialism is a methodological one. He argues in the *Disquisitions relating to Matter and Spirit* that in postulating a soul dualists are making the same mistake that the Newtonians make in postulating solid matter: both argue for an entity whose existence is not directly evident and for which there is no indirect evidence that cannot be otherwise accounted for. Both thus fall foul of Newton's "universally received" rules of reasoning. Following Hartley, he takes it that, as far as can be told, states of mind are universally correlated with states of the brain, a proposition that none of his critics contested. In *A Free Discussion of the Doctrines of Materialism and Philosophical Necessity, in a Correspondence between Dr. Price and Dr. Priestley. To which are added, by Dr. Priestley, an Introduction explaining the Nature of the Controversy, and Letters to Several Writers who have Animadverted on His Disquisitions Relating to Matter and Spirit, or his Treatise on Necessity* (1778), Price argues that Priestley's move from correlations between body and mind to an identity theory is a fallacious one. Priestley replies that of course not all universal correlations are cases of identity—his claim is only a theoretical entity such as the soul must not be postulated when the phenomena can be attributed to a known entity such as the brain.

Priestley had professed rigorous adherence to Newton's rules and required that his reasoning "be tried by this and by no other test." Reid was the only critic to take up this challenge. Priestley thought the rules discriminated between acceptable and unacceptable hypotheses; Reid thought they proscribed hypotheses altogether. According to Reid, the clause in the first rule

requiring causes to be "true" rules out any cause that is "barely conjectured to exist without proof." Priestley is more liberal: for him a hypothetical cause can be regarded as "true" if it is modeled on a real existent. Reid typically employs the "sufficiency" criterion to exhibit the "insufficiency" of some hypothesis against those who would oversimplify the complexity of nature. Priestley typically contrasts "sufficient" with "superfluous" against those who would overpopulate ontology. The crux of the disagreement is in their attitudes to analogy. Newton's second rule asserts that "to the same effects we must, as far as possible, assign the same causes." Reid adopts a strict interpretation of "same" and thus empties the rule of analogical content. Priestley reads "sameness" as equivalent to "likeness"; for him, science transcends the observable, on the basis of analogical inference from the observable. For Reid, part of Newton's greatness was that he refused to pronounce on the nature of gravity, and in that sense he discovered only the law of gravity, not its cause. In contrast, Priestley's science does deal with the nature of things and not just with the laws of their superficial phenomena. For him, the human ontology is expanded by analogy.

The application of Reid's principles to the mind is somewhat unclear. He has to treat the immateriality of the mind as axiomatic. Priestley's principles apply more straightforwardly. He allows that mental phenomena are in some respects sui generis, and that they cannot thus be wholly explained by analogies; but he denies that these features are any better explained by dualism. He analogizes that humans do not know exactly how the brain thinks, but then they also do not know how magnets work. In both cases power should be ascribed to its apparent source and not to any hypothetical agent. Had the brain been demonstrably incapable of performing the role required of it, then the method of analogy described by Newton's second rule could be used to enlarge the scheme of causes. As it seems "sufficient" and is undoubtedly "true," however, the first rule requires reducing the ontology. Not

to follow this rule is tantamount to supposing that "every particular substance to which any powers or properties are ascribed may have a separate soul also." The first rule requires simplicity, but it does not entail reductionism. The brain's powers reside in its structure or organization. Nature, in Priestley's view, is a multilevel set of systems, in which different powers belong to different levels of organization. Simplicity does not reduce everything to physics.

Priestley's determinism rests on one main argument, forcefully expounded in his *The Doctrine of Philosophical Necessity Illustrated* (1777). The work was presented as an "appendix" to his materialism and suggests that materialism and determinism are mutually supporting, although he argues for determinism on independent grounds. Hume had been wrong, Priestley contends, to take the mechanism out of causation, but he was right to insist that causal relations are regular. They hold not essentially between single pairs of events but between kinds of pairs of events. Causal relations are universal, lawlike relations. This account of causation is, he argues, incompatible with libertarianism. If in the same circumstances a person could on one occasion do X and on another occasion do Y, then it cannot be those circumstances that caused him to do either. But neither could his will be said to cause either action. Any self-determining power, "bearing an equal relation to any two different decisions, cannot be said to be the cause with respect to them both." This dilemma has only two solutions. Perhaps neither the circumstances nor human will produces the action, in which case the action is "an effect without a cause" and the libertarian must give up the doctrine that every event has a cause; or it must be that such undetermined actions are impossible, and libertarianism itself must be abandoned.

Priestley's main critics, Price and Reid, took up opposing lines of attack. In *A Free Discussion of the Doctrines of Materialism and Philosophical Necessity* Price contends that causation is not a unitary concept and that a different kind of causation

operates in the human sphere from that which reigns in nature. Natural causes are lawlike; human causes are not. For him, motives are both the final causes and the occasions of human action, but they are not coercive: humans are the agents, not them. Against this argument Priestley contends that the conception of causation is not shaped by the kinds of substances to which it applies: the concept must be one and the same in all cases, whether human or natural. He claims that the will can no more be said to determine actions than the motion of the air can be said to determine the direction of the wind. It is understood that the motion of the air does not cause any particular wind simply by understanding the concept of causation. He concludes that Price's ontological considerations do not divide the concept into two different kinds of causation.

Unlike Price, Reid accepted that Priestley's conception of causation does lead to determinism, and in his *Essays on the Active Powers of Man* (1788) he directs his attack against that conception (though with little mention of Priestley). He argues that all real causation is free conscious agency, whether human or divine, and that natural causes are only the superficial appearances of regularity occasioned by the hidden operation of conscious agents. He attacks Priestley's conception mainly on the grounds that it cannot account for accidental generalizations, such as the alternating succession of night and day. If all regular relations are causal relations, then night and day must be causally related. Priestley regards regularities as part of the causal relation and also as evidence of causation. Regularities point to the existence of a mechanism that is in turn the explanation of the regularity. Science advances from the regularities to the mechanism by experimentally analyzing the "proximate cause." He gives as an example his own discovery of why frequently breathed air is fatal to animal life: experiment shows that in being breathed the composition of the air is changed. This explanation is only a partial one, but it can in principle be extended toward a

complete account of the matter. It is not clear whether or how on his view it would be possible to investigate a regularity and discover no intervening proximate mechanism, so it must be said that he offered no criterion for detecting universal accidental generalizations.

In 1780 Priestley left Shelburne, in part because his philosophical controversies were beginning to embarrass his patron. He returned to his clerical career, in charge of Birmingham's prosperous "New Meeting," where he was also surrounded by a flourishing scientific and industrial culture in which he felt at home. Both friends and foes, however, tried to persuade him that philosophy was not his forte. In a sense he did modify his course at this time; little more was said about materialism thereafter. His next work, *Letters to a Philosophical Unbeliever, Part I. Containing an Examination of the Principal Objections to the Doctrines of Natural Religion, and especially those contained in the Writings of Mr. Hume* (1780), took up again the defense of the argument from design, against that most vigorous critique of the argument, Hume's *Dialogues concerning Natural Religion*, published posthumously in 1779.

Dialogues concerning Natural Religion attacks the design argument in a variety of ways. One of Hume's contentions is that the origins of life and order are necessarily unknowable because the history of the universe is a single, unique event, and no part of the universe can be used as a model by which to explain the whole. More generally, the "slow and deliberate" steps of science can never enable humans to reach cosmic conclusions. Priestley thinks that analogical reasoning, following Newton's second rule, is strong enough to bridge these difficulties. He admits that a genuine singularity would be inexplicable but denies that the Creation is an entirely singular event. God, he says, "is to be placed in the general class of intelligent and designing agents, though infinitely superior to all others of that kind." By Priestley's account of Newton's rules, however, analogy only has a constructive role when the known resources of

science have been exhausted. If materialism is sufficient to account for consciousness, why is not naturalism sufficient to do the same for the order of nature? Hume had argued that nature features many principles of order and cites as examples "instinct," "vegetation," and "generation." He sets up the principles of life in opposition to the design theorist's model of reason as the basic source of order. "The world," says Philo (Hume's skeptical spokesman), "plainly resembles more an animal or a vegetable than it does a watch or knitting-loom": "A continual circulation of matter in it produces no disorder: a continual waste in every part is incessantly repaired: the closest sympathy is perceived throughout the entire system: and each part or member, in performing its proper offices, operates both to its own preservation and to that of the whole."

In Priestley's view, however, these features of life--its orderliness and mutual adjustment--demand some sort of external explanation. Hume had foreseen this kind of reply, which he suggested begs the question: both reason and life are equally principles of order in nature, and it is arbitrary to give one priority over the other. Priestley makes two suggestions as to why life cannot be "sufficient" for the task Hume requires of it. In the first place, even if life is supposed to have been eternal, this supposition will not explain how the various species came to be so well adapted to their physical environments. Secondly, he claims that even the power of reproduction is only superficially a process in which life brings order out of disorder. Reproduction is itself possible only because of the intricate mechanisms plants and animals possess for their own procreation. He denies then that plants and animals bestow order and organization on their offspring, and he ascribes that ordering power to their reproductive apparatus. In thus distinguishing between the power of life as such and the power of reproduction, he is trying to show that it is not he but Hume who begs the question.

Priestley had not only to defend his theism against Hume--he also had to defend it, as it were,

against himself. Price, and later Samuel Taylor Coleridge, contended that materialism and determinism are in some sense inconsistent with belief in a transcendent deity, and they tend toward the pantheism of Benedict de Spinoza. Priestley's materialism was based not only on methodology but also on the problem of interaction and the theory of matter. The theological counterpart of the problem of mind-body interaction is the problem of "how an immaterial being, not existing in space, can create, or act upon matter," a difficulty so great that he concludes humans must regard God as being in some sense a material being. He observes that this solution leads to a further difficulty, for theorists are being required to suppose that nature is somehow filled by an infinite material substance. Here Priestley turns for help to the Boscovichian hypothesis: on the theory of forces and powers, solidity and impenetrability are not essential to matter, and the interpenetration of substances becomes a possibility. God, then, is quite literally a being in whom "we live, and move, and have our being," to quote one of Priestley's favorite biblical passages, Acts 17:28.

This position might be called a monism of attributes--everything is material, even, in some sense, God. Some of Priestley's critics and commentators, from Coleridge onward, have ascribed to him a monism of substance; somehow his quite strenuous opposition to this version of monism has gone unremarked. His opposition to pantheism could hardly be more explicit: "for the same reason that the maker of the table . . . must be different from the table. It is equally manifest that the maker of myself, of the world, and of the universe . . . must be a being different from myself, the world, or the universe; which is sufficient answer to the reasoning of Spinoza, who, making the universe itself to be God, did, in fact, deny that there was any God." The analogy central to the argument from design entails the ontological distinction between maker and made. Spinoza rejected the design argument because he rejected final causes, which he took to be incompatible with determinism, and because he

thought the design theory involved God employing means to achieve ends, which he took to be an impossible mode of operation for a perfect being. Priestley, on the other hand, saw no difficulty in reconciling final causes with determinism or in God employing means to ends, so long as in all cases the causal relations are regular.

Priestley also thought that pantheism could be refuted without recourse to the argument from design. This premise can be seen in his *Additional Letters to a Philosophical Unbeliever, in Answer to Mr. William Hammon* (1782), written in reply to Matthew Turner (writing under the name "Hammon"), who had given chemistry lectures at Warrington Academy when Priestley was there. Turner espoused a pantheism in which God is identical with the "forces of nature." Priestley objects that this hypothesis of an intelligent, self-designing universe is "contrary to any analogy in nature." He recognizes that Turner's intelligent material universe bears some resemblance to his own conception of a thinking brain; but, he says, the analogy is not a good one, for the universe lacks the homogeneity found in the brain. This rejoinder is surprising, for it is precisely the contention of the argument from design that the universe is not disjointed but is in fact a harmonious and simple structure.

Priestley also considers the question of whether, if human intelligence resides in a brain, God too, though distinct from the universe, must "have in him something resembling the structure of the brain." He rejects this suggestion, contending that "The divine mind . . . may be intelligent, in common with the mind of man, and yet not have the visible and tangible properties, or any thing of the consistence of the brain."

Many things have common properties that are very dissimilar in other respects. If we had known nothing elastic beside steel, we might have concluded that nothing was elastic but steel, or something equally solid and hard; and yet we

find elasticity to belong to so rare a substance as air. . . .

Priestley's claim is that analogies are sometimes misleading. Analogy does suggest that elastic objects are somehow steel-like, and the analogy of materialism does likewise suggest that God has a brain. Even so, his main objection to pantheism still stands; that is, the argument that the analogy of human creativity suggests God is to the world as maker to made.

Late in life Priestley encountered an evolutionary rival to his theism from Erasmus Darwin (Charles Darwin's grandfather), in the 1801 third edition of his *Zoonomia* (1794-1797). Darwin resembled Hume in that he thought of the biological order as having been generated by a primordial living principle. He postulated what he called "molecules with formative aptitudes" as the chief agents in reproduction and the driving force in the generation of new life-forms. Priestley's last scientific experiments were directed against the doctrine of spontaneous generation that he thought Darwin's evolutionary hypothesis entailed. (The results were published after his death in the *Transactions of the American Philosophical Society* in 1809.) Darwin, he thought, had attributed to his "particles" just the same sort of impossible spontaneity that the libertarian assigns to free will; he had given no account of how these particles are supposed to work. He denied that what Darwin called the "lower" forms of life are essentially simpler forms: on his view all species are highly complex, and all their complexities are finely adjusted to their environment.

Priestley's general position, then, is that naturalism fails to make sense of biology. Hume ascribed to life itself powers that belong only to the level of life's components; Darwin invented a mechanically impossible entity to bridge the gulf between the nonliving and the living. Since both these moves fail, mankind is forced to postulate an intelligent Creator, following the analogy of human creativity. In the case of the mind,

Newton's rules favor a reduced ontology; in the case of nature, an expansion.

For a time Priestley's contemporaries were either greatly repelled or attracted by his combination of politics, religion, and philosophy. Burke's *Reflections of the Revolution in France* of 1790, which attacked Priestley and Price with considerable vehemence, and the Birmingham Riots of 1791--in which a mob championing "Church and King" destroyed Priestley's home and his library--are both monuments of the hostility he inspired in some. A cartoon of the day, labeled "Dr Phlogiston, the Priestley politician or the political priest," depicts him as an enraged firebrand standing on a tract called "Bible explained away," waving a "Political sermon" and with his "Essays on Matter and Spirit" protruding from one pocket. This antagonism led to his immigration to the United States in 1794, where he was for a short time feted as a democratic hero but soon afterward was attacked as a French Revolutionary sympathizer.

Yet, to the young English radicals of 1790 Priestley was a hero: this admiration appears in figures as diverse as Coleridge, William Wordsworth, Charles Lamb, William Hazlitt, William Godwin, Mary Wollstonecraft, Bentham, and James Mill. As Leslie Stephen observed in his *History of Thought in the Eighteenth Century* (1876), this enthusiasm was "swept away by stronger currents." In a world starting to become divided between English Christian conservatism and French radical atheism, Priestley's ambition had been to put the most "advanced" Enlightenment ideas into the service of a rationalized though heterodox Christianity, under the guidance of the basic principles of scientific method. In this project he had little success. Some of his admirers moved toward Romantic philosophy and Christian orthodoxy, others toward atheism and empiricism. By the turn of the century Priestley's influence had dwindled to the narrow stream of rational Unitarians. He died on 6 February 1804 at his home in Northumberland, Pennsylvania.

Since his death Priestley's philosophical reputation has been marginal, for two reasons. His combination of materialism, determination, and theism has appeared paradoxical to subsequent scholars. Stephen described it as "an unnatural alliance" and declared that his methods of thought "would, if consistently applied, destroy the last citadel of supernaturalism." Further, his remarkable versatility has aroused suspicion. As Stephen put it, he "possessed one of those restless intellects which are incapable of confining themselves to any single task, and, unfortunately, incapable in consequence of sounding the depths of any philosophical system."

Joseph Priestley's life was one of perpetual disputation. He always regarded controversy as a service to truth, and it was his custom to answer every objection his critics could propose. When his arguments led him to seemingly paradoxical conclusions, he held to the arguments rather than reject the premises from which he started. In "The Late Dr. Priestley" (1829) Hazlitt said that Priestley "was certainly the best controversialist of his day, and one of the best in the language"; and, he added, "in boldness of inquiry, quickness and elasticity of mind, and ease in making himself understood, he had no superior."

Papers: Many of Joseph Priestley's nonscientific papers and letters were destroyed in the Birmingham Riots. Collections are in the Dr. Williams Library, London; Dickinson College, Pennsylvania; the American Philosophical Society Library, Pennsylvania; and the Royal Society, London. See also the careful "Select Bibliography" in Robert E. Schofield, *The Enlightenment of Joseph Priestley. A Study of His Life and Work from 1733 to 1773* (University Park: University of Pennsylvania Press, 1997).

WRITINGS BY THE AUTHOR:

BOOKS

- *The Rudiments of English Grammar; Adapted to the Use of Schools. With Observations on Style* (London: Printed for R. Griffiths, 1761).
- *The Scripture Doctrine of Remission which Showeth that the Death of Christ Is No Proper Sacrifice nor Satisfaction for Sin: But that Pardon Is Dispensed Solely on Account of Repentance or A personal Reformation of the Sinner* (London: Printed for C. Henderson & R. Griffiths & P.A. De Hondt, 1761).
- *A Course of Lectures on the Theory of Language, and Universal Grammar* (Warrington: Printed by William Eyres, 1762).
- *No Man Liveth to Himself. A Sermon Preached Before an Assembly of Protestant Dissenting-Ministers, of the Counties of Lancaster and Chester, Met at Manchester, May 16, 1764, to Carry into Execution a Scheme for the Relief of Their Widows and Children* (Warrington: Printed by William Eyres, 1764).
- *A Description of a Chart of Biography: with a Catalogue of All the Names Inserted in It, and the Dates Annexed to Them*, second edition (Warrington: Printed by William Eyres for the author & sold by himself & by John Bowles, London, 1765).
- *An Essay on a Course of Liberal Education for Civil and Active Life. With Plans of Lectures on I. The Study of History and General Policy. II. The History of England. III. The Constitution and Laws of England. To Which Are Added, Remarks on a Code of Education, Proposed by Dr. Brown, in a Late Treatise, Intituled, Thoughts on Civil Liberty, &c.* (London: Printed for C. Henderson, T. Becket & P. A. de Hondt, and Joseph Johnson & Davenport, 1765).
- *A Syllabus of a Course of Lectures on the Study of History* (Warrington: Printed by William Eyres, 1765).
- *A Catechism for Children and Young Persons* (London, 1767); abridged as *Extracts from Dr. Priestley's Catechism for Children and Young Persons* (Salem, Mass.: Printed by Samuel Hall, 1785).

- *The History and Present State of Electricity, with Original Experiments* (London: Printed for James Dodsley, Joseph Johnson & B. Davenport, and Thomas Cadell, 1767; corrected and enlarged, 1769; corrected and enlarged again, 2 volumes, London: Printed for C. Bathurst & T. Lowndes, J. Rivington & Joseph Johnson & T. Becket & Thomas Cadell, 1775).
- *An Essay on the First Principles of Government; and on the Nature of Political, Civil, and Religious Liberty* (London: Printed for James Dodsley, Thomas Cadell, and Joseph Johnson, 1768; corrected and enlarged edition, London: Printed for Joseph Johnson, 1771).
- *A Familiar Introduction to the Study of Electricity* (London: Printed for James Dodsley, Thomas Cadell, and Joseph Johnson, 1768).
- *Considerations on Church-authority; Occasioned by Dr. Balguy's Sermon, on That Subject; Preached at Lambeth Chapel, and Published by Order of the Archbishop* (London: Printed for Joseph Johnson & J. Payne, 1769).
- *Considerations on Differences of Opinion among Christians: with a Letter to the Reverend Mr. Venn, in Answer to His Free and Full Examination of the Address to Protestant Dissenters, on the Subject of the Lord's Supper* (London: Printed for Joseph Johnson & J. Payne, 1769).
- *A Free Address to Protestant Dissenters, as Such, as A Dissenter* (London: Printed for G. Pearch, 1769; enlarged edition, London: Printed for Joseph Johnson, 1771).
- *A Free Address to Protestant Dissenters, on the Subject of the Lord's Supper* (London: Printed for Joseph Johnson, 1769).
- *The Present State of Liberty in Great Britain and her Colonies, as an Englishman* (London: Printed for Joseph Johnson & J. Payne, 1769).
- *Remarks on Some Paragraphs in the Fourth Volume of Dr. Blackstone's Commentaries on the Laws of England, Relating to the Dissenters* (London: Printed for Joseph Johnson & J. Payne, 1769; Philadelphia: Printed by Robert Bell, 1772).
- *A Serious Address to Masters of Families, with Forms of Family-Prayer* (London: Printed for Joseph Johnson & J. Payne, 1769).
- *A View of the Principles and Conduct of the Protestant Dissenters, with Respect to the Civil and Ecclesiastical Constitution of England* (London: Printed for Joseph Johnson & J. Payne, 1769).
- *Additions to the Address to Protestant Dissenters, on the Subject of the Lord's Supper, with Some Corrections on it; and A Letter to the Author of the Protestant Dissenter's Answer to It* (London: Printed for Joseph Johnson, 1770; Boston: Printed by Thomas & John Fleet, 1774).
- *An Answer to Dr. Blackstone's Reply to Remarks on the Fourth Volume of Commentaries on the Laws of England* (Dublin: Printed by James Williams, 1770; Philadelphia: Printed by Robert Bell, 1772).
- *An Appeal to the Serious and Candid Professors of Christianity. On the Following Subjects, viz. I. The Use of Reason in Matters of Religion. II. The Power of Man to Do the Will of God. III. Original Sin. IV. Election and Reprobation. V. The Divinity of Christ. And, VI. Atonement for Sin by the Death of Christ,* anonymous (Leeds, 1770; Philadelphia: Printed & sold by Robert Bell, 1784).
- *A Description of a New Chart of History, Containing a View of the Principal Revolutions of Empire, That Have Taken Place in the World,* second edition (London: Printed for Joseph Johnson, 1770; New Haven, Conn.: Printed by T. & S. Green for Amos Doolittle, 1792).
- *A Familiar Introduction to the Theory and Practice of Perspective* (London: Printed for Joseph Johnson & J. Payne, 1770).
- *A Free Address to Protestant Dissenters, on the Subject of Church Discipline; With a*

- Preliminary Discourse, Concerning the Spirit of Christianity, and the Corruption of it by False Notions of Religion* (London: Printed for Joseph Johnson, 1770).
- *Letters to the Author of Remarks on Several Late Publications Relative to the Dissenters, in a Letter to Dr. Priestley* (London: Printed for Joseph Johnson, 1770).
 - *Letters and Queries Addressed to the Anonymous Answerer of An Appeal to the Serious and Candid Professors of Christianity; to the Rev. Mr. Tho. Morgan, and to Mr. Cornelius Caley* (Leeds: Sold by J. Binns, 1771).
 - *Directions for Impregnating Water with Fixed Air; in Order to Communicate to it the Peculiar Spirit and Virtues of Pyrmont Water, and Other Mineral Waters of a Similar Nature* (London: Printed for Joseph Johnson, 1772).
 - *A Familiar Illustration of Certain Passages of Scripture: Relating to the Power of Man to Do the Will of God, Original Sin, Election and Reprobation, the Divinity of Christ, and Atonement for Sin by the Death of Christ, as A Lover of the Gospel* (London: Printed for Joseph Johnson, 1772); as Priestley (Philadelphia: Printed by Thomas Dobson, 1794).
 - *The History and Present State of Discoveries Relating to Vision, Light and Colours* (London: Printed for Joseph Johnson, 1772).
 - *Institutes of Natural and Revealed Religion. Vol. I. Containing the Elements of Natural Religion; To Which Is Prefixed, An Essay on the Best Method of Communicating Religious Knowledge to the Members of Christian Societies* (London: Printed for Joseph Johnson, 1772).
 - *Observations on Different Kinds of Air* (London: Printed by W. Bowyer & J. Nichols, 1772); revised as volume 1 of *Experiments and Observations on Different Kinds of Air* (2 volumes, London: Printed for Joseph Johnson, 1774, 1775; enlarged, 3 volumes, 1777-1781).
 - *An Address to Protestant Dissenters, on the Subject of Giving the Lord's Supper to Children* (London: Printed for Joseph Johnson, 1773).
 - *Institutes of Natural and Revealed Religion. Vol. II. Containing the Evidences of the Jewish and Christian Revelations* (London: Printed for Joseph Johnson, 1773).
 - *A Letter of Advice to Those Dissenters Who Conduct the Application to Parliament for Relief from Certain Penal Laws. With Various Observations Relating to Similar Subjects, as The Author of the Free Address to Protestant Dissenters, as Such* (London: Printed for Joseph Johnson, 1773).
 - *A Sermon, Preached Before the Congregation of Protestant Dissenters at Mill-Hill-Chapel in Leeds, May 16, 1773. By Joseph Priestley, LL.D. F.R.S., on Occasion of His Resigning His Pastoral Office among Them* (London: Printed for Joseph Johnson, 1773).
 - *An Address to Protestant Dissenters of All Denominations: on the Approaching Election of Members of Parliament, with Respect to the State of Public Liberty in General, and of American Affairs in Particular* (London: Printed for Joseph Johnson, 1774; Philadelphia: Printed & sold by James Humphreys Jr., 1774).
 - *An Examination of Dr. Reid's Inquiry into the Human Mind on the Principles of Common Sense, Dr. Beattie's Essay on the Nature and Immutability of Truth, and Dr. Oswald's Appeal to Common Sense on Behalf of Religion* (London: Printed for Joseph Johnson, 1774).
 - *Institutes of Natural and Revealed Religion. Vol. III. Containing a View of the Doctrine of Revelation* (London: Printed for Joseph Johnson, 1774).
 - *A Letter to a Layman, on the Subject of the Rev. Mr. Lindsey's Proposal for a Reformed English Church, upon the Plan of the Late Dr. Samuel Clarke* (London: Printed for J. Wilkie, 1774).
 - *Considerations for the Use of Young Men and the Parents of Young Men* (London: Printed for Joseph Johnson, 1775).

- *Philosophical Empiricism: Containing Remarks on a Charge of Plagiarism Respecting Dr. H-----s, Interspersed with Various Observations Relating to Different Kinds of Air* (London: Printed for Joseph Johnson, 1775).
- *Observations on Respiration, and the Use of the Blood . . . Read at the Royal Society, Jan. 25, 1776* (London, 1776).
- *A Course of Lectures on Oratory and Criticism* (London: Printed for Joseph Johnson, 1777).
- *Disquisitions relating to Matter and Spirit. To which is added the History of the Philosophical Doctrine concerning the Origin of the Soul, and the Nature of Matter; with its Influence on Christianity, especially with respect to the doctrine of the Pre-existence of Christ* (1 volume, London: Printed for Joseph Johnson, 1777; second edition, improved and enlarged, 2 volumes, Birmingham: Printed by Pearson & Rollason for Joseph Johnson, 1782).
- *The Doctrine of Philosophical Necessity Illustrated; Being an Appendix to the Disquisitions relating to Matter and Spirit. To which is added an Answer to the Letters on Materialism, and on Hartley's Theory of Mind* (London: Printed for Joseph Johnson, 1777); enlarged as *The Doctrine of Philosophical Necessity Illustrated; Being an Appendix to the Disquisitions relating to Matter and Spirit. To which is added, An Answer to Several Persons Who Have Controverted the Principles of It* (Birmingham: Printed by Pearson & Rollason for Joseph Johnson, London, 1782).
- *A Free Discussion of the Doctrines of Materialism and Philosophical Necessity, in a Correspondence between Dr. Price and Dr. Priestley. To which are added, by Dr. Priestley, an Introduction explaining the Nature of the Controversy, and Letters to Several Writers who have Animadverted on His Disquisitions Relating to Matter and Spirit, or his Treatise on Necessity* (London: Printed for Joseph Johnson & Thomas Cadell, 1778).
- *Miscellaneous Observations Relating to Education. More Especially, as it Respects the Conduct of the Mind. To Which Is Added, an Essay on a Course of Liberal Education for Civil and Active Life* (Bath: Printed by R. Cruttwell for Joseph Johnson, London, 1778; New London, Conn.: Printed by J. Springer for T. C. Green, S. Green & J. Trumbull, Norwich, 1796).
- *The Doctrine of Divine Influence on the Human Mind: Considered, in a Sermon, Published at the Request of Many Persons Who Have Occasionally Heard it* (Bath: Printed by R. Cruttwell and sold by Joseph Johnson, London, 1779; Northumberland, Pa.: Printed by John Binns, 1804).
- *A Letter to the Rev. Mr. John Palmer, in Defence of the Illustrations of Philosophical Necessity* (Bath: Printed by R. Cruttwell & sold by Joseph Johnson, London, 1779).
- *Experiments and Observations Relating to Various Branches of Natural Philosophy with a Continuation of the Observations on Air*, 3 volumes (London: Printed for Joseph Johnson, 1779-1786).
- *A Harmony of the Evangelists in English; With Critical Dissertations, an Occasional Paraphrase, and Notes for the Use of the Unlearned* (London: Printed for Joseph Johnson, 1780).
- *A Letter to Jacob Bryant, Esq. In Defence of Philosophical Necessity* (London: Printed by H. Baldwin for Joseph Johnson, 1780).
- *Letters to a Philosophical Unbeliever, Part I. Containing an Examination of the Principal Objections to the Doctrines of Natural Religion, and especially those contained in the Writings of Mr. Hume* (Bath: Printed by R. Cruttwell and sold by Joseph Johnson, London, 1780).
- *A Second Letter to the Rev. Mr. John Palmer, in Defence of the Doctrine of Philosophical Necessity* (London: Printed by H. Baldwin for Joseph Johnson, 1780).

- *Two Letters to Dr Newcome, Bishop of Waterford, on the Duration of Our Saviour's Ministry* (Birmingham: Printed by Pearson & Rollason for Joseph Johnson, London, 1780).
- *A Sermon, Preached December the 31st, 1780 at the New Meeting in Birmingham, on Undertaking the Pastoral Office in That Place* (Birmingham: Printed by Pearson & Rollason for Joseph Johnson, London, 1781).
- *A Scripture Catechism, Consisting of a Series of Questions: with References to the Scriptures Instead of Answers* (London: Printed for Joseph Johnson, 1781).
- *A Third Letter to Dr Newcome, Bishop of Waterford, on the Duration of Our Saviour's Ministry* (Birmingham: Printed by Piercy & Jones for Joseph Johnson, London, 1781).
- *Additional Letters to a Philosophical Unbeliever, in Answer to Mr. William Hammon* (Birmingham: Printed by Pearson & Rollason for Joseph Johnson, London, 1782).
- *An History of the Corruptions of Christianity*, 2 volumes (Birmingham: Printed by Piercy & Jones for Joseph Johnson, London, 1782; Boston: Printed by William Spotswood, 1797).
- *The Proper Constitution of a Christian Church, Considered in a Sermon, Preached at the New Meeting in Birmingham, November 3, 1782. To Which Is Prefixed, a Prefatory Discourse, Relating to the Present State of Those Who Are Called Rational Dissenters* (Birmingham: Printed by Pearson & Rollason, 1782).
- *Two Discourses; I. On Habitual Devotion; II. On the Duty of Not Living to Ourselves: Both Preached to Assemblies of Protestant Dissenting Ministers, and Published at Their Request* (Birmingham: Printed by Piercy & Jones for Joseph Johnson, London, 1782).
- *A General View of the Arguments for the Unity of God: and Against the Divinity and Pre-existence of Christ, from Reason, from the Scriptures, and from History* (Birmingham: Printed by Piercy & Jones for Joseph Johnson, London, 1783; Philadelphia: Printed & sold by Robert Bell, 1784).
- *A Reply to the Animadversions on the History of the Corruptions of Christianity, in the Monthly Review for June, 1783: with Additional Observations Relating to the Doctrine of the Primitive Church, Concerning the Person of Christ* (Birmingham: Printed by Piercy & Jones for Joseph Johnson, London, 1783); republished in *Defences of the History of the Corruptions of Christianity* (London: Printed for Joseph Johnson, 1792?).
- *Letters to Dr. Horsley, in Answer to His Animadversions on the History of the Corruptions of Christianity. With Additional Evidence That the Primitive Christian Church Was Unitarian* (Birmingham: Printed by Pearson & Rollason for Joseph Johnson, London, 1783); republished in *Defences of the History of the Corruptions of Christianity* (London: Printed for Joseph Johnson, 1792?).
- *Letters to Dr. Horsley, Part II.: Containing Farther Evidence That the Primitive Christian Church Was Unitarian* (Birmingham: Printed by Pearson & Rollason for Joseph Johnson, London, 1784); republished in *Defences of the History of the Corruptions of Christianity* (London: Printed for Joseph Johnson, 1792?).
- *Remarks on the Monthly Review of the Letters to Dr. Horsley; in Which the Rev. Mr. Samuel Badcock, the Writer of That Review, Is Called upon to Defend What He Has Advanced in it* (Birmingham: Printed by Pearson & Rollason for Joseph Johnson, London, 1784); republished in *Defences of the History of the Corruptions of Christianity* (London: Printed for Joseph Johnson, 1792?).
- *The Importance and Extent of Free Inquiry in Matters of Religion: A Sermon, Preached Before the Congregations of the Old and New Meeting of Protestant Dissenters at Birmingham. November 5, 1785. To Which Are Added, Reflections on the Present State of*

- Free Inquiry in this Country* (Birmingham: Printed by M. Swinney for Joseph Johnson, London, 1785).
- *An History of Early Opinions Concerning Jesus Christ, Compiled from Original Writers; Proving That the Christian Church Was at First Unitarian* (Birmingham: Printed for the author by Pearson & Rollason and sold by Joseph Johnson, London, 1786).
 - *Letters to Dr. Horsley, Part III.: Containing an Answer to His Remarks on Letters, Part II. To Which Are Added Strictures on Mr. Howe's Ninth Number of Observations on Books Ancient and Modern* (Birmingham: Printed by Pearson & Rollason for Joseph Johnson, London, 1786); republished in *Defences of the History of the Corruptions of Christianity* (London: Printed for Joseph Johnson, 1792?).
 - *Letters to the Jews; Inviting Them to an Amicable Discussion of the Evidences of Christianity* (Birmingham: Printed by Pearson & Rollason and sold by Joseph Johnson, London, 1786); republished in *Letters from Dr. Priestley to the Jews; Inviting Them to an Amicable Discussion of the Evidences of Christianity* (New York: Printed by J. Harrison for Benjamin Gomes, 1794).
 - *An Account of a Society, for Encouraging the Industrious Poor: with a Table for Their Use. To Which Are Prefixed, Some Considerations on the State of the Poor in General* (Birmingham: Printed by Pearson & Rollason, 1787).
 - *Discourses on Various Subjects, Including Several on Particular Occasions* (Birmingham: Printed for the author by Pearson & Rollason & sold by Joseph Johnson, London, 1787).
 - *A Letter to the Right Honourable William Pitt, First Lord of the Treasury, and Chancellor of the Exchequer; on the Subjects of Toleration and Church Establishments; Occasioned by His Speech Against the Repeal of the Test and Corporation Acts, on Wednesday the 28th of March, 1787* (London: Printed for Joseph Johnson & James Debrett, 1787; corrected and enlarged, 1787).
 - *Letters to a Philosophical Unbeliever. Part II.: Containing a State of the Evidence of Revealed Religion, with Animadversions on the Two Last Chapters of the First Volume of Mr. Gibbon's History of the Decline and Fall of the Roman Empire* (Birmingham: Printed by Pearson & Rollason for Joseph Johnson, London, 1787).
 - *Letters to Dr. Horne, Dean of Canterbury: to the Young Men, Who Are in a Course of Education for the Christian Ministry, at the Universities of Oxford and Cambridge; to Dr. Price; and to Mr. Parkhurst; on the Subject of the Person of Christ* (Birmingham: Printed for the author by Pearson & Rollason and sold by Joseph Johnson, London, 1787).
 - *Letters to the Jews. Part II. Occasioned by Mr. David Levi's Reply to the Former Letters* (Birmingham: Printed for the author by Pearson & Rollason and sold by Joseph Johnson, London, 1787); republished in *Letters from Dr. Priestley to the Jews; Inviting Them to an Amicable Discussion of the Evidences of Christianity* (New York: Printed by J. Harrison for Benjamin Gomes, 1794).
 - *Defences of Unitarianism for the Year 1786. Containing Letters to Dr. Horne, Dean of Canterbury; to the Young Men, Who Are in a Course of Education for the Christian Ministry at the Universities of Oxford and Cambridge; to the Rev. Dr. Price; and to the Rev. Mr. Parkhurst; on the Subject of the Person of Christ*, 3 volumes (Birmingham: Printed for the author by Pearson & Rollason and sold by Joseph Johnson, London, 1788).
 - *Defences of Unitarianism for the Year 1787. Containing Letters to the Rev. Dr. Geddes, to the Rev. Dr. Price, Part I, and to the Candidates for Orders in the Two Universities; Part II, Relating to Mr. Howes's Appendix to His Fourth Volume of Observations on Books, A Letter by an Undergraduate of Oxford, Dr. Croft's Bampton Lectures, and Several Other Publications*

- (Birmingham: Printed for the author by Pearson & Rollason & sold by Joseph Johnson, London, 1788).
- *Lectures on History, and General Policy to Which Is Prefixed, An Essay on a Course of Liberal Education for Civil and Active Life*, 2 volumes (Birmingham: Printed by Pearson & Rollason for Joseph Johnson, London, 1788; Philadelphia: Printed for P. Byrne, 1803).
 - *A Sermon on the Subject of the Slave Trade: Delivered to a Society of Protestant Dissenters, at the New Meeting, in Birmingham; and Published at Their Request* (Birmingham: Printed for the author by Pearson & Rollason and sold by Joseph Johnson, London, 1788).
 - *The Conduct to Be Observed by Dissenters in Order to Procure the Repeal of the Corporation and Test Acts, Recommended in a Sermon Preached Before the Congregations of the Old and New Meetings at Birmingham, November 5, 1789* (Birmingham: Printed by J. Thompson & sold by Joseph Johnson, London, 1789).
 - *Defences of Unitarianism for the Years 1788 & 1789. Containing Letters to Dr. Horsley, Lord Bishop of St. David's, to the Rev. Mr. Barnard, the Rev. Dr. Knowles, and the Rev. Mr. Hawkins* (Birmingham: Printed by J. Thompson for Joseph Johnson, London, 1790).
 - *Dr. Priestley's Letters to the Candidates for Orders in Both Universities on Subscription to Articles of Religion, with an Address to Conforming Arians, &c.* (Cambridge: Sold by J. & J. Merrill & J. Bowtell, Cambridge, D. Prince, Oxford & Joseph Johnson, London, 1790).
 - *Familiar Letters, Addressed to the Inhabitants of the Town of Birmingham, in Refutation of Several Charges, Advanced Against the Dissenters, by the Rev. Mr Madan, Rector of St. Philip's, in His Sermon, Entitled 'The Principal Claims of the Dissenters Considered.' Preached at St. Philip's Church, on Sunday February 14, 1790* (Birmingham: Printed by F. Thompson & sold by Joseph Johnson, London, 1790).
 - *A General History of the Christian Church to the Fall of the Western Empire* (2 volumes, Birmingham: Printed by Thomas Pearson and sold by Joseph Johnson, London, 1790; 4 volumes, Northumberland, Pa.: Printed for the author by Andrew Kennedy, 1803).
 - *Letter to the Rev. Edward Burn, of St. Mary's Chapel, Birmingham, in Answer to His on the Infallibility of the Apostolic Testimony, Concerning the Person of Christ* (Birmingham: Printed by J. Thompson & sold by Joseph Johnson, London, 1790).
 - *Reflections on Death. A Sermon, on Occasion of the Death of the Rev. Robert Robinson, of Cambridge, Delivered at the New Meeting in Birmingham, June 13, 1790* (Birmingham: Printed by J. Belcher & sold by Joseph Johnson, London, 1790).
 - *A View of Revealed Religion; A Sermon, Preached at the Ordination of the Rev. William Field of Warwick, July 12, 1790* (Birmingham: Printed by J. Thompson & sold by Joseph Johnson, London, 1790).
 - *An Appeal to the Public, on the Subject of the Riots in Birmingham. To Which Is Added, Strictures on a Pamphlet, Intituled "Thoughts on the Late Riot at Birmingham"* (Birmingham: Printed by J. Thompson and sold by Joseph Johnson, London, 1791).
 - *A Discourse on Occasion of the Death of Dr. Price: Delivered at Hackney, on Sunday, May 1, 1791* (London: Printed for Joseph Johnson, 1791).
 - *The Duty of Forgiveness of Injuries: A Discourse Intended to Be Delivered Soon after the Riots in Birmingham* (Birmingham: Printed by J. Thompson for Joseph Johnson, London, 1791).
 - *The Evidence of the Resurrection of Jesus Considered: in a Discourse First Delivered in the Assembly-room, at Buxton, on Sunday, September 19, 1790. To Which Is Added, An Address to the Jews* (Birmingham: Printed

- by J. Thompson for Joseph Johnson, London, 1791).
- *Letters to the Members of the New Jerusalem Church, Formed by Baron Swedenborg* (Birmingham: Printed by J. Thompson & sold by Joseph Johnson, London, 1791).
 - *Letters to the Right Honourable Edmund Burke: Occasioned by His Reflections on the Revolution in France, &c.* (Birmingham: Printed by Thomas Pearson & sold by Joseph Johnson, London, 1791; New York: Printed by Hugh Gaine, 1791).
 - *A Particular Attention to the Instruction of the Young Recommended, in a Discourse, Delivered at the Gravel-pit Meeting, in Hackney, December 4, 1791, Entering the Office of Pastor to the Congregation of Protestant Dissenters, Assembling in That Place* (London: Printed for Joseph Johnson, 1791).
 - *The Proper Objects of Education in the Present State of the World: Represented in a Discourse, Delivered on Wednesday, the 27th of April, 1791, at the Meeting-house in the Old-Jewry, London, to the Supporters of New College at Hackney* (London: Printed for Joseph Johnson, 1791).
 - *Letters to a Young Man: Occasioned by Mr. Wakefield's Essay on Public Worship; to Which Is Added, a Reply to Mr. Evanson's Objections to the Observance of the Lord's Day* (London: Printed for Joseph Johnson, 1792).
 - *Letters to a Young Man, Part II. Occasioned by Mr. Evanson's Treatise on the Dissonance of the Four Generally Received Evangelists* (London: Printed for Joseph Johnson, 1793).
 - *Experiments on the Generation of Air from Water; to Which Are Prefixed, Experiments Relating to the Decomposition of Dephlogisticated and Inflammable Air* (London: Printed for Joseph Johnson, 1793).
 - *Letters to the Philosophers and Politicians of France, on the Subject of Religion* (London: Printed for Joseph Johnson, 1793; Boston: Printed & sold by Samuel Hall, 1793).
 - *A Sermon Preached at the Gravel Pit Meeting, in Hackney, April 19th, 1793, Being the Day Appointed for a General Fast* (London: Printed for Joseph Johnson, 1793).
 - *An Answer to Mr. Paine's Age of Reason, Being a Continuation of Letters to the Philosophers and Politicians of France, on the Subject of Religion; and of the Letters to a Philosophical Unbeliever* (Northumberland, Pa., 1794; London: Printed for Joseph Johnson, 1795).
 - *A Continuation of the Letters to the Philosophers and Politicians of France, on the Subject of Religion; And of The Letters of a Philosophical Unbeliever; In Answer to Mr. Paine's Age of Reason* (Northumberland, Pa.: Printed by Andrew Kennedy, 1794).
 - *Discourses on the Evidences of Revealed Religion* (London: Printed for Joseph Johnson, 1794; Boston: Printed & sold by William Spotswood, 1795).
 - *Heads of Lectures on a Course of Experimental Philosophy: Particularly Including Chemistry, Delivered at the New College in Hackney* (London: Printed for Joseph Johnson, 1794).
 - *The Present State of Europe Compared with Antient Prophecies: a Sermon, Preached at the Gravel Pit Meeting in Hackney, February 28, 1794: Being the Day Appointed for a General Fast . . . with a Preface Containing the Reasons for the Author's Leaving England* (London: Printed for Joseph Johnson, 1794); republished in *Two Sermons Viz. I. The Present State of Europe Compared with Antient Prophecies; Preached on the Fast-day in 1794; with a Preface, Containing the Reasons for the Author's Leaving England. II. The Use of Christianity, Especially in Difficult Times; Being the Author's Farewell Discourse* (Philadelphia: Printed by Thomas Dobson, 1794).
 - *The Use of Christianity, Especially in Difficult Times: a Sermon, Delivered at the Gravel Pit Meeting in Hackney, March 30, 1794. . . . Being the Author's Farewell Discourse to His Congregation* (London:

- Printed for Joseph Johnson, 1794); republished in *Two Sermons Viz. I. The Present State of Europe Compared with Antient Prophecies; Preached on the Fast-day in 1794; with a Preface, Containing the Reasons for the Author's Leaving England. II. The Use of Christianity, Especially in Difficult Times; Being the Author's Farewell Discourse* (1794).
- *Observations on the Increase of Infidelity. First Prefixed to the American Edition of Letters to the Philosophers and Politicians of France on the Subject of Religion, but Now Much Enlarged* (Northumberland, Pa.: Printed by Andrew Kennedy, 1795; London: Printed for Joseph Johnson, 1796).
 - *Considerations on the Doctrine of Phlogiston, and the Decomposition of Water* (Philadelphia: Printed by Thomas Dobson, 1796).
 - *Discourses Relating to the Evidences of Revealed Religion: Delivered in the Church of the Universalists at Philadelphia, 1796* (Philadelphia: Printed by Thomas Dobson, 1796); republished as *Discourses Relating to the Evidences of Revealed Religion. Vol. II, Being the First Delivered at Philadelphia in 1796* (London: Printed for Joseph Johnson, 1796).
 - *Unitarianism explained and defended in a discourse delivered in the Church of the Universalists at Philadelphia, 1796* (Philadelphia: Printed by John Thompson, 1796; London: Printed for Joseph Johnson, 1796).
 - *The Case of Poor Emigrants Recommended: in a Discourse, Delivered at the University Hall in Philadelphia, on Sunday, February 19, 1797* (Philadelphia: Printed by Joseph Gales & sold by W. Y. Birch & the booksellers in Philadelphia, New York and Baltimore, 1797).
 - *An Address to the Unitarian Congregation at Philadelphia, Delivered on Sunday, March 5, 1797* (Philadelphia: Printed by Joseph Gales, 1797).
 - *Letters to Mr. Volney: Occasioned by a Work of His Entitled Ruins, and by His Letter to the Author* (Philadelphia: Printed by Thomas Dobson, 1797).
 - *Observations on the Doctrine of Phlogiston and the Decomposition of Water. Part the Second* (Philadelphia: Printed by Thomas Dobson, 1797).
 - *An Outline of the Evidences of Revealed Religion* (Philadelphia: Printed by T. Dobson, 1797; London: Printed for the British and Foreign Unitarian Association, 1833).
 - *Discourses Relating to the Evidences of Revealed Religion: Delivered in Philadelphia 1796; and Published at the Request of Many of the Hearers Vol. II* (Philadelphia: Printed by Thomas Dobson, 1797); republished as *Discourses Relating to the Evidences of Revealed Religion. Vol. III, Being the Second Delivered at Philadelphia in 1797* (London: Printed for Joseph Johnson, 1799).
 - *A Comparison of the Institutions of Moses with Those of the Hindoos and Other Ancient Nations: With Remarks on Mr. Dupuis's Origin of All Religions, the Laws and Institutions of Moses Methodized, and an Address to the Jews on the Present State of the World and the Prophecies Relating to it* (Northumberland, Pa.: Printed for the author by Andrew Kennedy, 1799).
 - *The Doctrine of Phlogiston Established, and That of the Composition of Water Refuted* (Northumberland, Pa.: Printed for the author by Andrew Kennedy, 1800).
 - *Sermons, by Priestley and Richard Price* (London: Printed by J. Davis, 1800).
 - *An Inquiry into the Knowledge of the Antient Hebrews Concerning a Future State* (London: Printed for Joseph Johnson, 1801).
 - *Letters to the Inhabitants of Northumberland and its Neighbourhood on Subjects Interesting to the Author and to Them: To Which Is Added a Letter to a Friend in Paris, Relating to Mr. Liancourt's Travels in the North American States* (Philadelphia:

- Printed by John Bioren for John Conrad, 1801).
- *A General History of the Christian Church, from the Fall of the Western Empire to the Present Time*, 4 volumes (Northumberland, Pa.: Printed for the author by Andrew Kennedy, 1802).
 - *A Letter to an Antipædobaptist* (Northumberland, Pa.: Printed by Andrew Kennedy, 1802).
 - *A Letter to the Reverend John Blair Linn, A.M: A Pastor of the First Presbyterian Congregation in the City of Philadelphia, in Defence of the Pamphlet, Entitled, Socrates and Jesus Compared* (Northumberland, Pa.: Printed by Andrew Kennedy for P. Byrne, Philadelphia, 1803).
 - *A Second Letter to the Revd. John Blair Linn, D.D., Pastor of the First Presbyterian Congregation in the City of Philadelphia: A Reply to His Defence of the Doctrines of the Divinity of Christ and Atonement* (Northumberland, Pa.: Printed by Andrew Kennedy for P. Byrne, Philadelphia, 1803).
 - *Notes on All the Books of Scripture, for Use of the Pulpit and Private Families*, 4 volumes (Northumberland, Pa.: Printed for the author by Andrew Kennedy, 1803-1804).
 - *The Originality and Superior Excellence of the Mosaic Institutions Demonstrated* (Northumberland, Pa.: Printed by Andrew Kennedy for P. Byrne, Philadelphia, 1803).
 - *Socrates and Jesus Compared* (London: Printed for Joseph Johnson, 1803).
 - *The Doctrine of Heathen Philosophy: Compared with Those of Revelation* (Northumberland, Pa.: Printed by John Binns, 1804).
 - *Index to the Bible in Which the Various Subjects Which Occur in the Scriptures Are Alphabetically Arranged, with Accurate References to All the Books of the Old and New Testaments* (Philadelphia, 1804; London: Printed for Joseph Johnson, 1805).

- *Discourses on Various Subjects: Intended to Have Been Delivered in Philadelphia; To Which Are Added, Some Others, Selected from the Same Author* (Northumberland, Pa.: Printed by John Binns, 1805).
- *Four Discourses: Intended to Have Been Delivered in Philadelphia* (Northumberland, Pa.: Printed by John Binns, 1806).
- *Memoirs of Dr. Joseph Priestley, to the Year 1795, Written by Himself: with a Continuation, to the Time of His Decease, by His Son, Joseph Priestley and Observations on His Writings, by Thomas Cooper, President Judge of the 4th District of Pennsylvania, and the Rev. William Christie* (Northumberland, Pa.: Printed by John Binns, 1806; London: Printed for Joseph Johnson, 1806).
- *The Theological and Miscellaneous Works of Joseph Priestley, LL.D. F.R.S. &c.*, 25 volumes, edited by John Towill Rutt (London: Printed by George Smallfield, Hackney, 1817-1831).

Editions

- *Priestley's Writings on Philosophy, Science and Politics*, edited by John A. Passmore (New York: Collier, 1965).
- *Autobiography of Joseph Priestley*, edited by Jack Lindsey (Bath: Adams & Dart, 1970).
- *Political Writings*, edited by Peter N. Miller (Cambridge: Cambridge University Press, 1993).

OTHER

- *Hartley's Theory of the Human Mind, on the Principle of the Association of Ideas; With Essays Relating to the Subject of It*, edited, with an introduction, by Priestley (London: Printed for Joseph Johnson, 1775).

PERIODICAL UNCOLLECTED

PUBLICATION--

- "Observations and Experiments relating to Equivocal, or Spontaneous Generation," *Transactions of the American Philosophical Society*, 6 (1809): 119-129.

LETTERS

- *A Scientific Autobiography of Joseph Priestley, 1733- 1804: Selected Scientific Correspondence*, edited by Robert E. Schofield (Cambridge, Mass.: MIT Press, 1966).

FURTHER READINGS ABOUT THE AUTHOR

Bibliography:

- Ronald E. Crook, *A Bibliography of Joseph Priestley, 1733-1804* (London: Library Association, 1966).

Biographies:

- F. W. Gibbs, *Joseph Priestley: Adventurer in Science and Champion of Truth* (London: Thomas Nelson, 1965).
- Robert E. Schofield, *The Enlightenment of Joseph Priestley: A Study of His Life and Work from 1733 to 1773* (University Park: University of Pennsylvania Press, 1997).

References:

- R. G. A. Anderson and Christopher Lawrence, eds., *Science, Medicine and Dissent: Joseph Priestley (1733-1804): Papers Celebrating the 250th Anniversary of the Birth of Joseph Priestley Together with a Catalogue of an Exhibition Held at the Royal Society and the Wellcome Institute for the History of Medicine* (London: Wellcome Trust/ Science Museum, 1987).
- Margaret Canovan, "Two Concepts of Liberty-- Eighteenth-Century Style," *Price-Priestley Newsletter*, 2 (1978): 27-41.

- Martin Fitzpatrick, "Toleration and Truth," *Enlightenment and Dissent*, 1 (1982): 3-32.
- Jack Fruchtman Jr., *The Apocalyptic Politics of Richard Price and Joseph Priestley: A Study in Late Eighteenth-Century English Republican Millennialism* (Philadelphia: American Philosophical Society, 1983).
- Knud Haakonssen, ed., *Enlightenment and Religion: Rational Dissent in Eighteenth-Century Britain* (Cambridge: Cambridge University Press, 1996).
- P. M. Heimann, "Voluntarism and Immanence: Conceptions of Nature in Eighteenth-Century Thought," *Journal of the History of Ideas*, 39 (1978): 271- 283.
- Lester Kieft and Bennett R. Willevord Jr., eds., *Joseph Priestley: Scientist, Theologian, and Metaphysician: A Symposium Celebrating the Two Hundredth Anniversary of the Discovery of Oxygen by Joseph Priestley in 1774* (Lewisburg, Pa.: Bucknell University Press, 1980).
- Anthony H. Lincoln, *Some Political and Social Ideas of English Dissent, 1763-1800* (New York: Octagon, 1971).
- J. G. McEvoy and J. E. McGuire, "God and Nature: Priestley's Way of Rational Dissent," *Historical Studies in the Physical Sciences*, 6 (1975): 325- 404.
- Robert E. Schofield, "Joseph Priestley: Theology, Physics and Metaphysics," *Enlightenment and Dissent*, 3 (1983): 69-82.
- A. Truman Schwartz and John G. McEvoy, eds., *Motion Toward Perfection: The Achievement of Joseph Priestley* (Boston: Skinner House, 1990).
- Alan Tapper, "The Beginnings of Priestley's Materialism," *Enlightenment and Dissent*, 1 (1982): 73-82.
- John Yolton, *Thinking Matter: Materialism in Eighteenth-Century Britain* (Minneapolis: University of Minnesota Press, 1983).

About this Essay: Alan Tapper, Edith Cowan University.

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