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## LUDWIG BÜCHNER: NINETEENTH CENTURY ATHEIST

By Edward Jayne

October 5, 2018

Mostly forgotten today, the German physician and philosopher, Ludwig Büchner (1824-99), made a significant contribution to the theory of materialism in the mid- nineteenth century from an atheistic perspective. Described by Engels and others as a “vulgar” materialist, he was nevertheless unsurpassed in having linked science and atheism unfettered by irrelevant considerations. The son of a doctor who served as president of the local medical college, Büchner studied at four universities culminating with the University of Vienna. In 1852 he became a lecturer in medicine at the University of Tübingen with every expectation of pursuing an academic career. However, he was forcibly retired in 1855 because of the publication that year of his first book, *Force and Matter* [*Kraft und Stoff*], and he spent the rest of his career as a physician in Darmstadt as well as the author of close to a dozen additional books that explored in depth numerous scientific advances in the nineteenth century. Other titles by Büchner include *Nature and Spirit* [*Natur und Geist* (1857)], *Man in the Past, Present, and Future* [*Die Stellung des Menschen in der Natur* (1869)], *The Idea of God* [*Der Gottesbegriff und dessen Bedeutung in der Gegenwart* (1874)], and as his final testament the collection of his essays published during the 1890s, *Last Word on Materialism and Kindred Subjects*, trans. By Joseph McCabe (1901).

Büchner’s first effort, *Force and Matter* (hereafter cited as *F&M*), was by far the most influential of his works, having been reprinted in twenty-one editions over his lifetime in his effort to keep pace with mounting scientific advances during the second half of the nineteenth century. Unlike Herschel’s seminal history of science published in England, *A Preliminary Discourse on the Study of Natural Philosophy*, published twenty-five years earlier, which was followed by comparable scientific histories by Whewell and Jevons among others, Büchner addressed a variety of religious and philosophical issues relevant to the major scientific advances he was explaining. As indicated in his Preface to the 1884 edition, he also specifically devoted two chapters to religion with a focus on cultural variations across the world as told by contemporary anthropologists, and he gradually expanded his approach among disciplines and sub-disciplines to include discoveries in cell structure, spectral analysis, the conservation of

energy, chemical synthesis, the transmutation of forces, the anthropological consequences of evolution, and the neurological resemblance between primates and human beings.

Büchner's lucidity in dealing with complicated issues at a sophisticated level of analysis undoubtedly benefited from his reaction against the Kantian perspective that had dominated German discourse just a couple decades earlier. Repelled by both Kant and the post-Kantians, he went out of his way to ridicule their elaborate obscurity, for example declaring, "The philosophical mist which enshrouds the writings of learned men seems rather . . . to hide than to reveal thoughts." [F&M, pp. vii-viii] In a later passage, he declared with obvious irony upon having identified Kant by name, "Philosophers are wonderful people. The less they understand of a thing, the more words they make over it." By implication such authors were no less encumbered by their ignorance than their readers. Büchner also quoted Spiller about metaphysicians "bringing the simplest things into the most boundless confusion," as well as Helvetius about metaphysicians' "deluge of words poured over a desert of ideas," and Schopenhauer about a "mill clattering right enough, but without any meal" [F&M, pp. 257-58] Büchner especially despised orthodox belief, but he also overlooked the arguable clarity of Kant and Hegel's prose when they shifted their attention to scientific matters, reinforcing his suspicion that their use of obscurity was intentional.

Unavoidably, Büchner's compensatory effort to make scientific findings plain somewhat diminished the permanent value of his analysis in light of new and more advanced discoveries. Most notable was his neglect of recent theory relevant to such fields as metabolism and electro-magnetism, the latter in light of Maxwell's remarkable breakthrough as early as 1865. Nevertheless, Büchner's ability to summarize the broad range of mid-nineteenth century scientific innovations was unique, and with few exceptions the discoveries and theories that escaped his attention—including Maxwell's discoveries--would only have further substantiated the validity of his principal assumptions. Most of what he said helped to clarify science at a new level of understanding on a strictly materialistic basis, and in this light it remains valid even today.

In his first nine chapters, as promised by the title of his book, *Form and Matter*, Büchner focused on the two basic scientific laws, the conservation of matter as first proposed by Lavoisier in 1789 and the conservation of force as first proposed by Mayer and Helmholtz in approximately 1842. In his two chapters upon matter, Büchner declared a perfect vacuum to be impossible, estimated the

density of gas or vapor to consist of at least twenty-one trillion parts per cubic centimeter of gas, and he took the liberty of comparing the density of stars within galaxies with that of atoms within solid things. He additionally calculated the location of the sun in the Milky Way, estimated that the distance of Sirius, the closest and most brilliant star in heaven, to be more than a million times as far away as the sun is from the earth, and he favorably quoted Rückert relevant to the ancient assumption of Melissus that "The world has neither beginning nor end, in space nor in time. Accordingly, everywhere is centre and turning-point, and in a moment is eternity." [F&M, p. 45] Büchner also argued as earlier maintained by Aristotle that matter "is in motion everywhere and is full of most active life," and he proposed the risky hylozoic principle that "the spirit can only exist on a substratum of organized matter" and has no independent spirit outside matter, [F&M, pp. 52, 55]

In his chapter on motion, Büchner declared his acceptance of d'Holbach's argument suggestive of Heraclitus as well as Aristotle: "The world is nothing more than matter and motion and an endless concatenation of causes and effect. Everything in the universe is in constant flow and change, and all rest but apparent." Büchner accordingly argued, "All matter, as far as we can ascertain, is ever in movement, not merely in masses," and that "all the conditions of matter . . . are modes of motion." He even went so far as to quote from an early paper by Friedrich Engels the bold assertion, "motion is the mode of existence of matter," a thesis that can be seen in retrospect to have had economic as well as physical implications. [F&M, p. 59] On this basis, Büchner argued, "Rest is not an incapacity for motion, but only as the resistance between two equal and opposite motions." [F&M, 60] The specific cause of motion he accordingly assigned to heat, a concept first anticipated by the early Greek philosopher Anaximander, and the concept of circular motion first anticipated by Heraclitus:

Heat must be regarded as the sole moving principle in the constant rotation of energies, without the presence of which a state of equilibrium would long since have been reached and therewith universal rigidity have set in. [F&M, p. 62]

All in all, he argued without any sense of contradiction, "Motion is as indestructible, as incapable of annihilation as force and matter; it assumes other forms, other appearances, of which the new forms are equivalent to those from which they have arisen." [F&M, p. 64]

The more basic question that posed itself was the possibility—indeed the likelihood—of a basic interaction between the two physical principles of matter and force, the latter providing the source of motion. In later editions Büchner began the very first chapter of his text in its later editions by quoting as many as eleven scientists concerned about such a possibility. For example:

- Force is no impelling god, no entity separate from the material substratum; it is inseparable from matter, is one of its eternal indwelling properties. [Moleschott]
- Fundamentally, as is readily seen, there exists neither force nor matter. Both are abstractions of things, such as they are, looked at from different standpoints. They complete and presuppose each other. [Dubois-Reymond]
- Force without matter is not a reality, and both by their union have made the world and all its phenomena. Without matter no force, without force no phenomenon, also without matter no phenomenon. [Spiller]

And most simply:

- We know of no matter which does not possess force, and on the other hand, we know of no forces which are not joined to matter." [Haeckel] [F&M, pp. 1-2]

Büchner proposed three possible explanations for this linkage: (1) the theistic notion that force and matter are two wholly distinct phenomena created by God; (2) the materialist notion of force as kind of an imponderable matter; and (3) the more recent materialist notion of "unity and inseparability" implicit in Aristotle's cosmology, such that "wherever matter is found, there must also be force in a state of motion, tension and resistance, and vice versa." [F&M, 11-12] Büchner supported the third and most recent assumption and extended its application to the analysis of heat, light, and magnetism. On the other hand, he took for granted the assumption that any concept of nature is simply wrong that features one without taking into account the others, and he used this argument to challenge Christianity's version of creationism:

The conception of an inactive creative force without any real existence beside itself [i.e. God preceding creation] is as impossible as that of Force without Matter. If however an original chaos is supposed, into which at a

given time the creative force introduced order and reason, then is the idea of creation as such given up, and we come back to the eternity of the universe, which . . . excludes or renders superfluous any creative or regulating principle. [F&M, 8]

If force and matter across the universe bear a constant relationship that survives every permutation, Büchner argued, they are infinite as argued by Melissus in ancient Greece, and therefore cannot have been created by any kind of a God:

If Matter and Force . . . are indestructible, and if there is no matter without force, no force without matter — there can remain no doubt that the universe was not created, that it was not called into life by some will residing outside itself, but that it is eternal. [That which has neither beginning nor end in time or space can have none in existence. That which cannot be destroyed cannot have been created. [F&M, 10-11 — see also 14]

With greater brevity, Büchner asked, "How can that be created which cannot be annihilated?" [F&M, 18]

What Büchner overlooked, as did his contemporaries, was the possibility of a fourth explanation of force and matter, that the two are basically interchangeable as suggested by Einstein's famous equation,  $e = mc^2$ , which equates energy (i.e. force) with mass (i.e. matter) times "c square" i.e., the speed of light times itself. Büchner also overlooked, as did his contemporaries, the cosmic role of a "big bang" in providing the universe with a strictly "energetic" beginning and with "black holes" that produce a no less enormous concentration of matter ultimately the outcome of the big bang's release of energy. But of course this estimated 85 billion year cosmic lifespan might play a very small role in an even bigger plenum identified as a multiverse containing many such universes in similar progress from beginning to end. On such a grand scale, God's anthropomorphic role becomes absurd.

Büchner did concede the possibility of "evolution of the heaven itself," suggestive of Darwinian principles brought into play on a grand scale even bigger and more inclusive than their geological and biological manifestation on earth. [F&M, p. 114] However, as first suggested by Parmenides, he also rejected the notion of a discernible beginning that could be identified as a first cause that might justify the concept of creationism:

The existence of the universe with its perfections and imperfections, with its forever and ever interacting processes of development and reversion, is a more possible and more intelligible conception than the theory of a perfect self-conscious creative force springing from a reasonless Nothing. .

..  
Büchner's argument seems valid whether applied to the universe or to what is now described as a multiverse. If Aristotle was able to accept the possibility of infinitude, why can't we?

Büchner also emphasized the importance of structure, or form, at all levels of manifestation in nature:

There exists in Nature a tendency to form, which is the outcome of a definite formula, and is so blind and so dependent upon casual external circumstances, that it often gives birth to the most senseless and aimless forms, that it is often incapable of surmounting or conquering the smallest obstacle it meets in its way, and that it frequently obtains the very opposite of the effect which it ought to obtain according to the laws of reason or intelligence. [F&M, p. 84]

As to be expected, he accordingly emphasized the immutability of natural laws on the categorical assumption that nothing whatsoever is accidental, miraculous, or the result of chance. Without exception, he argued, all events in the universe are entirely explicable in terms of physical laws:

Nothing can happen in the universe, be it the greatest or the least of things, except by the influence and as the result of natural laws. Rigid inexorable necessity rules the whole and the course of nature. [F&M, p. 75]

Everything accordingly takes place as the result of "stringent necessity," and in the words of Vogt quoted by Büchner, "The laws of Nature are rude unbending forces which know nothing of morality nor of compassion." What instead prevails is a "tendency to form" resulting from "causal external circumstances." [84] Otherwise, the entire system falls apart. Necessarily supportive of such uncompromising determinism is the total absence of miracles as explained by Kepler: "For once miracles are admitted, every scientific explanation is out of the question." [85] The various unbreakable laws mentioned by Büchner included those of light, heat, gravitation, electricity, magnetism, chemical affinity, and even the process of thought as "condensed motion." [F&M, pp. 90-102]

In the realm of biology, Büchner took for granted the proposal of Robert Remak and Carl Virchow in the mid-1850s that all life manifests itself as either individual cells or combinations of cells:

The whole range of the simplest to the most complex forms, has been made up of a single and very simple form-element and from its products, the *cell*, and that this simple form, which consists of enclosure, contents, and nucleus, arises again from a yet simpler compound of matter, viz. the *protoplasm* or formative matter. [F&M, p. 70]

Moreover, Büchner identified carbon as the primary component of cells, a “semi-coagulated, homogeneous form of larger or smaller bodies of albumen capable of nutrition and reproduction.” [Ibid.] And he went so far as to describe the cell as the organic counterpart to the crystal in the inorganic world. All life, he suggested, can be traced to the preliminary existence of single-cells identified as “protistas” as described in the research of Haeckel. [F&M, p. 71]

Büchner also mentioned the possibility of an extra-terrestrial source of life as suggested by the discovery of “actual traces of plant and animal remains in meteoric stones.” In this case, he proposed that the germs or first beginnings of all living things very likely “existed from all eternity . . . and that they only became capable of further development wherever the necessary conditions were favorable to it.” [F&M, pp. 137, 134] He also supported what seemed the scientifically respectable study of biogenesis in specific environments, and he was even willing to propose the far more speculative hylozoic assumption that all matter is “full of active life,” and “brings forth ever increasing vital and intellectual forces by an ever higher and enhanced complexity of organic compounds.” [F&M, p. 55] He explained that nature possesses a “tendency to form” that produces intricate structures presumably including life itself. He conceded that this tendency might be explained as the product of divine intelligence, but argued that evolution as explained by Darwinism, for example, has been “too slow, gradual, and wearisome” to suggest the role of any sort of God in having brought it about. [F&M, p. 167]

In his three chapters upon evolution explained by an inevitable result of “ceaseless mutual competition” both within and between species, Büchner provided ample exemplification of the incessant, if sluggish, pace of biological advances. [F&M, pp. 176-77] He explained that the full development of advanced biological features such as the eye are the outcome of early functions that serve the same purpose at a far more primitive level. In the case of the eye,

he argued, the earliest process of sight as sensitivity to various shades of light is performed by “small gatherings of red or violet pigment-cells, to be found in the skin at the fore-part of the body.” [Ibid] Of course the evolution of different functions has advanced at different rates and with different modifications. Nevertheless, he argued, the biological ties among the species have been demonstrated by their close resemblance in any number of ways. The most striking of these, he suggested, are the structure and function of the brain among primates—nearly the same except for variance in relative size. He also mentioned the close resemblance among fetuses of various species whose differentiation emerges at later stages of maturity. [F&M, pp. 162-63]

Büchner also went so far as to suggest the seemingly experimental impact of evolution itself in creating a large variety of new mutations few of which have survived. It was almost as if biology itself tried out new and seemingly random variations to determine their adequacy relevant to survival:

If once we begin to look at Nature from the point of view of fitness, it is easy not only to discover numbers of such aimless and useless things, absurdities and imperfections, but also to demonstrate that Nature, when interrupted in her blind action by external or internal difficulties, becomes guilty of the most startling blunders and perversities. [p. 180]

The sometimes unfortunate result, he proposed, has been the emergence of a large variety of species, many of which effectively survive with a “mischievous” impact on the environment:

No one can deny that Nature, in her blind creative impulse, has given birth to a number of beings and things which cannot be regarded as designed for their own sake, and which rather destroy than promote the natural order of things and the good of the whole. [Ibid.]

Büchner included reptiles, snakes, and the like in this category, and summarized the futile effort of teleologists, metaphysicians, and others to explain away the existence of such creatures in God’s universe. But of course no such excuse is necessary in light of Darwinian evolution. Citing the predictions of Helmholtz and others, Büchner more broadly predicted the eventual extinction of mankind, indeed of all life, in the indefinite future based on astronomical calculations:

As there was once a period in which the earth was without organic life, so there must be and shall appear also in the future which, so far as human

conception goes, is as yet infinitely and immeasurably remote, a period in which the present forces of Nature will become exhausted and be consigned to temporary inactivity, through the constant loss of heat and the gradual equilibrium of temperature; causing everything that lives on earth to return to night, to death and oblivion. [F&M, p. 192—see also 171]

Büchner nevertheless declared his optimistic expectation that life can be expected to occur elsewhere in the universe in a similar manner and under comparable circumstances:

Nay, at the very time when our own race dies away in cold and desolation, we have a right to assume that on thousands upon thousands of other spots in the universe the conditions of things will have reached a culmination point from which a new race can take its departure . . . [F&M, p. 193]

Today Büchner's prediction might seem commonplace aside from its suggestion of a frozen global destiny as opposed to a hot one, and of course both options remain possible, given the likelihood of sun's expansion before its collapse in the distant future. Toward the end of the nineteenth century, however, Büchner's proposal could only have shocked many of his readers.

In the second half of his book, Büchner provided an extended analysis of the human mind, including spiritual issues presumably neglected by materialists. Büchner speculated that the brain functions like an electric telegraph, with myriad ganglionic centers constantly relaying impulses through nerves that both generate electricity and serve as electric conductors. He also argued that intelligence manifests the effectiveness of this telegraphic system, and in fact that Carl Vogt's seemingly demeaning analogy is fully appropriate, "As there is no bile without liver and no urine without kidneys, so there is no thought without brain." [F&M, p. 246—also pp. 241, 235 and 245] Moreover, Büchner declared, the brain is dependent upon its blood supply for neural activity to occur, so once it is deprived of elements—e.g. oxygen--carried by blood to the brain, mental activity stops and death quickly follows:

But when the severance takes place, the blood supply from the heart at once comes to an end, and with it all consciousness--every function of the brain, every psychical activity, and all life ceases. [F&M, p. 263]

It may accordingly be deduced, he suggested, that all modes of consciousness, whether described as idea, soul, or spirituality, are entirely a biological function of the brain resulting from slow oxidization within brain cells through the combustion of carbon and oxygen, both of which are supplied by blood. As such human thought like all other mammalian consciousness is strictly a product of metabolism, therefore derivative of nature:

A soul without a body, a spirit without physique, and a thought without substance, can no more be realized or exist than electricity, magnetism, undulations of heat, gravity, etc., can exist without those bodies or materials by the activity of which the phenomena designated by those names are produced. Innate ideas do not exist, and free will is almost entirely an illusion. Like all other creatures in the animal kingdom, mankind is a product of nature, since "not only what he is, but also what he wants, does, feels and thinks, depends on purely natural interconnections and on necessities of nature, like the whole fabric of the universe. [F&M, pp. 317—also see p. 352]

In the simplest possible terms, soul consists of nothing more than the composite interaction of mental processes relevant to the experience, memory, and feelings imbedded in the brain's neural circuitry kept active by its blood supply. It can be noted here that Büchner did not refer more specifically to the elaborate network of axons and dendrites needed for thought to occur.

Büchner also suggested that the level of metabolism in the human brain is much higher than in the rest of the body. The average human brain weighs three pounds and occupies between sixty-five and seventy cubic inches, just one fortieth the size of the average human body. However, he estimated that it actually consumes one-third of the entire body's process of metabolism resulting from the activity of its six hundred million to a billion ganglionic centers. [F&M, p. 233] Current data suggests that only twenty percent of the body's metabolism occurs in the brain, but that between fifty and a hundred billion neurons are involved. Nevertheless, the ratio emphasized by Büchner remains impressive and obviously relevant to the differentiation between human and animal mental capacity. With serendipity, he also suggested that this advantage of the human brain as compared to the brains of other species might ultimately result from erect posture, but he did not try to explore this possibility in depth.

Büchner also disclosed that based on every aspect of chemical and biochemical analysis the human brain's capabilities bear a close resemblance to

those of the animal brain. As a result, he maintained, the advantage of human intelligence is almost entirely a matter of relative size: "The difference existing between human and animal souls is not a fundamental one, but only a question of degree." [F&M, p. 328] In a later context he repeated his thesis more specifically relevant to this assumption:

Neither morphology, nor chemistry, nor macroscopy, nor microscopy is capable of discovering an essential difference between the human and animal brains; great though the differences may be, they are after all but differences of degree. [F&M, p. 352]

With an average weight of only three pounds, Büchner argued, the human brain is nevertheless bigger both on an absolute scale and relative to body weight as compared to animals:

Whilst in man the weight of the brain amounts to from one-fiftieth to one thirty-fifth part of the weight of the body, in the dolphin it amounts only to the hundredth part, in the elephant to the five hundredth, and in the whale to the three-thousandth part of the aggregate weight of their respective bodies. [F&M, p. 210]

Quoting the French anatomist Leuret, Büchner suggested as an alternative that the average weight of the brain compared to each ten thousand parts of the body mass is 1.8 in fishes, 7.6 in reptiles, 42.2 in birds, 53.8 in mammals, and 277.8 in human beings. [F&M, pp. 210-11, 220] As compared to the gorilla, the closest genetic relative to humanity, he estimated that the human brain capacity averages ninety cubic inches as compared to the gorilla's brain capacity of thirty-four cubic inches, little more than a third the size. [F&M, p. 222]

Elsewhere, Büchner did acknowledge additional factors such as strength, development, and cooperation additional to size:

There is no intellectual capacity which belongs solely and exclusively to man; it is only the greater strength and the higher development of these capabilities, aided by their more perfect co-operation, which give him his great and marvelous superiority over the brute. [F&M, p. 351]

Moreover, he disclosed that the pre-frontal region of the human brain, which is heavily involved in cognitive activity, is more developed in humans as compared to other regions of the brain, and that the human brain's fissured convolutions of

gray matter are deeper than those of animals, often producing as much as a 12-1 advantage in functional mass as compared to an entirely smooth brain. Also of possible relevance, he suggested, are the levels of phosphorus and lecithin it contains. [F&M, p. 217] Whatever the variables submitted to analysis, Büchner maintained, the variation between human and animal intelligence can be treated as primarily a question of degree, so the qualitative advantage of the human soul turns out to be strictly quantitative. If the human soul is somehow immortal, the animal soul might therefore be as well, given a larger brain.

The remarkable advantage of human intelligence cannot be discounted, Büchner insisted, for it has made possible all the advances of the human species, not least its ability to generate and sustain civilization. He declared with mock eloquence, “Yea, the destiny of the whole human race is indissolubly bound up in the sixty-five or seventy cubic inches of brain-mass, and the story of mankind is recorded therein . . .” [F&M, p. 240]

Büchner was more generous in his attitude toward the concept of free will than might have been expected. His initial epitaph quoted from Lavatar, “Man is as free as a bird in a cage; he can move within certain limits,” conceded a modest zone of behavioral freedom in an otherwise deterministic universe. Büchner explained at greater length—

And thus it may be said without exaggeration that. . . all human actions are everywhere dependent in the last resort on the fixed necessities of nature or on external and internal influences, and that in each individual instance there remains only a very small scope, and oftentimes no scope at all, for free volition. [F&M, pp. 366-67]

His reference to a “very small scope” provided a tiny window of opportunity for promoting the concept of free will, but he also cited the habitual predictability seldom surmounted by mankind in general:

How often does it happen that a man knows himself and his mental and peculiar characteristics sufficiently well to see what faults he is likely to commit, and yet is unable to successfully resist this internal pressure. He repeats the same faults over and over again and gets again and again into the same scrapes; for it is quite an exception for the powers of imagination and thought to gain the victory over a man’s perceptive faculties and appetites. [F&M, p. 373]

One assumes that the principle extends to the most trivial choices in life, for example the seemingly random decisions that normally occur in card games or in wandering through a grocery store. Even the effort to test or demonstrate one's free will by picking what seems an entirely new choice once again exemplifies one's predictability. As already suggested by Edgar Allen Poe, the "imp of perversity" might seem entirely frivolous to those who exercise it, but to others familiar with such individuals, their supposed unpredictability is altogether predictable in light of their personalities.

Büchner included two chapters pertaining to religion, the first of them a sweeping anthropological history of worship as practiced in a large variety of primitive religions, and the second a comparative summary of various beliefs in an afterlife. He declared his reluctance to discuss in depth any of the "biblical myths and fairy tales," since, he argued, they are—

. . . really too childish, too radically at variance with the most notorious facts and results of the whole geological, archaeological and archaeogeological science, to be made the subject of a serious controversy." [F&M, p. 197]

Stripped of anthropomorphic fantasies, he argued, the God concept is strictly a primitive application of reason at each and every stage in its historic advance from primitive superstition to the most advanced ventures in both theology and its rejection. Ironically, godlessness occurs both at the most and least advanced levels. At the very top of the heap in religious sophistication, he argued, are the almost entirely godless religions of Confucius, Buddha, and Lao-Tse, the latter having specifically identified the principle of Tao with universal reason. [F&M, pp. 205-7] At the very bottom with no absolutely no belief in God, he included a large assortment of primitive societies later investigated by Tyler, Lubbock, Bradley, Hasskarl, and others. He also quoted Darwin's authoritative confirmation in *Descent of Man*:

There is ample evidence, adduced not by mere visitors, but by men who have long resided among savages, that numerous races have existed, and still exist, which have no idea of one or more Gods, and which have no words in their languages to express such an idea. [F&M, p. 302]

Among societies in America devoid of religion, Büchner included Californian and Brazilian Indians as well as the Abepoinas, Payaguas, and Grand-Chaco tribes. Comparable African societies included the Oukanyama, the Lakkutas, the

Bechuanas, Kaffirs, Hottentots, Bushmen, and Ovaheroro tribes. Among Pacific tribes he included native Australians, Motus of New Guinea, Samoans, and the Mincopis. [F&M, p. 302-10] Büchner also took into account the predictable tendency in many primitive societies to emphasize either the role of a devil or group of devils rather than God or some kind of a polytheistic compromise pitting gods against devils. Unlike the monotheistic notion of a benevolent God capable of anger, primitive worshippers had divided into friendly and hostile gods, justifying their worship of one category (supportive) in order to protect themselves from the other (hostile). As a more sophisticated sky-god religion, he suggested, Christianity has been sufficiently flexible to accommodate both versions, since many who believe in heaven also accept the existence of hell as an underworld alternative. Recently in the United States, for example, ninety percent of the population believed in God, whereas only seventy percent believed in the devil. Organized religion seems to have no problem in straddling this division among otherwise like-minded churchgoers.

The sky-God religious faiths promoted by Jews, Christians, and Moslems have of course been situated between primitive belief and the sophisticated beliefs of Buddhists and Confucians. Büchner did not bother to explore the standard arguments used against religious belief, for example the multitude of Biblical contradictions challenged by several generations of English deists as well as Spinoza, Meslier, Voltaire, and Strauss, among others. It was almost as if Büchner considered this particular level of assumptions no longer relevant to philosophical discourse. However, he did devote a full chapter to rejecting the hope and expectation of an afterlife as the empty pursuit of "personal continuance." Appropriately, his initial epigraph for the chapter was Pliny's memorable quote, "From the moment of death onwards, both the soul and body feel as little as they did before birth." Büchner went on to explain--

A soul without a body, a spirit without physique, and a thought without substance, can no more be realized or exist than electricity, magnetism, undulations of heat, gravity, etc. can exist without those bodies or materials by the activity of which the phenomena designated by those names are produced. [F&M, pp, 316-17]

No supportive body, effectively no soul. Upon the death of body the soul returns to oblivion from whence it came in the first place. Büchner was also dubious of sophisticated metaphysical arguments that bypassed such issues obviously vulnerable to challenge. For example he ridiculed the contemporary physicist

Fechner's amateurish effort to justify Christianity based on what might be described as metaphysical common sense:

God, the aggregation of being and action, has no universe external to himself and no existence external and opposite to himself; he is the One and the All; all spirits move within his spirit, and all bodies within his body; he rotates wholly within himself, and is influenced by nothing from without; nay he is influenced wholly by himself, and he himself, since he embraces the basis of the influence of all existing within himself. [F&M, pp. 314-15]

Somewhat reminiscent of Spinoza, Fechner's pantheistic vision would seem to have been harmless enough two hundred years later, but not for Büchner, who declared with obvious disdain, "That sounds very beautiful, but nevertheless, if we look at it more closely, we find that it is stupendous nonsense." [Ibid]

Büchner also rejected vitalism, the pantheistic notion of "vital force" as a supposedly transcendent power that supersedes the physical universe. He explained, "life is no *force*, but a *resultant* or movement of particles grouped in a definite order." The "stuff" of organic life wholly derives from the inorganic universe, and its components--necessarily atoms--are indestructible as can be readily demonstrated by burning anything organic inclusive of flesh, "so that nothing remains except the non-volatile ashes, and this without a single atom being lost in the process." [F&M, p. 339] Of course Büchner was unaware of the full biological complexity of metabolism in light of modern scientific findings. Initial discoveries about metabolism took place during the nineteenth century, but it was only in the twentieth that its unique dynamics could be grasped, especially with relevance to the discovery of DNA and RNA's genetic roles. Nevertheless, Büchner's argument that the same number of atoms remains after combustion continues to be valid with the important caveat that the compound cannot be restored without renewing the complex participation of such biological aspects as metabolism and genetics, which is of course impossible at that point.

And finally Büchner returned to the issue of ethics, challenging the assumption essential to Kant's metaphysics and almost entirely accepted by society as a whole that religious belief is essential to morality. Quite the contrary, Büchner argued, there has been no direct connection between the two based on anthropological evidence:

But in reality it is a fact that has long been placed beyond all doubt, that morality and the church, nay morality and religion, are things perfectly independent of each other, and that the most efficient agencies of morality in the world are education, training, prosperity and freedom [F&M, p. 381]

Büchner insisted that anthropologists have conclusively demonstrated that social customs, not religion, “first created morality.” Granted, religion can serve as an effective agent supportive of social customs, but it has unfortunately too often impeded rather than promoted this accomplishment by needlessly producing conflict among competitive societies:

Religion counteracts morality and universal philanthropy in so far as it sets men against each other by the diversity of doctrines and theories of belief, thus fostering and nourishing the worst impulses of human nature. [Also] it must not be forgotten that the moral precepts laid down by religion are mostly antagonistic to human nature and therefore wholly unpracticable. [F&M, p. 384]

Büchner’s suggestion that the most religious ages and nations “have not always been the most moral” seems an understatement in light of Europe’s bloodthirsty history that includes the Medieval Inquisition, the Crusades, the Spanish occupation of the New World, and the Seventeenth Century religious wars. Even today the inhabitants of the most aggressive and expansionistic nations almost inevitably depend on false righteousness based on a toxic admixture of religion and excessive patriotism. Granted, a small group of religious dissidents is often publicized for opposing a particular war, but the great majority accept their government’s propaganda on the remarkable assumption that God is either on their side or at least willing to forgive their choice.

As for individual behavior, Büchner went so far as to insist on religion’s basic immorality because of its dependence on threats and rewards to encourage ethical behavior. He argued, “religion is injurious to morality, in so far as it assigns to it an aim based upon egotism and self-seeking, whereas pure morality finds, and ought to find its reward in itself . . .” [F&M, p. 383] In other words, moralists who believe in God are more likely to engage in ethical behavior because of their assumption that they will be repaid in heaven once they die rather than being consigned to eternal perdition in hell. Such individuals might perform good deeds simply because they want to, but if they also happen to believe in just rewards during an afterlife this expectation cannot be disregarded.

To this extent, Büchner argued, their generosity is “egotistical,” as opposed to the willingness of benevolent atheists who perform good deeds strictly because they seem appropriate relevant to human need without any rewards in mind. Such individuals are the true moralists, Büchner maintained, not the seekers of heavenly reparations, whatever their good deeds.

In his final chapter, “Concluding Observation,” Büchner once again mentioned the abandonment of Kantian metaphysics and those who practice it (“No one now speaks about them”) for the most part in light of “gigantic strides” in science. At least five times he insisted on the crucial importance of science in confirming the validity of atheism. Most simply he quoted Virchow to the effect that philosophy “must walk on the path of natural science only,” and in support of this thesis he cited Protagoras’s ancient declaration that man is the measure of all things. Almost as an afterthought he concluded his book by taking into account the recent trend in agnosticism popularized by the English evolutionist Thomas Huxley, who claimed that religious issues can neither be confirmed nor rejected and can accordingly can be ignored on this basis. As later explained by logical positivists, Huxley identified the God concept as a “pseudo-issue” that lets believers hold whatever belief they wish while giving secularists the freedom to pursue their interests free of ideological obstruction. In effect agnosticism served as a compromise that neutralized the choice between religion and its rejection, just as Pyrrhonian skepticism had done twenty-three centuries earlier. In partial accord with Huxley, Büchner was true to his commitment as an atheist by rejecting agnosticism as an empty compromise unduly generous to believers:

If we look at things in open daylight, we find that the "Unknowable" of modern Agnostics is nothing more than the good old God of the theologians, who has already made his appearance in so many deceptive disguises in the history of philosophy. . . . At the bottom of it we always find the same anthropomorphic disfigurement, the same *asylum ignorantiae* and the same vague being [God] which, being begotten of the fear of the unknown, ruled of yore over the crude primeval man and will continue to rule over the civilized man, until the sun of knowledge and the recognition of a natural and self-contained order of the world shall have made a reality of the *Fiat lux!* (Let there be light). [F&M, pp. 396-97]

Agnosticism’s “asylum in ignorance,” or, more specifically, its *excuse* based on ignorance—the lame rationalization that one cannot be sure whether God exists and therefore is justified in avoiding the issue—was in itself reprehensible in Büchner’s opinion, since it helped to perpetuate the religious cause. Without

quite recognizing his implications, Büchner thus brought his remarkable book to a close with two principles—his defense of science as an unavoidable concern of philosophy, coupled with his rejection of skepticism to the extent that it serves as evasiveness and an unnecessary concession to religion.

Compiled almost as an afterthought, Büchner's culminating book, *Last Words on Materialism*, included thirty-one essays written during the final decade of his life—also by chance the final decade of the nineteenth century. If Büchner provided in *Force and Matter* a cumulative assessment of scientific trends earlier in the century, *Last Words* served as an appendix summarizing their remarkable secular implications as a major intellectual accomplishment setting the stage for the twentieth century. Büchner argued in retrospect that he was not a crass materialist as Engels had once argued (LW, p. 140), but strictly speaking a monist insofar as he treated all phenomena without exception as particular aspects of the physical universe without any supernatural input whatsoever. Like Aristotle, in other words, he refused to speculate about its origins, willing to accept the supposition that the total universe never had a beginning nor by implication a creator who imposed such an event.

Büchner went so far as to declare that “existence is a fact, and that is all” (LW, p. 152). He accordingly rejected metaphysical theories as being dualistic somehow based on the distinction between mind and matter, spirit and the physical universe, etc. as if the mind, like all animal intelligence, were not strictly speaking a product of this universe. In his 1895 essay, “Science and Metaphysics” he himself eluded the charges of binarism by identifying energy with force (“what comes to the same thing,”), thereby permitting his notion of the unity of force and matter as appropriately “the foundation of philosophic monism.” [LW, pp. 111, 113] In effect he proposed that the two were complementary manifestations of the universe in its entirety, not that he recognized the possibility of their conversion from one to the other as based on the principle of relativity later proposed by Einstein.

In his 1899 essay, “More about Philosophic Materialism,” (significantly, the next-to-last essay in his book), Büchner went so far as to elevate monism to a status superior to both materialism and spiritualism:

Whoever takes a one-sided view of matter may rightly be called a “materialist.” Whoever, on the other hand, attributes everything to force alone may rightly be called a spiritualist, idealist, or dynamist. Whoever

regards both in their unity and association, and makes this unity the basis of his thought, is a “monist.” (LW, p. 273]

By “force alone” he seems to have referred to ultimate cause. With ironic generosity, he conceded the harmlessness of the God concept predicated on intrinsic unity such as might be suggested by Spinoza’s pantheism, but he insisted that such a notion becomes empty once reduced to this level of generality:

It is possible that the two expressions, like the words “spirit” and “matter,” represent only two different sides or phenomenal aspects of one and the same thing, or source of all things, the inner nature of which is unknown to us. If anyone wishes to call this “God, there is not much to be said against it—provided it is stripped of its theological and anthropomorphic associations, and not opposed to or set above the principle of the uniformity of nature. [LW, p. 116]

Büchner also rejected the a priori status of thought as well as the concept of a privileged but unknowable realm in the universe that totally eludes scientific investigation as explained by misleading transcendental concepts, for example the Kantian notion of the “Thing in itself,” the Hegelian version of “Idea” derivative of Platonism, “Schopenhauer’s “Will” as an unspoken momentum of the physical universe (for example in human instincts), Hartmann’s pre-Freudian version of “Unconsciousness,” and most inclusively, Spencer’s concept of the “Unknowable.” [LW, pp. 287-88, 148-9] All of these privileged realms of pre-existence or extra-existence, Büchner insisted, illustrate what might be described as an *asylum ignorantiae*, a higher (or lower) sanctuary of unavoidable ignorance supposedly the result of our limited grasp of the universe.

In “Knowledge and Evolution,” his final essay written in 1899, Büchner conceded that electricity, magnetism, and chemical affinity cannot be directly experienced by the five senses, but defended advanced scientific methodology in surmounting this limitation, and on this basis he insisted that “it is . . . inconceivable or impossible that the world should be essentially other than as man conceives it . . .” [LW, pp. 292-3] With Lockean confidence, he asserted—

Our sensations, moreover, which only become sense-perceptions and offer material for further elaboration to the intelligence through the action of the brain, are not, as we have seen, something complete in itself, and independent of the outer world, but are in every case caused by very

definite and very varied movements of the outer world—movements which must have a definite and orderly relation for those which take place within us. [LW, pp. 296-7]

In the simplest possible terms, what the brain perceives somehow manifests existence and can be submitted to scientific analysis on that basis, and the physical universe as perceived by the brain—inclusive of the brain itself--does not possess any supernatural influence that eludes scientific investigation. In the simplest possible terms, Lockean epistemology once again prevailed despite Kant's reinvention of metaphysics.

Büchner accordingly rejected the concept of vitalism promoted during the late nineteenth century as an alternative version of monism dependent on a "peculiar force which alone has the property of producing the vital phenomena" (LW, p. 3) Obviously, some sort of a God concept was implied by this notion, but Büchner was unwilling to explore such a possibility. Instead, he insisted that there is no extraneous power that has invested the universe with life. Quite the contrary, he asserted in "Science and Metaphysics," also published in 1895, life itself is strictly a product of the physical universe:

The circumstance that we do not know yet, or cannot demonstrate in what way non-vital motion passes into vital, does not in the least impair the fact that this conversion is purely natural, proceeding in a natural manner and conditioned by the general natural laws. [LW, p. 112]

In other words, life (i.e., biological existence) is nothing more than one particular aspect of nature, and, vice versa, nature alone generates the life principle without outside guidance:

There is no such thing as dead nature; the difference between organic and inorganic nature consists merely in the kind, direction, and intensity of their motion. . . . The matter which is found in both, the natural forces which operate in both, are the same; and, however intricate the characters of life may be, they are neither more nor less than movements of matter under peculiar and highly specialized conditions. [LW, p. 111]

In retrospect this seems the case if atomic and sub-atomic motion can be both identified and differentiated from the generation of DNA and RNA understood as a "specialized condition" essential to life. With the later discovery that all life without exception depends on the involvement of DNA and RNA strands in the

nucleus of all biological cells regardless of their level of evolutionary advancement, there is little difficulty in distinguishing between spontaneous behavior by creatures so endowed on a genetic basis and the visible cause-and-effect movement of strictly physical events such as waves, the wind, falling rocks, expansion resulting from heat, etc.

Büchner took for granted that this secular perspective was shared if not fully understood by most educated individuals, however small their number, by the end of the nineteenth century. These “judicious few” [LW, p. 147]—as opposed to the “ignorant multitude” who had been described by Hume as the “common people,” by Tindal as the “bulk of mankind” and by Rousseau as the “common herd”—fully recognized the potential absurdity of the God concept and the need for a more cogent explanation among those able and willing to cope with this realization. As an obvious compromise by the end of the nineteenth century, most who belonged to this minority at odds with received orthodoxy, identified themselves as “agnostics,” as proposed by Thomas Huxley with the tentative support of his mentor, Charles Darwin. However, both of them as well as most of their followers at the time refused to confront the choice between the acceptance of the God concept and its rejection based on the secular adoption of Leibniz’s principle of sufficient reason that our universe has become totally explicable devoid of godhead. Nevertheless, God’s presumably transcendent role cannot be absolutely proven true or false, if on no other basis than Descartes’ suggestion of God as a “malicious demon” able and willing to obscure His existence despite the best efforts of mankind to demonstrate otherwise. As already indicated in *Force and Matter*, Büchner disdained such logic and promoted outright atheism despite the concession that its truth had not yet been completely demonstrated by science, as still remains to be seen relevant to such issues as the origin of life.

It can be mentioned on a final ironic note that additional to his vigorous authorship, Büchner helped to found in 1881 the *Deutscher Freidenkerbund* (German League of Freethinkers) a wide network of German freethought associations with a total membership in 1930 of between six and eight hundred thousand. All of these associations were abruptly terminated as soon as Hitler came to power in 1933, probably relevant to his successful effort to obtain the combined Catholic and Protestant acceptance of his dictatorial powers. By 1938 Hitler could actually boast that more Germans had purchased Bibles that year than copies of *Mein Kampf*. Atheism has certainly revived in Germany since then, but not as a militant cause comparable to the support obtained by Büchner and his followers preceding the turn of the twentieth century.

## Texts:

Ludwig Buchner: *Force and Matter: Principles of the Natural Order of the Universe. With a System of Morality Based Thereon* (1855—trans. from the 15<sup>th</sup> German Edition by Truth Seeker Company, 1950). Identified in the text as F&M.

Ludwig Buchner, *Last Words on Materialism and Kindred Subjects*, (trans. b Joseph McCabe, Watts & Co. 1901. Identified in the text as LW.