**The Compleat Agnostic:**

**OBSERVATIONS on HUXLEY’S VIEW on SCIENCE and RELIGION1860-1874**

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*It seems to me that the idea of a personal God is an anthropological concept which I cannot take seriously. I also cannot imagine some will or goal outside the human sphere.*

*Science has been charged with undermining morality, but the charge is unjust. A man's ethical behavior should be based effectually on sympathy, education, and social ties and needs; no religious basis is necessary. Man would indeed be in a poor way if he had to be restrained by fear of punishment and hope of reward after death.*

*What I see in Nature is a magnificent structure that we can comprehend only very imperfectly, and that must fill a thinking person with a feeling of humility. This is a genuinely religious feeling that has nothing to do with mysticism.*

*I am a deeply religious nonbeliever. This is a somewhat new kind of religion.*

- Albert Einstein (1940, 1943 [2], 1951)1

**I / INTRODUCTION: *CRED’EQUIDEM***2

T

homas Henry Huxley’s personal and public views on science, religion, theology, education, politics, and the various intersections of those fraught quantities were essentially in place when his friend John Tyndall summarized them at the 1874 meeting of the British Association for the Advancement of Science in Belfast, Ireland. In his seventy minutes at the bully pulpit Tyndall scandalized not only the conservative Anglo-Irish élite but also the entire Anglophone establishment by proclaiming the sole supremacy of science – skeptical, open-minded, provisional, evidence-based, revolutionary – above the faith-based Church of England; indeed over revealed religion in all forms. Only science, Tyndall proclaimed, has the right to say what the natural world is, describe its functions, probe its origins, and speculate how it might develop. Theologians might continue mumbling over meaningless terms like Immanence and Transfiguration, but would henceforward be intellectually irrelevant in doing so. The world belonged to science alone.

So uncompromising were Tyndall’s theses that Huxley himself voiced misgivings about the speech, both before and after its delivery3. Yet Hal3a kept his objections largely to himself, or expressed them in personal letters to intimates; his disagreement with Brother John’shomily was not in its precision but in its tactlessness. This was *ungentlemanly* truth.

Yet truth it was, in Hal’s well-considered view. The BAAS lecture merely synopsized what Tyndall and the rest of the X club had evolved under Hal’s strategic leadership since 1860, when Hal emerged from the widely read anonymity of the *Westminster Review* to address a large general audience over his own signature. This paper explores the articulation of Huxley’s philosophical views of the science/religion dichotomy over those fourteen years, till Tyndall at Belfast unveiled them *in toto* as a polished system of values and beliefs.

As I have noted elsewhere, a main tenet of Huxley’s world-view was causation: whether in nature or in human thought, “Nothing will come of nothing.”4 Thus by 1860 the precursors of Huxley’s 1874 world view were largely fixed. At the same time, however, niceties of the X-Club belief system regarding the science/religion interface remained fluid. One must infer their refinement 1860-74 from Huxley’s writings, whether private (letters to intimates) or public (almost entirely anonymous to 1860, and almost entirely signed thereafter).

Such details aside, by 1860 Huxley had assembled an internally consistent philosophy together with a logico-rhetorical means of presenting and defending it. As soon as his *WR* anonymity was void, Hal was not only compelled to present his world-view *in propria persona* rather than hiding behind his *WR* publisher John Chapman; he was intellectually and emotionally prepared for the transition. The belief system that Huxley then unveiled strikingly anticipates the European existentialism of Sartre, Camus *et alia* that would arise 80 years later. In both philosophies -

* ‘Religion’ is held (or rather demoted) to mean personal emotions arising from the contemplation of nature, whether the microcosm of cellular physiology or the macrocosm of the night sky. Such responses lie within the same aesthetic as music and poetry, and are incommensurate with experimental and theoretical science, including precise techniques of manipulation, analysis, and prediction such as mathematics.
* The reflexive mind is limited in its universe of discourse to that subset of the natural world that is perceptible to human senses, whether directly or else mediated by instruments. Whatever lies beyond that apprehensible world is permanently denied to human encounter, and may not be speculated upon fruitfully; in this forbidden zone lies the whole of formal theology. “[W]hile it is the summit of human wisdom to learn the limit of our faculties, it may be wise to recollect that we have no more right to make denials, than to put forth affirmatives, about what lies beyond that limit. Whether mind, or matter, has a ‘substance’ or not, is a problem which we are incompetent to discuss.”5  This is the scientific approach to theological intangibles such as deity and the human soul.
* Theology has never offered humanity, nor ever will offer, any succor beyond the deceit of panacea. In accepting this truth, it is both possible and mandatory to live one’s life to the highest moral and ethical standards – speaking truth as one perceives it, and dealing kindly and fairly with all.
* Everything in nature is subject to the scientific approach. ‘Nature’, the universe of discourse for science, must be defined exactly. It includes the universe of matter and energy but extends to everything conceived, discussed, or written by humans, now or at any time. As a consequence of this premise, no thought is too elevated for epistemic or ontological analysis; nor is any text is too holy to be examined historically, philologically, archaeologically, or by any other scientifically reputable means.

**II / GOING PUBLIC**

Huxley did not voluntarily emerge from his *Westminster Review* camouflage so much as it was torn away from him. The authorship of his *WR* pieces (1856-60) was generally known among the London intelligentsia; his authorship of the *Origin* review in a late 1859 *WR* issue was an open secret, bathing Huxley in so intense a national and international limelight that from 1860 onward Hal would spend his intellectual life on the public stage.

A single new publication opened the door. Charles Darwin’s *Origin of Species* raised to British society’s inspection the most profound speculations made to date on the nature and origin of life, including humanity’s, and also introduced someone uniquely qualified to understand and popularize the momentous new work: the rising young ‘man of science’ T.H. Huxley. The *Origin* handed Hal a central lectern in a hall the size of Britain, giving him the most influential scientific podium of the nineteenth century.

While this transformation occurred within half a year, it took place in degrees. The first step in Huxley’s public emergence was his review of the *Origin* in the *London* *Times* of 1859 December 26. The staff reviewer Lucas threw up his hands after skimming the book and called in Huxley, the scientific man of the hour, to write the entire text except for Lucas’s two-paragraph introduction. Huxley grasped his chance. He scribbled like a madman, so quickly his wife could hardly keep up with the proofreading, “faster than ever I wrote anything in my life”8, to make typesetter’s deadline.

Next, Huxley (whose authorship of the *Times* review instantly became an open secret as well) spoke on the new book at the Royal Institution. Hal’s talk on 1860 February 10 was well attended and well received by nearly everyone, except the man who had most at stake: C. Darwin. Huxley voiced strong support for the new theory, but (as befitted a skeptical scientist) hedged his approval with so many caveats that natural selection was hardly mentioned. The only achievement that Huxley unreservedly sanctioned was Darwin’s cheek. “I must confess,” Darwin afterward lamented, “that as an Exposition of the doctrine [natural selection] the Lecture seems to me an entire failure.”9

The failure was only in Darwin’s eyes. A triumph had occurred, but covertly: it was of publicity rather than science, and its beneficiary was Huxley the promoter, not Darwin the researcher-theoretician. For the first but not the last time Hal had ridden the *Origin*, a book whose tenets he never fully accepted, to new heights of personal fame.

A *Westminster Review* article that Huxley had written at the same time as the *Times* review came out in 1860 April (*WR* 17-2); and here again, Hal’s anonymity was compromised. Darwin grudgingly admitted that Huxley’s piece advanced his radical theory – even if, as in the *RI* lecture, Huxley’s enthusiasm was tempered by scientific misgivings that were justified in Hal’s eyes though not in Darwin’s.10

In terms of the science-religion dyad, the real bombshell of Hal’s half-year emergence from his *WR* chrysalis was his confrontation at Oxford University with ‘Soapy Sam’ Wilberforce, Lord Bishop of Oxford and, like Hal, an FRS (due to his mathematical achievements). Reports and assessments of what happened at the debate, both contemporary and *ex post facto*, vary greatly; both the Oxbridge High Church and the London scientific-naturalistic parties were to claim victory. But as with the *RI*, the *WR*, and the *Times*, the lasting achievement seems to have been T.H. Huxley’s. As Darwin’s General (and later ‘Bulldog’ or ‘High Priest’) leading the anti-Establishment, pro-Evolution brigade, Hal rose to the role of reformer in a United Kingdom vigorous and prosperous but suddenly unsure of its future course. The past was reverenced but obsolete: what would replace it?

A public stage to address such questions was now Hal’s to command. He began with a series of lectures, one to his fellow men of science and another to the cloth-cap set –prosperous tradesmen on the fringe of the middle class. Hal filled halls with them: they sat in rapt silence as he uncovered the scientific truths behind commonplace stuff like chalk, coal, and lobster. Radicals – socialists, atheists, even the adherents of a visiting German scholar named Marx – had long harangued Britain’s big-city workers with diatribes against the Church of England, its crippling tithes and rigid doctrines. But here was an up-and-comer with access to knights and MPs, not just inveighing along similar lines but buttressing his positions with arguments that seemed scientifically ironclad. Not only were the working audiences impressed to reverence: so were the attending press. A Huxley lecture, said one reporter, was “a most exciting and even solemn occasion.”11

As time went on, even a nose-out-of-joint Darwin overlooked Hal’s theoretical reservations and recognized the boost to a general acceptance of natural selection that the young biologist’s consummate propaganda was achieving. The last vestiges of natural theology, in the persons of Owen, Wilberforce *et alia*, were being flogged from the temple of science; General Huxley might not be a card-carrying Darwinist, but he had a useful knack of winning ideological wars.

**III / TOO MUCH SATIRE**

Huxley particularly delighted in refuting that hoary C of E bogeyman, *viz*. that absent the promise of heaven and threat of hell (both concepts being infinite in intensity and duration) society would collapse into amoral anarchy: no spouse faithful, no one honest, no child duly taught. Hal, perhaps consciously, used his own family as the exception that disproved this inductive rule: it was loud, boisterous, close-knit, loving, supportive even of its black sheep, and utterly adoring of ‘Patter.’ Some of the most amusing text in the Huxley papers can be found in the letters of flabbergasted traditionalist visitors *chez* Huxley, who breathlessly report an absence of brimstone.

At the end of 1859, Hal’s views on science and religion might be summed up as follows:

* Denial or assertion of Divinity (let alone pronouncements on his/its properties) are forever beyond mortal purview;
* What *is* denied, absolutely, is any type or degree of divine meddling in the instant-by-instant operations of nature;
* The natural world neither requires nor permits miracles; its consistency, variety, and robustness are miracle enough;
* Any *soi-disant* god who must resort to miracles as a kind of software patch is by that action alone non-omniscient;
* Humanity cannot apprehend or know Deity by any means, not even to the extent of deeming it good, rational, conscious, sane, or even extant;
* Pope’s Augustan adjuration remains categorical –

*Know then thyself, presume not God to scan;*

*The proper study of Mankind is Man*12*.*

Another study proper for humanity to undertake is Nature – insofar as Man with his limited senses and sensorily circumscribed intellect may comprehend a cosmos of which he is a negligible part. This second ‘proper study’ is science, which detects in the universe an inexplicable yet inexorable regularity of cause and effect and encapsulates such consistency in sweeping generalizations called scientific laws. These laws, not divine ordinances but rather inductive distillations of carefully controlled experiment plus disinterested observation, reduce each individual event into a comprehensible instance of a much simpler and more powerful order. A million apples may fall from a thousand trees; no matter. Each obeys Newtonian laws.

Still, science goes beyond mere summary. Assuming (absent evidence to the contrary) that natural law is eternal and immutable, science accords itself the temerity of predicting the future – the path of a cannonball, the time of a Venusian solar transit, the time at which a melting iceberg will invert. Later, Bertrand Russell correctly termed this predictive aspect of science “astonishing.”

In 1860 Huxley, to that point unknown beyond a scientific coterie based in London, was no stranger to conflict. Even before his emergence from the *WR’s* public anonymity, reticence was not one of Hal’s virtues: from the first, he loved a scrap. So vitriolic were his 1850s pronouncements on (*e.g.*) Owen’s scientific positions that even close friends such as Hooker were appalled by his unchivalrous rancor. Such intemperate language from a child in his twenties! It was *infra dignitate*. Adrian Desmond, a biographer of both Huxley and Darwin, sums up Hal’s midcentury Philippics as an “explosive mix of provocation and perspicacity.”13

Yet while Huxley could construe a scientific or theo-scientific dispute as a bareknuckle smackdown, he tended throughout his life to pull his punches *in re* religion. In such confrontations he was savage to the smug-cleric type, having “too much satire in his vein”14, but gentler to genuinely devout individuals such as his cherished confidant Charles Kingsley15. After he spoke to the *RI* on 1860 February 10 (in the address that to a sniffy Darwin showed scientific timidity) Hal said that with “a Bishop & a Dean among my auditors . . . I wound up with the most energetic protest in favour of Science versus Parsonism.” Yet even here Hal named no names. Such mildness may in an unkind construal seem a social-climbing reluctance to be too obstreperous; nonetheless it constantly crops up in Hal’s remarks and writings throughout the 1860s. The underlying message may be best put by Hal himself: “Reverence is the handmaid of Knowledge.”16

In fact throughout the 1860s, at least in theology and its adherents if not in science and his fellow men of science, Hal spared the individual and restricted his venom to the type. Even his response to Soapy Sam’s jibe about pongid precursors at the famous Oxford confrontation (‘Whether it was by his grandmother or his grandfather that he claimed such ancestry’) was so cool, poised, and gentlemanly that, however the acolytes of both interlocutors would recall the exchange, Huxley and the Bishop were later able to serve together in clubs and committees, and chat agreeably at chance encounters, for the rest of their lives.

**IV / TRIAL BY FIRE**

Huxley’s intransigence in his most deeply held beliefs was put to its most severe test in September 1860, when his three-year-old son Noel died unexpectedly of an unidentified infectious disease, probably scarlet fever. If anything could have tossed Huxley into the arms of Jesus, if was this; yet even as he poured out his anguish in a series of long letters to Kingsley (who to his everlasting credit never tried to body-check Hal’s sorely troubled soul toward religion) Hal stuck to his view that theology was beyond scientific analysis, and hence not to be addressed by anyone who spoke as a man of science:

I could have fancied a devil scoffing at me . . . and asking me what profit it was to have stripped myself of the hopes and consolations of the mass of mankind? 16a  To which my reply was & is Oh devil! Truth is better than much profit. I have searched over the grounds of my belief and if wife and child & name & fame were all to be lost to me one after the other as penalty still I will not lie. 17

I find it significant that Huxley presents this, the very bedrock of his personal philosophy, both as objective truth (in that recanting it would be a “lie”) and as “belief” – that is, something intuited to be true, felt emotionally, but not proved; even intrinsically unprovable. Again this anticipates 20th century existential normativity: man must encounter the universe with such unflinching honesty that he repudiates all thought of supernal comfort, even if it lead him to physical malady (*La Nausée* is Sartre’s most influential book). One must admire Huxley’s steel spine – his son Leonard calling this “the greatest sorrow perhaps of his whole life”18 – while noting that Hal’s central credo employs (perhaps unconsciously) the tone and rhythm of Abrahamic scripture.19

Hal’s expression of his beliefs about science and religion entered another mode of expression throughout the 1860s when he presented lectures, ostensibly on science alone, to societies of London workingmen. These lectures, later printed in various compendia, examined everyday objects – in 1861, the lobster that a mason’s wife had boiled for his dinner; in 1868, the chalk with which he marked a plumb line. To use a term from today’s science popularization, Huxley ‘unpacked’ his subjects to show the marvelous complexity and beauty of their scientific underpinnings. That ha’p’orth stick of chalk was the tiny modern fragment of uncounted shells, remnants of a vanished sea and its carboniferous life forms whose exoskeletons now spread across thousands of miles to a depth of several thousand feet; the lobster was not a simple foodstuff but a staggeringly complex set of tissues and functions whose most common actions – curling a tail, snapping a claw – remained mysterious to the greatest savants of the day. This last point lies at the core of Huxley’s views: for Hal, wonder and mystery lay at the heart of both religion and science. Measured by affect, both entities were one.

Yet by no means did Hal offer his rapt and silent audiences, unused to being addressed as thinking citizens by an eminent scholar, the facile comfort of natural theology. God had not created uncounted bivalves, then slaughtered them, to hand John Workingman cheap markers; nor had the Most High crafted crustaceans to give John dinner. Both chalk and lobster were the product of natural processes, *unthinking* processes, which proceeded inevitably from basic and unalterable properties of energy and matter. In the whole realm of science, whose explanations were descriptive rather than hermeneutic, teleological, or morally instructive, God *qua* God need not be invoked at all – even in the deistic, Newtonian sense of an intelligent designer Who set the universe in motion, then stepped back with folded arms to watch it unfold. To Huxley, exactly as to the workingmen, the science-religion dichotomy resolved to: *Stick to what you know*.20

Further, the time-scales of Huxley’s common things were vastly beyond those of the Church of England’s Holy Writ. These Abrahamic scriptures were regarded by Huxley and the more advanced German Biblical scholars – and as the 19th century wore on, by most broad-church C of E progressives as well – as the creation myths of illiterate goat-herders, impressionable geocentrists who saw the stars as nearby fires and the sun as peripatetic. Not for nothing did Huxley himself call these popular lectures ‘lay sermons.’ While they were made to instruct, to edify, to encourage wonder, and even to morally uplift, they made no reference to supernatural will or cause.

Huxley’s settled concepts of science and religion rarely find their way into his scientific writings at this time. Search as you may (*e.g*.) Hal’s extensive paleontological correspondence with Rev. George Gordon of Birnie, Scotland and you will find nothing but scientific terms and concepts. Priest and layman interact here strictly as men of science in quest of fossil crocodilians. Yet if the terms are explicit in these letters, the concepts are implicit: chief among them an unScripturally ancient Earth.21 In all his writings, of whatever complexity and to whatever audience, Hal says much in little: often when he is explicitly mum on a science-religion issue, “His silence bellows up and down Europe.”22

**V / 1860s: QUASI-PUBLIC TEXTS**

Away from formal scientific communications, however, Huxley was less rhetorically reticent. *On the Methods and Results of Ethnology*, published in 1865 in the massively influential *Fortnightly Review* in its first year, was founded by Anthony Trollope, one of the greatest 19th century novelists. It carried a Preface in its opening issue by Editor G.H. Lewes, Hal’s colleague (one thinks of the modern term ‘frenemy’) from the *Westminster Review*. The *FR* , which broke with its precursor *WR* to identify its authors including Huxley, falls halfway between a scientific (*i.e.* expert-to-expert) memorandum and an interpretative popularization like the Lay Sermons. In *MRE*, Huxley begins by defining the disciplines of ethnography and anthropology; he then surveys these disciplines’ current theories and past achievements. But at his article’s closing peroration, Huxley strays from the rigorously scientific into an ethnographic meta-analysis of the Biblical scripturalist-literalists. Here Huxley demolishes his opponents using analytic forms, phraseologies, and stylistic cadences that are the opponents’ own. Although the *dénouement* of Huxley’s essay is highly readable, it is in fact as structured as an invertebrate tissue.23 We can employ a technique that Huxley used so successfully in his Lay Sermons, and break down this exceedingly complex quasi-public text into its ideological and factual components, as follows:

1. THH thesis: *What conditions have determined the existence of the persistent modifications of mankind, and have caused their distribution to be what it is*? 24
2. THH explanations of thesis (all presented as ‘speculative’):
   1. Monogenist (Single-couple, single-locus, single-time origin of humanity):
      1. Abrahamic-Religionist-Edenic (held by ‘Adamites’, a THH neologism)
      2. Non-Religionist
   2. Polygenist (Multiple origins of humanity, in multiple times & places)
   3. Darwinian (Not surprisingly, THH’s favoured explanation)
3. THH conclusions

Huxley quickly dismisses 2.1.1. in a few words: “five-sixths of the public25 are taught this Adamite Monogenism, as if it were an established truth, and believe it. I do not; and am I not acquainted with any man of science, or duly instructed person, who does.”26 The non-religionist monogenist position (2.1.2) by definition accepts a single-couple origin of the totality of modern humanity, thereby establishing humanity as a single species. This must have been fertile (as Hal notes) in any subsequent male-female breeding pair.27

Huxley has four defining criteria for 2.1.2: (i) Assuming “the present condition of the earth has existed for untold ages”28; (ii) Temporal remoteness of the primordial couple far earlier than Bishop Usher’s notoriously recent 4004 BCE, a date that Victorian archaeology had already sited in Egypt’s Old Kingdom; (iii) Geographical provenance in or near the Caucasus Mountains in central Asia, followed by a radiative diaspora; (iv) Geoclimatic conditions of the various sites of occupancy being necessary and sufficient to explain all of humanity’s distributive variations. Hal rates these criteria as follows: *(i) True; (ii) Uncertain; (iii) Uncertain; (iv) False*.

His last assessment leads Huxley into a brilliant *explanandum*, applying Darwinian selection (a theory introduced six years earlier but still a hot topic for scientific and lay discussion) to explain all racial variation, potential or observed. Here the Bulldog sets his teeth. Not only does Hal demonstrate how geoclimatic conditions reward and foster racial adaptations rather than directly causing them (dark skins in sunny regions, broad flat noses in cold ones); he goes beyond Darwin to propound what later biologists termed genetic drift, the speciation of geographically isolated populations.29 It is a *tour de force* not only of popularization, but also of theoretical biology.

Huxley’s arguments are remarkably prescient for the science-religion debate, in our time as well as his. According to the Bulldog there had indeed been an Adam and Eve, even if neither would be recognizable to Victorian Londoners. Not only did our ancestors live ages ago; not only would they have been naked and all-over hairy unlike their representations by Christian artists: they need not have arisen in central Asia, as Huxley’s contemporary Blumenbach surmised. The ‘Caucasians’ who now live in the Caucasus might never have arisen there.

The fifteen decades since Huxley made his theology-shaking assertions have done nothing to vitiate them; quite the contrary. Not only have Leakey *et al.* persuasively demonstrated an ‘African Genesis’; mitochondrial DNA analysis has proven (insofar as any scientific datum may ever be proven) that everyone alive may trace a direct lineage back to one female ancestor. “And Adam called his wife’s name Eve, for she was the mother of all living.”30 Through his scientific rigor Thomas Henry Huxley F.R.S., non-religionist monogenist, unflinching enemy of ‘parsonism’, had reëstablished Eden.

**VI / CONCLUSION**

As the 1860s progressed, Huxley’s views on science and religion evolved less in content than in frequency and acerbity. As Huxley’s reputation grew among the nonscientific classes, both in Britain and abroad, he gained the confidence to grow bolder in his assertions; yet the central tenet of what he asserted remained remarkably constant. That tenet is stated with perfect clarity and incompressible brevity in Hal’s grief-stricken letter to Kingsley of 1860 September 23:

[T]he longer I live, the more obvious it is to me that the most sacred act of a man’s life is to say and to feel, ‘I believe such and such to be true.’ All the greatest rewards and all the heaviest penalties of existence cling about that act. The universe is one and the same throughout; and . . . [if] I shall rigorously refuse to put faith in that which does not rest on sufficient evidence, I cannot believe that the great mysteries of existence will be laid open to me.31

What is striking here is not just the elemental simplicity of Huxley’s belief, but its expression in religious terms. ‘Sacred’, ‘I believe’, ‘faith’, ‘mysteries of existence’: Hal’s is a *cred’equidem* that, while existential in content, is couched in Cranmerian prosody. Moreover this expression arises at a time of deep distress for Huxley, giving his proclamation enormous force. Hal must have been aware of this at some contrarian level. He was not propounding mere despair, as Kingsley feared; he was glorying in it. Throughout his life Hal saw himself as a soldier of science, and his intellectual campaign within science as a *heldenkampf*. He may have taken a perverse comfort from his uncomfortable doctrine, or more precisely from his unflinching adherence to it: “From the thing that is / My comfort is come. / Wind washes the plain road; / This is the way home.”32

I find it admirable that Huxley hewed to this stark view of reality, not merely in later life but all his life, without thereby losing one jot or tittle of good humour. Born with an ancient soul, Hal lived out his threescore and ten years as an operative youngster: curious, vigorous, and genial.

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**ABBREVIATIONS**

AD I: Adrian Desmond, *Huxley: The Devil’s Disciple* (Vol. 1 of 2-volume biography)

AD II: Adrian Desmond, *Huxley: Evolution’s High Priest* (Vol. 2 of 2-volume biography)

LH: Leonard Huxley, *Huxley: Life and Letters (Life of Professor Huxley)* (Vol. 1 of 2)

C&A: T.H. Huxley, *Critiques and Addresses*

**NOTES**

1. *Source:* [www.albert**einsteins**ite.com/**quotes**/**einsteinquotes**.html](http://www.alberteinsteinsite.com/quotes/einsteinquotes.html)

2. “This I most firmly believe.” Horace, *Odes* Bk. II.

3. AD II p. 63. “ ‘Its very well done,’ Huxley admitted, ‘but I wish he [Tyndall] had taken another line.’ ”

3a. I have adopted Desmond’s more intimate referent for THH.

4. “As Hal’s lifelong ally John Tyndall expressed it in a popular science text, ‘Every occurrence in Nature is preceded by other occurrences which are its causes, and succeeded by others which are its effects.’ That axiom forbids events without demonstrable natural origins, *viz*. miracles. As well as strict causality Huxley, Tyndall *et al.* insisted on verifiable laboratory evidence, and construed ‘religion’ as a supra-logical awe distinct from formal theology. This set of contentions constitutes the agnostic gospel through which Huxley and his acolytes would transform British science. (*Sources*: Atkinson, 2016 [3] p.3. Initial quotation: Shakespeare, W., *King Lear,* I.i. Tyndall quotation: as cited (inter alia) in *Ontario Readers - Fourth Book 1909* pp 262-269.)

5. C&A Ch.XII, *Bishop Berkeley and the Metaphysics of Sensation*, p.317

6. *Autobiography* p.16

7. *(Deleted in revision)*

8. AD I p.264

9. AD I p.270. Hooker concurred, labelling Hal’s RI appearance a ‘pity’ and a ‘fiasco.’

10. Which to my knowledge have yet to be definitively answered. This is *not* an endorsement of specious creationist arguments.

11. AD I p.269, on the *RI* lecture.

12. Pope, A., *An Essay on Man* (Epistle I)

13. AD I p.267.

14. Like Jonathan Swift in his famous self-assessment – ‘I will perhaps allow the Dean / Had too much satire in his vein.’ Note the Augustan Anglo-Irish rhyme ‘*Dane*-*Vane.’*

15. One memorable lapse being Hal’s remark that, on learning of Wilberforce’s death after being pitched from his horse, the Bishop’s brain could not handle its first encounter with reality.

16. AD I pp.270f.

16a. *i.e.* religious belief, specifically in an afterlife

17. Letter to Kingsley 1860 September 23. Cited AD I p.287; LH I p.217.

18. LH I p.216.

19. “Truth is better than much profit” echoes “Great is truth and mighty above all things” (Apocrypha 1 Esdras 4: 25). This quotation is chiseled into the limestone lintel of the [wholly agnostic] National Research Council of Canada on Sussex Drive, Ottawa.

20. There was another reason than courting popular opinion or reforming British society that led Huxley to address the less educated: the chore of rephrasing science for nonscientists was itself scientifically productive. Writing thirty years after his first successful foray into public speaking [see 1894 preface to *Man’s Place in Nature*, as mentioned in LH I p.179], Huxley reveals his motives: “Some experience of popular lecturing had convinced me of the necessity that making things clear to uninstructed people was one of the very best means of clearing up the obscure corners in one’s own mind.” Or as Einstein put it eight decades later: “No one understands anything that he cannot explain to a six-year-old.1”

21. *See* Bibliography (Collie, M.)

22. Bolt, R., *A Man for All Seasons*, V.ii. Spoken by Bolt’s Thomas Cromwell.

23. C&A pp 159-166. “There is one art / No more no less / To do all things/ With artlessness.” Piet Hein, *Gruks* [1962]

24. C&A p.159. ‘Persistent modifications’ means races; ‘distribution’ means geographical location, plus cognitive, cultural, and technoscientific variance (all putative as at 1865).

25. “97.3% of statistics are invented” (Trad.)

26. C&A pp159f. Hal of course is guilty of begging the question, as ‘duly’ can mean only one thing here, *viz*. ‘non-Adamite.’

27. *H. sapiens* breeds no mules (sterile hybrids): it is understandable how theologians ancient and modern see us as intentionally created to “increase, and multiply, and fill the earth, and subdue it.” Or as an agnostic biologist of my acquaintance once remarked: “Humans are omnivorous, intelligent, adaptable, fecund, hardy, and utterly unscrupulous. That defines a vermin species.”

28. C&A p.160

29. “[A]s these rude and primitive families were . . . impelled by encroachments of sea or of marsh, or by severity of summer heat or winter cold, to change their positions, what opportunities must have been offered for the play of natural selection, in preserving one family variation and destroying another!” (C&A p.165).

30. Christian Bible (RSV): Genesis 3:20

31. LH I p.217.

32. Laurence Binyon, *The Way Home* (1943, in the poet’s final year)