

# SCIENCE AS THE ENEMY OF TRUTH

Hilaire Belloc: Essays

Science cannot be opposed to truth, for it is no less than a part of truth itself, as discovered in a particular sphere. But those who practice physical science may have a corporate spirit which is warped, opposed to true philosophy and therefore to beauty and to goodness. That is exactly what has happened in the development of physical science and of the so-called “scientific” criticism of documents during the last two centuries. The misfortune has happened because the advance in scientific method came after the break-up of Europe and of our common religion. The Process is now reaching its climax in an effort to persuade men against the belief in a beneficent conscious omnipotent Creator, the moral sense and the freedom of the will.

## I

### “Science is the enemy of Truth.”

That sentence reads absurdly, for it is a direct contradiction in terms.

The definition of science is: “A body of facts ascertained to be true by proof such that we cannot admit their opposite.” Thus the fact that water boils when we subject it to heat is a piece of science. The fact that man must have air to breathe if he is to live is also as much a piece of science as the most complicated or the newest result of chemical research.

The word “Science” today is commonly used, and will be used here, in the more restricted sense, as meaning the body of ascertained fact relating to the physical world; to the behaviour and history of animate and inanimate objects. The word “scientific” will be extended from physical science to the exact scrutiny of documents, to the examination of records, political and social, and to the critical analysis of literary remains.

The whole point, then, of science being that it is a body of ascertained truth, manifestly the assertion that “Science is the enemy of Truth” makes nonsense.

Yet many men today would by implication at least show their agreement with that phrase, “Science is the enemy of Truth”; and the number of those who feel this more or less consciously is increasing. On seeing a passage beginning, “Science has proved . . .” or “There is no scientific evidence for . . .” or “Examined in a strictly scientific spirit . . .” and so forth, men are becoming more and more predisposed to quarrel with what follows. They are filled with an “I know all about that!” feeling. On hearing of some method that it is “Scientific” they are at once prepared to find it leading to ridiculous conclusions. They do not feel instructed; they feel warned. Habits of eating, clothing and everything else suggested in the name of “Science” they constantly discover to be inhuman, degrading or simply silly. The term “Scientific” applied to some recommended habit is beginning to have something grotesque about it, as likely to be in opposition to the general conclusions of mankind and our human common sense. As for the name “Scientist,” it has fallen on the worst fate of all. It is becoming something of an Aunt Sally, and to call a man a Scientist is perilously near making a laughing-stock of him; unless you add the word “distinguished,” which turns him into a statue.

Further, this word “Science” and its derivatives is beginning to be associated with unreliability. The high priests of science yesterday loudly affirmed as eternal truth what today they have to be silent upon because it has been proved false. Yet the new supplanting doctrine is as loudly affirmed today as was the discredited one yesterday—and as it will itself be denied again tomorrow.

Under the influence of such experiences, although few men will as yet pronounce the words, “Science is the enemy of Truth,” yet more and more men practically agree with that statement in their emotions. More and more are they associating the word “Science” and its derivatives with the idea of being bamboozled, or annoyed, or presented with incomprehensible absurdities or with truths solemnly affirmed to be eternal and yet bursting at frequent intervals, or with what is manifestly contrary to experience. Now, what is manifestly opposed to experience, or absurd, or unstable is clearly at issue with Truth.

Yet I say again, the phrase “Science is the enemy of Truth,” is a contradiction in terms.

How, then, has this state of mind arisen? Why can one write down with the certitude of receiving so much hearty, though often only indirect, agreement, "Science is the enemy of truth"? To understand the matter let us write down another simple phrase:

"Drink is the enemy of health."

Here is a phrase to which millions of men and women will give enthusiastic support. Yet on the face of it this phrase also is a contradiction in terms. Health is a term signifying the perfect physical functioning of the human body. Drinking is a term signifying the absorption of liquid by the human body. But to the functioning of the human body at all, let alone perfectly, absorption of liquid is essential. Man must drink to live, let alone to keep his health. Men kept from drinking, as shipwrecked sailors are, die mad in a short time.

How, then, can you say: "Drink is the enemy of health"?

To those who would object to the phrase the reply would come at once: "You know well enough what I mean; the drinking of stimulants is the enemy of health." But to this reply, in turn, will come the answer: "Not so; we have all known masses of people who drank wine and beer regularly, and were perfectly healthy."

To which would come the further answer: "Yes; you do know what I mean. I mean that the drinking of stimulants to excess is the enemy of health."

So there we have it. All language is shorthand; any sentence to express reality must be modified indefinitely; and so it is with the sentence: "Science is the enemy of Truth."

For this let us write, "The Modern Scientific Spirit is the enemy of Truth," and we shall have it pat. The modern scientific spirit as applied to daily practice, to life, and to letters, and, above all, to religion, is the enemy of truth.

This is my thesis, and very important it is. The Modern Scientific Spirit being the enemy of truth, is the enemy of right living and of human happiness, and if it is not tackled, humbled and set right, will lead us to misery.

## II

The Modern Scientific Spirit may be defined as the practice of Science under a false philosophy; that is, the research and establishment of ascertainable facts in the physical world but the application of those facts in an irrational and perverted mood. In other words, the Modern Scientific Spirit is always looking for, and finding, facts in order to misuse them.

Begin by remarking an important historical point; the increased interest in physical science which has been the mark of modern times and the increasing use of what are called "scientific methods" in the writing of history and in the critical examination of literary documents, did not produce the false philosophy under which it now works and which is doing all the harm. It found the false philosophy well launched, fell under its influence when young, and has remained captured by it ever since.

In Science, physical, documentary, or of any other kind, there cannot be inherently a false philosophy, for truth does not contradict truth. Mankind has been at Science since men have been men, and within their limited range the animals are practicing science all day long. A bird which gives up at last the attempt to fly through a glass window has arrived through experiment and conclusion at the fact that the glass is not penetrable by him and ceases to entertain the idea of the opposite. The burnt child who dreads the fire has done a little work in Science, so has the whole human race in its tremendous achievement of our original civilization, which is incomparably greater, in extent as well as in quality, than the added results of the last few generations. Whoever first cooked meat, or first framed something like a plough, or first carved an image, was doing a bit of scientific work: discovering and establishing fact by experiment and applying that fact to the uses of mankind. There was not and could not be anything of perversion or falsity attached to so necessary, permanent, original and enduring a human process, anymore than there could be to breathing or to sleeping.

In particular, we may note that the chief characteristic in the particular philosophy of the modern scientific spirit, Monism—Doom—is as old as the hills. The denial of Free Will in the universe, the subjecting of all happenings to necessary fate, was not begun by modern biology. It was a perverted mood into which men tended to fall from the earliest recorded times; and during the break-up of our Christian culture four hundred years ago. Calvin was the powerful prophet of it long before anything that can seriously be called "modern" physical experiment began.

Spinoza, in another way, was also a prophet of it, long before modern physical research had taken on its later characteristic extension.

And if this is true of the chief error, it is true of the accompanying minor errors. Deism [or Pantheism], Rationalism, stand to the development of the modern scientific mood not as children, but as parents. Having gone off the rails of sound philosophy because the social forces around them shepherded them into the wrong way, the pioneers of modern physical science [for the most part] started under these misconceptions and read them into all they did, handing on the tradition to their followers. Bad reasoning and a bad application of what they found were not the product of what they found. They did not [for instance] gradually come to disbelieve in the possibility of miracle because they had proved it impossible by experiment. They disbelieved in it already, before they began experimenting, and were confirmed in their disbelief by observing, with owlish wisdom, that miracles did not commonly take place in the routine of physical cause and effect. They were ready to be confirmed in their mistake, and the particular work in which they were engaged especially lent itself to so confirming them.

### III

The capital, the fundamental sin of method [not of creed] in what we call the Modern Scientific Spirit, is the substitution of Numerical Synthesis for Integration.

Other accompanying errors of method allied to and in particular proceeding from this capital error shall be noted; but before proceeding to them it is necessary to explain the terms used and to show why the substitution of Numerical Synthesis for Integration as a method of arriving at truth is calamitous, and, far from leading one to truth, debars one from attaining it.

We mean by integration that faculty in the human mind whereby it is able to combine an indefinitely large number of impressions [colloquially we say: "an infinite number of impressions"] in order to arrive at reality.

For instance, if a man seeing another man coming towards him along a path says: "Here comes my friend, Brown," he is quite certain of the truth of what he says, and he is right to be certain. His mind has not created an image, but appreciated an external object, and his judgment is coincident with that object.

But he has not noted every detail characteristic of Brown. He has not catalogued one by one the gestures and the gait, the elements of the contours and all the rest of it. He has received an indefinitely large number of indefinitely small impressions and combined them, without addition, into one immediate whole.

It is the same with a taste, with a colour, with the recognition of anything. A man sees the truth that a distant vessel is of such and such a rig, if he is familiar with that rig, though the indications, if he were to set them down, would seem each individually quite insufficient, and even any sum of them insufficient. Or take what is perhaps the most lucid example of all, the recognition of a type of tree. A man looking at a tree a good way off says with complete certainty, if he is acquainted with such trees: "That is an oak." He cannot see the individual leaves, and if he did he would be a great fool to go over them one by one and not be sure of his oak until he had examined them all. He would be a great fool if he went on to say: "Well, the leaves seem to be all right; but now I must look closely at the bark and I must have a section of the grain, and what about the shape of the boughs?" He, as we say, "knows an oak tree when he sees one." And that "knowing" is a process of integration. It is the immediate combining of an indefinitely large number of indefinitely small indications into one short flash of communion with reality.

The metaphor of "Integration," the best I know in this connection, is taken from mathematics, in which science the word "Integration" is used of arriving at a result through the consideration of what are called "infinitesimals"; an infinitely great number of which, for instance, give the formula of a curve.

This God-given faculty of Integration is the just and only method of perception we possess: I mean, of perception sufficient to bring us into touch with reality and to recognize a thing. It is our only way of truth. We use it in every moment of our lives, and in proportion to our vigour in using it are we sane.

Integration lies at the basis, not only of our recognizing things, but of our judgment upon character and events. Thus, we say that one man "is of good judgment," because he integrates well, though he may not be able to give reasons for his judgment; and another man "of bad judgment," because he integrates badly, although he piles up reasons and calculations over much. Hence, also, we say that good judgment is based upon experience, and hence do

we rightly mistrust a man's judgment in practical affairs—other things being equal—when he is inexperienced in the particular matter involved, however well he knows the theory of the business.

Now, the Modern Scientific Spirit has more and more fettered itself with a different, false and almost contradictory method of arriving at truth.

It adds together numerically a comparatively small number of ascertained truths with regard to any object and then propounds its conclusion, as though by possession of these few gross certainties it had a sufficient basis for that conclusion. What is more, it very impudently puts forward such a conclusion against the sound conclusion arrived at by the powers of integration present in the common man.

I shall never forget a personage of my early youth who gave us boys lectures in chemistry [for the honour of my old school I must say that it was not at this school that they were given]. He came out one day with this enormity: "A diamond is therefore" [Oh, glorious "therefore"!] "the same thing as a lump of coal." Why, a man might go to jail for pretending that they were the same thing! A diamond is not a lump of coal, and a lump of coal is not a diamond. The Science of this lecturer was the enemy of Truth.

Upon one line of analysis, insofar as the gentleman in question had knowledge, a lump of coal gave the same results as a diamond. They both, along that one line of analysis, presented themselves as what he called "carbon"; and "carbon" was what he called an "element," and an element consisted of hypothetical "molecules," in which there was but one kind of hypothetical "atoms." The atoms he was quite sure were atoms of carbon, and therefore [Oh, glorious "therefore"!] the diamond and the carbon, whose difference stared him in the face, were the same thing. But we infants knew very well they were not the same thing. Nor are they the same thing. Though most of us were of the middle class, we had seen diamonds—and with coal we were all familiar. We had done our little integrations in these affairs, and we knew that a man who could call a lump of coal a diamond would call cricket, football. Along one line of analysis cricket and football are both games. Along another they are both played with a ball. Along another they are both of English origin. In each case "Experiment on independent lines confirms the hypothesis of identity."

Nevertheless, to affirm identity between them is to talk rubbish.

The Modern Scientific Spirit is at war with common sense and with universal judgment—that is with truth—principally because it has fallen into this false method. But there are many other allied errors in method which it commits.

It is perpetually presenting hypothesis for fact. In the matter of interpreting [not establishing] documents the whole of the Higher Criticism is a mass of that. Three quarters of the terminology of modern chemistry is a mass of that, and modern geology reeks with it. It was not so long ago—a lifetime at most—we were told, not as an hypothesis, but as a fact, that the earth was a molten mass with a thin crust, upon which we walked about precariously, as on an egg-shell, the boiling stuff bursting out at volcanoes. It was an hypothesis to explain many evident phenomena, including the increase of heat with depth, but it was only an hypothesis—yet it was put forward as an ascertained truth. Today the "scientific" earth is fairly solid. Tomorrow it may be hollow.

Again, the Modern Scientific Spirit revels in false authority; that is, in substituting for proof assertion backed by a name.

I have under my hand as I write a very amusing little instance of this. Common sense reasonably presumes from tradition, from a knowledge of how books are made, from an appreciation of the tone and sincerity of the writer and so forth, that the Acts of the Apostles were written by one man, a companion of St. Paul, and that companion St. Luke, the author of the Gospel. Yet I find seriously given, as a sufficient rebuttal to this process of integration, the following formidable roll-call of gentlemen, "Hilgenfeld, Holtzmann, Overbeck, Hansrath, Weizsacher, Wendt, Schürer, Pfleiderer, von Soden, Spitta, Jülicher, J. Weiss, Knopf, Clemen, Konigsmann, De Wette, Baur, and Zeller." I know nothing of their work; I do no more than copy a list from a received text book, but it is a typical list. I am asked to believe the Acts of the Apostles to be a mixture of forgery and patchwork, and when I ask for rational proofs I am given a magic formula of oracles. It is no good saying that all these worthies have laboured. I'm sure they have—too much. The point is that this citation of mere names is the common form of Science today, and on it we are expected to pin our faith—in the irrational.

Again, the Modern Scientific Spirit, you will be distressed to hear, is perpetually using the same word in two

senses, one of the commonest errors into which dolts have always fallen. An excellent example of this is the use of the word “Natural Selection” to mean two totally different things.

- (a) The undoubted truth that adverse conditions tend to kill off a type and favourable conditions tend to continue it.
- (b) The creative power of this process accounting for all organic differentiation.

Thus, a biologist of repute at Oxford, having been challenged for an actual case of Natural Selection in the second sense, gave the instance of black moths which lived side by side with white moths in a certain wood. The trees of the wood were dark pines; with the result that the white moths had a bad time, being easily picked off, while the black moths flourished. But when the trees of the wood were gradually replaced by light colored birch trees, it was the other way about; the white moths flourished and the black moths diminished. Surely it hardly needed great learning to expect such a result! But the Scientist mixed up that obvious result with a totally different thing, to wit, the turning of the black moths into white moths through the new birch plantation. That was what he had to give an instance of, and he thought in his muddled way that what he did give was on all fours with the instance required of him.

Indeed, this use of the term in two different senses during the same argument is repeated constantly, as when you get the word “health” used to mean now what it normally means, and again, what it may connote, but does not necessarily connote, longevity. As in the phrase: “The climate was thought unhealthy, but scientific observation has shown that the death rate is lower than in surrounding districts.”

We have another even more common example of it in the dreadful muddle with the word “creation,” as in the phrase: “Modern Science has made the idea of creation inconceivable, for we now know that living organisms invariably proceed from other living organisms.” Mark the mixture of ignorance and indolence in a sentence like that and admire the foison [abundance] of folly in it! It uses the word “creation” in two quite distinct senses, to wit, mediate and immediate creation, as though the two were identical. It affirms that we know what we don’t know and perhaps never shall know. It ascribes to a powerful Mumbo-Jumbo called “Modern Science” a marvellous new discovery which has been a commonplace with the whole human race from immemorial time—the fact that in general experience you only get chickens from eggs.

The Modern Scientific Spirit revels in unproved and unexplained postulates; as in the case of Renan, who at the opening of his book on the history of the children of Israel [I quote from memory] tells us point blank that the human race did not arise at one place but in many. The postulate that physical cause and effect must follow the same process in any place and at any time runs through the whole of modern scientific assertion. It is reasonable enough, but neither is it self-evident nor is demonstration attempted. It is admitted, of course, that all proof must have its postulates. You always come back at last to something which must be held and cannot be proved. But even so, you can and should give reasons why you hold it, although those reasons are not of the nature either of experimental or deductive proof. But nine times out of ten your Modern Scientist puts forward his postulates, by implication at least, in circular fashion, basing them upon the conclusions drawn from them. For instance, he postulates that light behaves outside this world as it behaves here. But his confidence is based upon experiment made here. The least he could do would be to say: “I postulate—for I cannot prove it—that light follows the same laws under non-terrestrial conditions as it follows under these conditions—where alone I experience it.” But he hardly ever does that. Huxley was great enough to do it, but Huxley was exceptional. The run of modern Scientific writing takes its form of faith for granted **and does not even know that it is a faith.** [emphasis added]

Yet another error, and one exceedingly common in the action of the Modern Scientific Spirit, is the confusion of categories; and a bad mark of stupidity it is, since the chief mark of intelligence is the distinction of categories.

For instance, there is that perpetually recurrent error of confusing proof with analogy, as when the scientist tells you that a general similarity of body-structure in different animals proves a common ancestor. Then there is confusion of certitude in one process with certitude in another; for instance, the confusion between certitude in a mathematical identity with certitude in an observed physical phenomenon, as when a man says that we are “as certain the earth is round as that two and two make four.” There is also confusion between the categories of things immediately observed and things inferred, giving to the last the same degree of certitude as to the first; as when one confidently assures you that a prehistoric being of whom he has but a handful of broken bones carried on like a known contemporary savage.

There is the error of regarding a long chain of hypothetical conclusions as equivalent in strength to the best

established link in the chain, instead of the strength of the weakest link—and so on. But the worst error after that original sin of substituting numerical synthesis for integration is the closely allied error of assuming universal knowledge.

Now, this folly will, I know, be indignantly denied in a chorus by all those who commit it. As for assuming universal knowledge, they profess themselves to be groping from one ascertained truth to another; to be of all men the most ready to admit their ignorance of what is not in their province, and the immensity of the field still remaining for exploration.

Of course, they are not conscious of their error; if they were they could be cured of it. But see how they go to work! One will tell you that a bottle of Richebourg of 1921 [such as may be drunk with profit in the Three Pheasants at Dijon] is “the equivalent” of a flask of whisky, because the “alcoholic content” is the same; presupposing so universal a knowledge as can put in their right order of importance all the other things in which the two liquids differ, leaving the “alcoholic content” the outstanding mark. Another will tell you that the climate of one place which makes you ill must be the same as the climate of another [in which you thrive], because all our existing means of measurement give us similar results for the two in heat and cold and damp and barometrical pressure and the rest of it. This is to presuppose that there are no other elements in climate which we cannot measure, or that if they exist they are unimportant because we cannot measure them. It is to presuppose that the speaker knows all there is to know in the matter of climate.

#### IV

In social practice the fruits of a false philosophy are more important than the false philosophy itself. The greed, ugliness and vice of a Calvinist town affect us in practice more than a misstatement on Election and Efficient Grace. So the mischief done by the Modern Scientific Spirit is most felt, not in its errors of reasoning, but in the established school or fashion under which its exponents are moulded. The exponents and imposers of that Spirit bear certain unmistakable characteristics throughout the modern world, and one knows them for what they are as one knows a jockey or a prize fighter; they are one kind. To point out that there are exceptions: that many of them have humour: that some even are capable of doubting whether they are so certain, after all: that great names among them are even of a kind quite opposite from the general run, does not contradict the truth that they form a general body, and almost a corporation.

There is nothing extraordinary about this. What is extraordinary is that it should not be yet fully recognized, though I think it is being more and more recognized as time goes on. There have always been fashions or schools of this sort. There have always arisen in the group of learned professions a corresponding group of characteristics, of underlying presumptions in thought, of effects on conduct, which have no necessary connection with the subject studied. Thus, your classical scholar in one university has his mark, “the stamp of the trade,” your classical scholar in a foreign university will have perhaps a somewhat different mark, but a mark of the same species.

For, indeed, Classical Scholarship as the Renaissance advanced, developed a certain body with which to clothe its soul. One may curiously inquire how it is that a wide and precise reading in the dead languages produces these characteristics, just as I shall shortly examine why certain characteristics in the average modern scientist have arisen; but one must everywhere recognize that these are concrete attributes not directly connected with the abstract functions of a trade, but standing to it as clothing does to the body.

In the case of the Classical Scholar a few of these outward characteristics may be evil, some of them are rather ridiculous, but most of them are estimable, and many of them excite our ardent and just admiration. It is evil in him to think scholarship greater than virtue; it is ridiculous in him to exaggerate the importance of making false quantities in Latin. It is estimable in him to have so much taste; it is most admirable to be filled with the profound and vivifying culture which the Classics alone can give—for it is impossible to be steeped in the great works which lie at the roots of our civilization and not be enlarged and nourished thereby. But the corporate marks of the modern Scientific exponent are not, for the most part, admirable.

What is admirable in him are not marks peculiar to his corporation. One is accuracy in detail. Another is industry. Another devotion to the research undertaken. Another is candour: an error having been committed, it is always

acknowledged in what is called the "Scientific world"; further experiment, modifying what has been hitherto accepted, is not usually boycotted. Though there is necessarily jealousy among scientists, as there always will be among the members of the same profession, there is more generosity than in most callings. And the last and by far the finest in this list of the better characteristics in our Scientists is an indifference to wealth, such as you may find, indeed, in most men absorbed in any occupation, but particularly here. There are exceptions, but they are rare. It is almost a commonplace that the robbers of finance can prey at will on the Scientist, and it is to the honour of the Scientist that it should be a commonplace.

Unfortunately there are many other less admirable characteristics which very strongly mark the Scientific corporation as a whole. I think it will be of interest to catalogue some of these seriatim.

First, I remark a set of characteristics in them exactly corresponding to what the Scientists themselves used to denounce as "priestcraft"; what may be called the "Mumbo-Jumbo" group—and Heaven knows it applies a great deal more to the scientists than it ever did to the priests of any false religion.

Part of this is the "Superior information" business: telling the layman that he cannot follow the difficult process by which a result has been arrived at, and that therefore he must take it on trust. There is also something of an hieratic language, but of a very undignified type: litanies of words barbarously compounded from Latin and Greek, sometimes in a mixture of the two with the vernacular. Part of this is no doubt necessary; one must have technical terms, one cannot be forever explaining. Still, there is a very damnable plague of what plain people call "long words."

There is also the Marvel. Here the scientist has a most powerful instrument, the more powerful that it does not pretend to depend—as in the old Pagan priestcraft—upon an irrational process, but upon methods which anyone can use if he will give up his time to them. The Scientist will be forever showing us that things are not what they seem, expatiating upon the astonishing character of Scientific achievement. Thus, I read in a book which has sold by scores of thousands under the name of a chief scientific authority in the department of physics, that the hypothetical "electron" is "at once everywhere and nowhere"—and this nonsense is swallowed whole by people who smile at the mystery of the Trinity.

Even as I write, my daily paper publishes the conclusion of a Scientist that after accurate measurement of sound he can show the London of Motor Buses and the Pneumatic Drill to be a haven of quiet compared to the old London of Hansom Cabs.

From this solemn hieratic humbug, comes the habit of speaking of fellow pundits in terms of reverence and awe, calling upon us outsiders to worship them, ascribing to them all manner of rare virtues, and even, when things go wrong, dubbing them "martyrs."

There is by the way no more absurd example of "Scientific" Mumbo-Jumbo than this last. A "martyr to science" should properly mean one who bears witness to scientific truth by submitting to suffering rather than recant his conviction. In this sense men are indeed martyrs to scientific truth who sufficiently anger the Scientists by pointing out their mistakes. Samuel Butler in his day was a martyr to science, in that he suffered for being a pioneer in challenging the folly of the Darwinians. But our new priesthood does not use the word "martyr" in this sense at all. They apply it to a man who is blown up in the course of a chemical experiment, or who dies of a disease caught in a medical one. And as for "the gulf between clergy and laity," which was made such a grievance of against real priests; it is nothing to the gulf between the ignorant herd and Scientific Persons. They show a corporate and almost universal contempt for the man who has not had the leisure to go through all their studies, but who can bring valid criticism to bear on their laughable conclusions; they do not meet his criticism in its own field, they appeal to Status, to their own necessary and unapproachable superiority.

I have found that very horribly true in my own department of history. Your "Scientific" historian having concentrated on one tiny section, on which he has become, he believes, an expert—at the expense of all other knowledge—is always disdainful of, and sometimes furious against, the man with a wide range of general knowledge, who is properly equipped for exposing the expert's absurdities. Thus, I have known not a few specialists in medieval documents who have argued by the volume on the size of the Virgate [approximately a parcel of land measuring 30 acres], and who had no idea what a team could plough in a day and even [what is really monstrous] were ignorant of what is meant by the word "fallow." I have found an expert in other medieval documents who assured me that a city—

a city of the fourteenth century—with half as many parish churches as London, with walls three miles round, and so crammed full of people that it had burst out into suburbs beyond those walls, had less than six thousand people living in it. The other experts were all with him. How did they fall into such nonsense? By divorce from common sense and relying on a document. There happened to have survived one fragmentary parchment which it was imagined gave a full list of the male inhabitants of over fourteen years of age in one district. On that basis was the myth built. When it was pointed out that a list comprising all males over fourteen would have the same surnames repeated over and over again, and that this list did not show such repetition, they boggled. The “Scientific” mind was astonished to hear that unless surnames are frequently repeated in such a list it cannot be a complete list of males.

Not a long time ago, when the scientists were still talking about an imaginary stuff called ether, they gave it qualities which were contradictory and the sum of which made arrant nonsense. It was, as a great man has well said, no more than “the nominative of the verb to vibrate.” But when the plain man pointed out that they were talking nonsense, how angry they were! They must be glad, I think, to have scrapped the thing. It was high time.

They suffer from a fatuous glory in perpetual revelation and ceaselessly proclaim to the common man hidden treasures suddenly revealed—discoveries with which their unfortunate audience have already been familiar for a lifetime.

The best example, I think, of this is the original and still prolonged scientific attack upon the Gospel of St. John; which we are solemnly assured is quite different in tone and manner from the Synoptic Gospels. We are bidden to open our eyes to this revelation, to rejoice in the new and dazzling light—whereas I suppose there was not one of us, though he might not know any language but his own and might have read but half a dozen books outside his Testament, who could not find out for himself in ten minutes that the tone and style of the Gospel of St. John is different from that of the Synoptics.

But there are plenty of other instances. It is only the other day that in the department of chemistry a great authority announced to the world in clarion tones that profound research had proved margarine to be less nutritious than butter.

Yet another scientific authority, after duly making the experiment upon a dozen selected typists [male typists let us hope!], announced his discovery that a little “alcohol,” as he called it [I will bet it was whisky] stimulated them at their work, but a good deal more made them dull and inaccurate, while a still larger dose [he gave it all in decimals of centilitres] rendered them perfectly incapable of typewriting at all.

But apart from the weakness of the Modern Scientific Spirit in playing at Pontificals, there is a weakness of logic. They mistake accumulation of items, irrespective of weight, for cogency; thus, having found one relic of the past which may or may not be of such and such an age, they argue as though to find thousands of such relics would make the guess at the age more accurate. Again, when they set out to sustain a theory they arrange their evidence in a shamefully irrelevant fashion, which plain reason condemns. In biology and anthropology they are specially guilty of thus manipulating proofs to fit theory, instead of testing hypothesis by experiment, which is their profession.

Not one, but a hundred, first-class authorities on anthropology give us detailed accounts of men’s behaviour before recorded history began. In most of these accounts man is described as something repulsive, the better to confirm the reader’s vanity. In all there is drawn a picture of something which the writer never saw and never knew, his inferences for the making of which are of the flimsiest kind, built, some of them upon conjecture, most of them upon nothing; yet the stuff is put forward as confidently as though it were the description of a real experience, in a contemporary place, of things which the writer himself had seen and heard.

There are innumerable examples of this sort of thing. The late Andrew Lang had plenty of fun with Fraser’s Golden Bough, and its hypothesis of the “Sacrificed Divinity Royal.” He showed how good evidence, doubtful evidence, and no evidence at all were all put on a level, and how the object of the writer was not to judge by evidence between various possibilities, but to force evidence for a preconceived thesis. Indeed the very soul of this exceedingly unscientific sort of science is forcing facts to fit theories; and any theory can be made to look true if you ignore evidence against and arrange the evidence in its favour cumulatively instead of giving it in the order of value. Indeed, the Golden Bough is a feast for satire.

I could have shown you some years ago an exhibit in one of our scientific museums where a row of skulls several yards long ran in series like a railway train, from a very flat little thing at one end, which was that of I know not what

ape, to a big round thing at the other, which was the skull of I know not what modern criminal or Saint. There was a long ladder of gradations in between, so that the whole row proceeded charmingly to the desired end of suggesting that they had come in succession by regular development from first to last. It was most convincing—because the arrangement was artificially made. Had it been naturally made in order of time or of place, or in order of resemblances in the rest of the skeleton, it would have produced a very different effect.

And talking of this, I remember another series abroad, where some typically “Scientific” dealer in comparative religion had set on parade a regiment of little statues, each representing a mother with a child in her arms and ending up with a glorious specimen of Our Lady and the Infant Jesus, a triumph of the thirteenth century. Here again there was the most carefully continuous arrangement, the object being to “prove” that the reverence we pay to the Mother of God was as false as the reverence the most degraded savage had paid to his grotesque fetish. Even had the order been genuine, it would have proved nothing of the kind; it would only have meant that as religion must be expressed in certain symbols there will be something in common between the symbols of the false religion and of the true, and that there is in every false religion, even in that of the materialistic scientist, something of reality. But the order was not genuine; it was artificial and false. Some of the statues had nothing to do with any religion but were natural representatives of a familiar group. Others were from family shrines where the representation of a mother and child would be equally natural. The whole series was not arrayed in order of time or of place but only so as to suggest that the Divine Mother and Child are not Divine at all, but man-made—as statues are.

We reverence Our Lady because she is the Supreme Mother, the Mother of the Incarnate Word; and the whole meaning of the Incarnation is that it is human as well as Divine. We represent Our Lady with the Little Lord in her arms in order to emphasize the union of the human and the Divine which the historic event called the Incarnation means. A Pagan moved to worship will naturally yearn for a similar union of the human and the Divine, and though he has it not he will symbolize his desire. His desire will call up a phantasm, which in our case is no phantasm, but a reality. All this the scientific gentlemen who artificially arranged the row of statues never allowed for and probably never heard of.

There is one more head to be added [there are many more, but one most important], the Modern Scientific Spirit has lost logic, and so remains blind to proportion and therefore ignorant of essential things. It not only abandons logic, but sneers at it. It has produced in its votaries an open negation of reason, presuming an opposition between logic and reality. It is this abandonment of reason which leaves them contemptuous of theology, the highest intellectual exercise of the human race. And it is through their consequent blindness to scale that the Scientists are contemptuous of the humanities and of exalted things.

Now, if at the end of such a catalogue I be told that it is an outrageous caricature [and I am sure I shall be told that], and if in proof that it is a caricature there be named to me one exception after another—a few Modern Scientists who seem to have none of these intellectual failings, some who suffer from certain of them but not from others, and so on—I answer that, by the same process, you could make out any general descriptive category of Professional Character to be false.

Take my own profession, that of letters. It can justly be brought against us writers, and particularly against those of us who wish to be thought poets, that we are vain and touchy, and that we put art before morals. There are plenty of other heads in the indictment against us, but those two are the main ones. They are pretty bad—also they are perfectly true.

It is of no consequence to tell me that poet Brown, now happily dead, was thick-skinned, or that Poet Smith, still living, is humble, or that Poet Jones, rather than offend good morals, destroyed his best work and remained obscure. The truth is true of the mass of them; we have today such a herd of poets caracoling about, and such a vast army of prose writers crowding the marketplace, that we can generalize with certitude; my profession as a whole is vain, touchy, and careless of morals.

So with the exponent of the Modern Scientific Spirit. So with the man who is the typical Modern Scientist. We are always hearing that the true Scientist is distinguished for the virtues opposite to those vices which I have just catalogued. The true scientist is particularly humble; he never affirms a thing as certain until it is proved beyond the shadow of a doubt, and he always gives his proofs. He never quotes a mere name as authority. Pseudo-scientists and

mere popular writers on Science may go on like that, but the true scientist doesn't. I am afraid this true scientist is like "Nature's gentleman" and the "moral victory," the first of which is rarely a gentleman and the second never a victory. The Modern Scientific Spirit is, in the main, as I have described it and its exponents; its priests of lesser and higher degree suffer from those errors in mental attitude, in method, and in intellectual process which make their teaching the enemy of truth.

## V

Let us ask ourselves how this tone of mind grew up. What influences were at work to create this lamentable Modern Scientific Spirit? To seek an answer to such a question is of practical utility, for you cannot attempt to remedy an evil until you have understood it, and you cannot understand it until you have some knowledge of its causes.

The causes in this case, being buried in that profound and multiple thing, human character, largely escape us; but some main causes I think we can trace.

First we have the mechanical process which in the case of documentary criticism consists largely in mere counting; and in physics in the mere establishment of regular recurrence.

That the scientific worker should be limited to this tedious and lifeless round is necessary. He should be pitied for being under that servitude, not envied for it, still less admired for its effects upon him. Subjection to such a mechanical round is in the very nature of his trade. It is as inevitable to his work as muddiness is inevitable to a hedger and ditcher. If he could take it humbly, and if the man who is perforce occupied in this mechanical life admits his limitations, no harm is done to him or his readers; on the contrary, he is very useful, he is adding to our stock of knowledge. But if he allows the worst effects of such a life to warp his philosophy the result is ill indeed.

Thus, in the case of the Modern Scientific Spirit applied to documentary investigation we have such examples as the following [let one stand for a thousand]:

The writer is setting out to prove the favourite "scientific" thesis that a certain portion of Holy Writ was not set down by one writer, but is a sort of quilt or patchwork in which there are "strata" from various hands—any number of them, so that it be not the natural number one.

The critic proceeds as follows:

"In the 480 verses of Chapters I to XII and in Chapter XV there are only 188 words which are not found in the rest of the book and in the corresponding gospel. According to this proportion, only 38 such words should be discoverable in the verses of the 16<sup>th</sup>, 20<sup>th</sup>, 21<sup>st</sup>, 27<sup>th</sup> and 28<sup>th</sup> Chapters. But the actual number is three times as many. Again, in the first-named and larger part of the work there are 657 words [excluding proper names] which are wanting in the corresponding gospel. Therefore in the lesser section, which is about one tenth of the whole, we should expect about 66 such words; whereas there are 162, nearly two and a half times as many."

From which solemn piece of elementary numeration it seems that a whole string of so-called authorities have decided that the lesser part of the document proceeded from another hand than the greater part!

Face nonsense of this kind openly and tell me what you think of it? What you will think of it if you have ever written anything creatively yourself I know very well; the idea that a writer always uses the same vocabulary and always in the same proportion is nonsense. But it needs no personal experience in authorship to see what rubbish the whole thing is. Apply the same test to almost any living writer at random and you will see it fail. Besides which, are books, especially vivid books, written as a fact in "strata"? Are they not, must they not be, in the nature of things written by one author? Of course they must! Yet the method has been applied, not only where the object was to destroy the authority of Holy Writ, but where it was only an object to destroy tradition at large. We have been asked to believe that great poems of antiquity were written in this composite fashion. How is it no modern ones were?

With the scientific spirit in physical research there is the same mechanical taint as in documentary criticism, though in this case it is not of its nature ridiculous, and only does harm when it affects the reason. The scientist engaged in physical research must be forever watching identical recurrence of cause and effect, always seeing the same results following upon the same preliminaries. Mechanical habit in this case breeds in him a blindness to the extent of will and of diversity [of which will is the cause] throughout the universe.

It need not blind him. He can say to himself: "When I conduct a new experiment, I am only watching what is normal in any natural sequence. It is no new discovery to find such sequence invariable in my new experiments; it is

equally invariable in the oldest experiments. Man has known from the beginning that if you threw a stone into the air it would fall to the ground. But that has not prevented him from believing it possible that an occasional miracle might arrest its flight.”

I say that the daily habit of watching invariable phenomena need not make the mind itself mechanical nor blind to the multiplicity of will, but presumably it tends to do so, especially if it be not corrected by an ambient true philosophy, but predisposed to a false fatalistic one.

Next the scientific practice breeds a habit of certitude which the vulgar would call “cocksureness.” The great mass of the results arrived at are certain, demonstrated over and over again, and never failing. There follows a tendency to two particular habits in the mind thus occupied: First, the habit of thinking that certitudes can only be arrived at experimentally; next, that hypotheses, the least certain of things, are themselves certitudes.

If a man deny that two substances which have been named oxygen and hydrogen disappear under some circumstances and that their total mass reappears in a completely different substance, which we call water, he is denying a certitude arrived at by physical science. But if he doubt the theories by which this strange transformation is explained, he is not denying a certitude; he is only challenging something of its nature uncertain and saying that the hypothesis should not be put forward as fact. But the man steeped in scientific work easily comes to confuse the one type of denial with the other. He will think that the sensible fellow who challenges the fantasies of theory is doing so from the same blockheadedness as might make a fool challenge ascertained truth. And that is why [as I shall repeat at the conclusion] this essay, if it is read at all, will be called an attack on Science.

Next, your Scientist has acquired a habit of achievement in knowledge: in knowledge not possessed by the mass of other men. This breeds in him a natural pride, and from that root, I think, spreads that extraordinary presupposition I have noted, unconscious, but very much alive, that the scientist is possessed of universal knowledge. Hence I take it [to be] the mood shown in the example of climate which I gave above; the mood which presumes that, when all that can be measured by our present instruments and methods is stated, there has been stated all that exists in the case.

Next, a cause of the Modern Scientific Spirit’s disease would seem to be the exclusion from consciousness of all that is not measurable by known and divisible units; because the scientific method can only deal with results recorded in known and divisible units. Thus, the physical scientist tends through habit to a state of mind in which qualities not so measurable seem negligible or imaginary; hence the loss of the sense of beauty—the loss of all that is qualitative; the loss of distinction and of hierarchy, in sensation.

But the last cause of intellectual evil in the Modern Scientific Spirit is different from all of these, and may be thus expressed: Anyone can, with patience, do scientific work. It demands no individual, still less any rare, talent. The reward of scientific work in Physics or Record, the fame which it achieves, has nothing to do with the intellectual or creative ability of the man whose name is attached to it.

The result of this is that intellectual ability, critical or creative, will be at a discount among scientists, for fame is in every form of activity a criterion of success. To excel in playing the violin, or in majestic architecture, or in lovely painting, or in verse, you must possess exceptional qualities. Of a thousand men only a few could be taught to paint even fairly beautiful things; perhaps not one in such a number could reach the fame attaching to genius. Of a thousand men only a few can write tolerable verse; not one in a thousand or perhaps in a million will ever write good poetry. But anyone of common mental and physical health can practice scientific research, whether in physics, or biology, or history or literary documents. Anyone can count the number of times in which the word *ingens* occurs in the **Aeneid** and compare the proportion of its frequency there with some other Latin poem. Anyone can test style by mere number; it takes special talent to savour style, and it takes genius to understand it fully.

Anyone can try by patient experiment what happens if this or that substance be mixed in this or that proportion with some other under this or that condition. Anyone can vary the experiment in any number of ways. He that hits in this fashion on something novel and of use will have fame. He who, having hit upon a series of such things, comes to some very obvious conclusion through the coordination of that series, will also have fame. The fame will be the product of luck and industry. It will not be the product of special talent.

So with the scientific historian. His card indexing of innumerable documentary points will produce some results, and from these there may emerge an important discovery; but it was not even a flair which made the discovery: still

less a genius for perception. It was not a talent for visualizing the past, it was not a profound understanding of human nature by which he could explain some happening, it was nothing more, intellectually, than is the setting up of ninepins in a row or the pricking of a lot of little holes in cardboard. It was essentially a mechanical operation.

Now observe the consequences of this and compare those consequences with similar consequences in other fields. It has been a commonplace throughout the ages that men famous for their race and lineage and inherited position were often surprisingly stupid. Why? Because when we hear that a man is eminent we naturally, though unreasonably, associate with the idea of his eminence something special to the man himself; such as courage, or brains. But there is no particular reason why an aristocrat should be more intelligent than a plebeian. The chance of finding a hero among a hundred lords is not a large one, anymore than it would be among a hundred peasants.

In the same way the eminence attaching to the mere possession of great wealth disappoints us nine times out of ten, especially if the wealth has been accumulated rapidly. For great wealth is accumulated rapidly by cunning or chance, or a mixture of the two. Cunning has nothing to do with high qualities; it is rather a presumption against them; while chance has nothing to do with them either. Therefore it is that men are always complaining after meeting So-and-so, that he seemed to be astonishingly stupid, though he made a million in ten years and started as a pauper. Most such men are stupid, compared with what we expect of them, but they are not stupider than the run of men; it is only the contrast between what they are and what we expected to find in them which makes us emphasize their very normal and average lack of parts.

So it is with the Scientist. Industry coupled with chance gives in his field of activity the reward of fame. Very great men indeed are to be found among the scientists, but it is not a scientific sense that has made them great; it is always some other talent. With Huxley, for instance, one of the very first of English names, mastery over the English tongue and an admirable intelligence were marks which would have singled him out in whatever activity he had undertaken. But side by side with him you have many another who has become equally or more famous through the mere accumulation of a mass of data by brute observation. Such plodding, carried, on patiently and stupidly for the better part of a lifetime, may stumble on an important result—or may not. And for so stumbling on it no superior capacity is required. The same is true of scientific blundering or floundering into the apparent evidence for what turns out, later, to be false. Darwin's idea of the origin of species is an excellent example to the point. He accumulated a whole mountain of facts tending to establish development, or as it is now vaguely called, "evolution." In one department, that of human descent, what he had to say was very probably true [At the time the author wrote this book of essays (1931), the great bulk of evidence showing Evolution to be unfounded and without scientific basis had not yet been published.—Editor, 1992.], but plenty of others had thought of it before him; in his only new contribution, his theory as to how evolution worked, he has proved to be simply wrong. Yet, so far as the fame of the marketplace is concerned, Darwin is more famous than Huxley.

In general, the man who takes up the scientific method, whether in physics or history or in documentary criticism, takes it up with the more zeal because he knows that it is within the compass of the meanest intelligence. There is nothing to deter him. He can begin at once and work on those lines all his life, and myriads will be doing the same thing with equal pertinacity. The reward of fame being haphazard and having no quality about it, it follows that the scientific spirit tends to disregard quality.

And there is another consequence of all this. Since the most famous scientist need not have any intellectual claim to fame, . . . But, being famous, his opinion will be reverently sought on a host of matters where it is worthless and especially on the nature of the universe, of morals, of society, where he has no sort of standing; and here he will challenge, in his innocence, such giants as Suarez and Aquinas whom he has never read.

## VI

The evil done by the Modern Scientific Spirit [I wish there were some shorter and simpler name for it] is due to its prestige. It exercises an authority over men through the awe and admiration in which they stand of it.

The causes of this prestige are plain enough. Modern science, that addition to human science which has been made since Christendom broke up—and especially since the definitely anti-Christian movement of the eighteenth century—has achieved many great things, some of them startling in their novelty, others in their scale, others in their satisfaction of a need; and all these three types of achievement which are sometimes coincident have produced a profound effect

upon the modern mind. It is distantly parallel to the effect produced by the wonder-worker, coupled with the effect produced by the hero who slays dragons, with the addition of the effect produced by an enormity.

Thus the sudden appearance of flight, the equally sudden appearance of the talking machine, had a violent effect through novelty. Wireless has an effect, through enormity; it is the scale of the thing that impresses—to be able to talk through space to the ends of the earth. And again, rapidity of locomotion satisfies what is, for many, something of a need, while universality of mechanical locomotion has satisfied for the modern man living in modern cities a very urgent need—which was to get out of them.

Sometimes all these three effects of modern science are coincident, and the new discovery not only satisfies a need, but is astonishing in scale and suddenly novel as well.

Those who can speak in the name of that which has done such things naturally have prestige, and if that prestige is mixed up with a false philosophy they naturally become the vehicles and promoters and propagators of that false philosophy.

That the harm done through false action upon the soul is greater than the advantage obtained through the new material good must be admitted by anyone who has the elementary sense to observe that we only feel happiness or unhappiness through the soul.

Thus, to transport the human body rapidly from one place to another cannot be good in itself; it is only a good insofar as it satisfies what may be called, in the largest sense, a spiritual need: that is, insofar as it fulfills the desire of a living soul. But if the same men who by research and accumulation of practice have made it possible thus to transport the body rapidly are by a false philosophy tending to make men's lives ugly, miserable, evil and untrue, then they will only transport unhappiness; and unhappiness transported quickly is not better but worse than happiness transported slowly.

And here there should be remarked the curious connection between the success of modern science in one set of purely material things and its almost invariable concomitant of failure in another set of things equally material. Nearly all that Modern Science does, not only fails to fulfill the promise of material happiness, but carries with it some quite definite material evil, quite apart from moral evil. For instance, rapid transport has brought about something like a permanent massacre. It is making us callous to an appalling tale of deaths by violence and horrible suffering in the infliction of such deaths. It puts at the command of men far below the average income a new material good; power of covering great distances and thereby enjoyment of changing scene. But it accompanies this power with a vibration and din which are abnormal and the ultimate physical effects of which must be disastrous. Modern Science reproduces the human voice mechanically and the sound of musical instruments, but in the reproduction there is always something incomplete and usually something metallic and offensive. It enables us to build on a greater scale more rapidly, and more strongly than before; but the new material seems doomed to produce horrors, and the newly enlarged scale to increase them.

Now, this combination of success and failure is not accidental, it is organic; it proceeds from a spirit which regards important things as unimportant. Had that spirit, for instance, understood the value of leisure and quietude, it would have developed its mechanism with those ends in view. It has not understood them. In the same way Modern Science has given us cheap and regular heat indoors during cold weather, but it is so particularly offensive a form of heat compared with that of the open hearth that those who can afford it are pathetically constrained to imitate the old, healthy fireplaces and their glow, even while submitting to the new inconvenience. But even if these material, corporal evils were not present, that spirit would still be an evil; **for whatever is opposed to truth will be opposed to goodness and to beauty.** [emphasis added] That is why we have before us the effect today of such a spirit in the abominations of the latest architecture and the latest sculpture and the hideous applications of Science to war, and the destruction of comfort in the name of "Hygiene"!—a typically "scientific" word for the common word Health. But perhaps it is as well to use another word than health, for hygiene has by this time come to connote something different indeed from health.

## VII

The evil we have been here examining is of first rate importance. It attacks the whole field of man's life and it

attacks with particular virulence those good things which are the very chief factors in man's life; those things whereby life was in the past made tolerable.

Notoriously and upon all sides the spirit of which I speak is attacking true doctrine, that is, the Catholic Church. If it continues in power unmodified that spirit will sooner or later wage open and direct war against true religion, as it has for so long waged covert and indirect war against it.

It further tends to cut us off from our past and from tradition; **but societies cut off from their traditions and from their past wither.** [emphasis added]

It has begun to confuse and to atrophy the power of clear reasoning. It has long made deeper and deeper inroads into the sense of beauty, which it may at last destroy.

It is our business, then, to combat the Modern Scientific Spirit with all our might.

As a rule it is much easier to point out an evil, and even to analyze its nature, than to prevent it or to suggest a remedy for it. Happily in this case the remedy is obvious; it can be briefly stated and appreciated the moment it is set down. The evil spirit of which I speak is a fashion. It is no more than a fashion. It is a corporate mood, the strength of which depends upon the tyranny of fashion. Now the solvent of any bad fashion is ridicule.

Our weapon against the Modern Scientific Spirit is ridicule—persistent, active, untiring; and never was there an easier target for the exercise of that salutary spiritual activity.

The Modern Scientific Spirit is patently open to attack by laughter from a hundred points, both in its theory and in its practice, and above all in the pretensions of its priesthood, high and low. Its muddle-headedness lies open to the simplest analysis. Its self-contradictions can be tabulated by the score and are being added to daily. Its stupidity can be goaded, its pompous habit of baseless assertion exposed, its hideous creations in apparatus pilloried; there is not an aspect of it which does not lend itself to our shafts or which has any shield except obscurantism.

It has no defense against the attack of ridicule save continued and loud self-praise, reiteration, and perhaps [with the baser parts of society] clumsy appeals to lethargy.

Thus where it is riddled by the use of logic it can turn to its dupes and say, "Do not listen to this, it is only logic chopping. You would not bother with such a flimsy highbrow thing as logic, would you?" Or it can play the trick of confusing the issue, in which the master example is a confusion between Science proper and that which calls itself the Scientific Spirit.

With an appreciation of that form of defence I will conclude. It is the only serious obstacle to our advance against the silly but dangerous thing which pretends to speak in the name of true knowledge.

I have noticed that wherever the evils and perils of the Modern Scientific Spirit are attacked, those wounded in the attack and wincing from the pain of it raise, almost always, the cry that Science is being attacked; just as men who propose some foolish war in which the national finances may go under and which can be, even if victorious, of no profit, shriek that those opposing their policy are no patriots; just as a drunkard in his last stages still complains that those who would wean him from his mortal vice are the enemies of good-fellowship. I will bargain that of those few who have done me the honour of reading or skimming through this very long essay, some goodly proportion will lie open to this confusion of ideas and will need the warning that those who attack the perversions of Science are not attacking Science itself, but **defending** it. [emphasis added]

There is not, and cannot be, any quarrel between sane reason and the search for truth. Our quarrel, and it is a serious one [I should say, in the long run, a mortal one], is with a moral atmosphere which, so far from making the discovery of truth its aim, is what I have called it: The Enemy of Truth. It is the Enemy of Truth because it is an enemy of the human reason and of the only methods whereby reality may be grasped.

The accusation that an attack upon these evils is an attack upon the immemorial human glory called Science must necessarily have some effect, and an effect widespread in proportion to the stupidity of those for whose benefit the accusation is made. Let that be no check to the efforts of those who have already begun, by ridicule, to break up the foundations of the maleficent structure. It is only a matter of pertinacity and time. Ill fashion always yields at last to the comic spirit, if that spirit be maintained. Laughter has already shaken those walls and, prolonged, will make them crumble.

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