

# Favorite Quotes (mostly) Related to Science and Scientists

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A true adventure begins when imagination collides with reality. (Karel Capek)

Nature is implacable and unalterable, and quite indifferent to whether she's comprehensible to us or not. (Galileo)

In questions of science, the authority of a thousand is not worth the humble reasoning of a single individual. (Galileo)

The victory [on the law of refraction] was still with Monsieur Descartes since in effect his opinion was confirmed to be true even by reasoning different from his, after all the most famous conquerors did not consider themselves less happy when victory was obtained by auxiliary troops instead of by their own. (Pierre de Fermat)

It's perplexing to see the flexibility of the so-called 'exact sciences' which by cast-iron laws of logic and by the infallible help of mathematics can lead to conclusions which are diametrically opposed to one another. (Vasco Ronchi)

Great difficulties are felt at first [in research] and these cannot be overcome except by starting from experiments ... and then by conceiving certain hypotheses ... But even so, very much hard work remains to be done and one needs not only great perspicacity but often a degree of good fortune. (Christiaan Huygens)

The nature of light is a subject of no material importance to the concerns of life or to the practice of the arts, but it is in many other respects extremely interesting. (Thomas Young)

Those [scientists] who dislike entertaining contradictory thoughts are unlikely to enrich their science with new ideas. (Max Planck)

The best thing to give to your enemy is forgiveness; to an opponent, tolerance; to a friend, your heart; to your child, a good example; to a father, deference; to your mother, conduct that will make her proud of you; to yourself, respect; to all others, charity. (Benjamin Franklin)

It's of no use whatsoever. This is just an experiment that proves Maestro Maxwell was right - we just have these mysterious electromagnetic waves that we cannot see with the naked eye. But they are there. (Heinrich Hertz)

The opposite of a right statement is a wrong statement. The opposite of a deep truth can also be a deep truth. (Niels Bohr)

Thanks to my having hit upon the fortunate idea of introducing the relativity principle into physics, you [Arnold Sommerfeld] and others enormously overestimate my scientific abilities, to the point where it makes me somewhat uncomfortable. (Albert Einstein)

The state of mind which enables a man to do work of this kind ... is akin to that of the religious worshiper or the lover; the daily effort comes from no deliberate intention or program, but straight from the heart. (Albert Einstein)

I believe with Schopenhauer that one of the strongest motives that leads men to art and science is escape from everyday life with its painful crudity and hopeless dreariness, from the fetters of one's own everyday desires ... (Albert Einstein)

The grand aim of all science is to cover the greatest number of empirical facts by logical deduction from the smallest number of hypotheses or axioms. (Albert Einstein)

We think we understand the regular reflection of light and X rays - and we should understand the reflections of electrons as well if electrons were only waves instead of particles ... It is rather as if one were to see a rabbit climbing a tree, and were to say 'Well, that is rather a strange thing for a rabbit to be doing, but after all there is really nothing to get excited about. Cats climb trees - so that if the rabbit were only a cat, we would understand its behavior perfectly.' (Clinton Davisson)

All science is either physics or stamp collecting. (Ernest Rutherford)

It was about three o'clock at night when the final result of the calculation [demonstrating the sensibility of matrix mechanics] lay before me ... At first I was deeply shaken ... I was so excited that I could not think of sleep. So I left the house ... and awaited the sunrise on top of a rock. That was 'the night of Helgoland.' (Werner Heisenberg)

Nature is made in such a way as to be able to be understood. Or perhaps I should put it - more correctly - the other way around, and say that we are made in such a way as to be able to understand Nature. (Werner Heisenberg)

When God said 'Let there be light' he surely must have meant coherent light. (Charles Townes)

It's of great advantage to make the mistakes from which one can learn as early as possible. (Winston Churchill)

Only a fool makes no experiments. (Charles Darwin)

Nicht nur koennen, sondern auch tun. (Johann Wolfgang Goethe)

One has to do something new in order to be able to see something new. (Lichtenberg)

One doesn't journey in order to arrive but in order to journey. (Johann Wolfgang Goethe)

To believe an utter nonsense is the prerogative of humans. (Konrad Lorenz)

There is something irreversible about acquiring knowledge; and the simulation of the search for it differs in a most profound way from the reality. (Robert Oppenheimer)

The art of being wise is the art of knowing what to overlook (William James)

I cannot give any scientist of any age better advice than this: the intensity of conviction that a hypothesis is true has no bearing over whether it is true or not. (Peter Medawar)

The history of a science is that science itself. (Johann Wolfgang Goethe)

Only the love of truth brings about miracles. (Johannes Kepler)

Strange is our situation here on earth. Each of us comes for a short visit, not knowing why, yet sometimes seeming to a divine purpose. From the standpoint of daily life, however, there is one thing we do know: we are here for the sake of others. (Albert Einstein)

It was an unbearable thought ... for Kepler that, on the one hand, human reason enables insight into the wonders of Nature (and “only science reveals wonders”), into the harmonic order of the world, but, on the other, that human life generally passes in disharmony, driven by quarrel, conflict, hate, and war. (Walther Gerlach on Johannes Kepler)

Science is what we know and philosophy what we don't. (Bertrand Russell)

A genius is eternal patience. (Michelangelo)

Art enchants, science enlightens. (Freeman Dyson)

Free will is to mind what chance is to matter. (Charles Darwin)

Prediction is very difficult, especially of the future. (Niels Bohr)

The effect of a concept-driven revolution is to explain old things in new ways. The effect of a tool-driven revolution is to discover new things that have to be explained. (Freeman Dyson)

What we cannot discern in ourselves, becomes glaringly evident in others. (I. Klotz)

The future isn't what it used to be. (Karl Valentin)

Alle Dinge erreichen denjenigen, der es versteht zu warten. (Wolfgang Pauli)

I'm ignorant of science – couldn't find my way out of a test tube on my own ... (Polly Lis)

The science research of today is [a] temporary culmination of a very long, hard-fought struggle by a largely invisible community of our ancestors. (Gerald Holton)

The main fallacy ... is that the reductionist hypothesis does not by any means imply a "constructionist" one: The ability to reduce everything to simple fundamental laws does not imply the ability to start from those laws and reconstruct the universe. In fact, the more the elementary particle physicists tell us about the nature of the fundamental laws, the less relevance they seem to have to the very real problems of the rest of science, much less to those of society. (Philip Anderson)

The process of creation of the new depends essentially on the transgression of categorization. (Roald Hoffmann)

Encouraging students is like building a fire. You can either blow the fire out when you are trying to start it, or you can make the coals glow in such a way that they spontaneously burst into flame. (Dudley Herschbach)

I think physicists are the Peter Pans of the human race. They never grow up and they keep their curiosity. (Isidor Isaac Rabi)

Physics is an honest craft; only when you learn this can you start philosophising about it. (Werner Heisenberg to Carl Friedrich von Weizsäcker)

Have lots of ideas and throw away the bad ones. (Linus Pauling)

The first question which we have a right to ask will be, 'Why is there something rather than nothing?' (Gottfried Wilhelm Leibniz)

[The soul] of a Shakespeare or a Newton is stupendous. Such men live the best parts of their lives after they shuffle off the mortal coil and fall into the grave. Maxwell was one of those men. His soul will live and grow for long to come, and thousands of years hence, it will shine as one of the bright stars of the past, whose light takes ages to reach us, amongst the crowd of others, not the least bright. (Oliver Heaviside)

We are all atheists about most of the gods that humanity has ever believed in. Some of us just go one god further. (Richard Dawkins)

Unhappy is the land that needs a hero. (Bertolt Brecht, through the mouth of Galileo)

Secrecy hides failure and exaggerates success. (Freeman Dyson)

The history of the development of ideas is of all subjects that in which we, as thinking men, take the deepest interest. (James Clerk Maxwell)

Life [is] a fugitive from the second law of thermodynamics. (John Avery)

If it's not worth doing it, it's not worth doing it well. (Dan Kleppner)

Life is full of surprises. And almost half of them are good. (Dan Kleppner)

Hydrogen is the proper study of man. (Dan Kleppner)

What one fool can do, another can. (Richard Feynman)

Style is the physiognomy of the mind. (Arthur Schopenhauer)

The best antidote to the philosophy of science is a knowledge of the history of science. (Steven Weinberg)

We should embrace the notion that the solution to pressing global problems will not be found by ruthless [international] competition but rather by cooperation that ignores [political] borders. (Helmut Schwarz)

The old believe everything; the middle-aged suspect everything; the young know everything. (Oscar Wilde)

The most pathetic person in the world is some one who has sight but no vision. (Helen Keller)

Imagination is more important than knowledge, for knowledge is always limited. (Albert Einstein)

The best lack convictions, while the worst are full of passionate intensity. (William Butler Yeats)

A physicist is a mathematician with a feeling for reality. (Norman Packard)

[P]atience, patience, patience! Only by persistent, unremitting labor can a lasting outcome be reached. (Theodore William Richards)

In my experience, assistants who are not carefully superintended may be worse than none ... The less brilliant ones often fail to understand the force of one's suggestions, and the more brilliant ones often strike out on blind paths of their own if not carefully watched. (Theodore William Richards)

[L]et us hope that yet finer means of research and yet deeper chemical knowledge may make possible further improvements, yielding for mankind a more profound and far-reaching knowledge of the secrets of the wonderful Universe in which our lot is cast. (Theodore William Richards)

History is a primary way of creating meaning. (Laurel Ulrich)

Those who do not stop asking silly questions become scientists. (Leon Lederman)

Gravitation is not responsible for people falling in love. (Albert Einstein)

Education is an admirable thing, but it is well to remember from time to time that nothing that is worth knowing can be taught. (Oscar Wilde)

History is the prediction of the present. Historians explain why things turned out the way they did. Since we already know the outcome, this might seem a simple matter of looking back and connecting the dots. But there is a problem: too many dots. Even the dots have dots. Predicting the present is nearly as hard as predicting the future. (Louis Menand)

Einstein was a giant. His head was in the clouds, but his feet were on the ground. But those of us who are not that tall have to choose! (Richard Feynman)

Don't squander energy, utilize it! (Wilhelm Ostwald)

Physical Chemistry is not just a branch on but the blossom of the tree of knowledge. (Wilhelm Ostwald)

If you want to make a simulation of nature, you'd better make it quantum mechanical.  
(Richard Feynman)

An understanding of history destroys innocence. (Drew Gilpin Faust)

If you are up to something great, start with it now. (Alexander von Humboldt)

Relax. Nothing is under control. (Mister Booja-Booja)

I don't know how man will fight World War III, but I do know how they will fight World War IV; with sticks and stones. (Albert Einstein)

Not everything that counts can be counted, and not everything that can be counted counts.  
(Albert Einstein)

The fact that we live at the bottom of a deep gravity well, on the surface of a gas-covered planet going around a nuclear fireball 90 million miles away and think this to be normal is obviously some indication of how skewed our perspective tends to be. (Douglas Adams)

In order to fully appreciate life, one has to indulge in a certain degree of laziness. For those who hurry through life will likely reach their destination, but at the price of overlooking myriads of things passed by on their way. (Karel Capek)

The value of a man resides in what he gives and not in what he is capable of receiving.  
(Albert Einstein)

The fragility of freedom is the simplest and deepest lesson of my life and work. (Fritz Stern)

Lise Meitner: a physicist who never lost her humanity (Otto Robert Frisch)

The physicists defer only to mathematicians, and the mathematicians defer only to God ...  
(Leon Lederman)

Science as something already in existence, already completed, is the most objective, most impersonal thing that we humans know. Science as something coming into being, as a goal, however, is just as subjectively, psychologically conditioned, as all other human endeavors.  
(Albert Einstein).

One must give the highest importance to affairs of the state, that it may be well run. One must not pursue quarrels contrary to right, nor acquire a power contrary to the common good. The well-run state is the greatest protection, and contains all in itself; when this is safe, all is safe; when this is destroyed, all is destroyed. (Democritus)

Yesterday is history, tomorrow is a mystery and today is a gift, that is why it is called the present. (Eleanor Roosevelt)

$\pi$  and  $e$  are all the irrationality that I need. (A protester at the March for Science, Berlin, 22 April 2017)

No love without chemistry. (A protester at the March for Science, Berlin, 22 April 2017)

Say not in grief that he is no more, but live in thankfulness that he was. (Rabindranath Tagore)

Q: Why can't you trust an atom?

A: Because they make up everything. (<http://www.laughfactory.com>)

Molecule 1: I just lost an electron.

Molecule 2: Are you sure?

Molecule 1: I'm positive. (<http://www.laughfactory.com>)

Great scientists usually show up when and where in the history of science they are needed. (Isidor Rabi)

It's never too late for something good to happen. (Walther Gerlach)

Although we are not the stars in a cosmic drama, if the only drama we're starring in is one that we are making up as we go along, it is not entirely ignoble that faced with this unloving, impersonal universe we make a little island of warmth and love and science and art for ourselves. (Steven Weinberg)

Gratitude turns what we have into enough. (*Daily Menu* of Sheraton Commander in Cambridge)

Socialism is a scare word they have hurled at every advance the people have made in the last 20 years.

Socialism is what they called public power.

Socialism is what they called social security.

Socialism is what they called farm price supports.

Socialism is what they called bank deposit insurance.

Socialism is what they called the growth of free and independent labor organizations.

Socialism is their name for almost anything that helps all the people.

(Harry S. Truman, 1952)

Don't do anything that someone else can do. (Edwin Land)

Don't undertake a project unless it is manifestly important and nearly impossible. (Edwin Land)

Everything should be made as simple as possible, but no simpler. (Albert Einstein)

For the theoretical physicist, sunrise is not a physical observable. (Hans Bethe)

The best thing to give to your enemy is forgiveness; to an opponent, tolerance; to a friend, your heart; to your child, a good example; to a father, deference; to your mother, conduct that will make her proud of you; to yourself, respect; to all others, charity. (Benjamin Franklin)

The first human who hurled an insult instead of a stone was the founder of civilization. (Sigmund Freud)

When I die my first question to the Devil will be: What is the meaning of the fine structure constant? (Wolfgang Pauli)

I have the best of two worlds: an MIT education and a Harvard degree. (Dave Pritchard)

You have only one life to live - if that. (Dan Kleppner)

All models are wrong. Some are useful. (George Box)

What the heart loves, the will chooses, and the mind justifies. (Thomas Cranmer)

Theory is when you know everything but nothing works.

Practice is when everything works but no one knows why.

In our lab, theory and practice are combined: nothing works and no one knows why. (Richard N. Zare)

The optimist thinks this is the best of all possible worlds. The pessimist fears it is true. (Robert J. Oppenheimer)

Hope is not prognostication. It is an orientation of the spirit, an orientation of the heart. ... Hope is an ability to work for something because it is good, not just because it stands a chance to succeed... It is not the conviction that something will turn out well, but the certainty that something makes sense, regardless of how it turns out. (Vaclav Havel)

One accurate measurement is worth a thousand expert opinions (Grace Hopper).

All nations must come to the decision to voluntarily renounce violence as a last resort in politics. If they are not prepared to do so, they will cease to exist. (Mainau Declaration, 1955)

What's the use of having developed a science well enough to make predictions if, in the end, all we're willing to do is stand around and wait for them to come true? (Sherry Rowland)

Denial ain't just a river in Egypt. (Mark Twain)

The story of nuclear weapons will have an ending, and it is up to us what that ending will be. Will it be the end of nuclear weapons, or will it be the end of us? One of these things will happen. (Beatrice Fihn)

A war doesn't decide anything, just breeds the next war. (Setsuro Tamaru)

Now that I am a bit older, I have met young students who explain to me what LIF is, how it works, and why it facilitates what they are investigating. They are blissfully unaware that I am the originator of this technique. This situation is wryly amusing but sobering. It allows me to assess the worth of what I have done and how we all take for granted the struggles of others who came before us. (Richard N. Zare)

Much of my work has had its origin in the notion that science should treasure its history, that historical scholarship should treasure science, and that the full understanding of each is deficient without the other. (Gerald Holton)