Organum of Bacon; of *Systema Naturae* of Linnæus; of *De Motibus Stellae Martis* of Kepler; of the *Exercitationes de Motu Cordis et Sanguine* of Harvey. So that, you see, these two languages cover the vastest realms of human thought. Latin will admit you, not only into the Forum, where immortal actions glow, but also the garden of Hesperides, and also into the courts of justice and laboratories of science. Of these languages it may be said, with as much truth as perjury, that their fruits are the fruits of nepenthe, and their flowers the flowers of amaranth.

And, yet, an immense service has been wrought for modern education by the widening of its curriculum. A man may be a perfect scholar, in the old, narrow sense, and yet very imperfectly educated in the new, if he knows nothing of the moon which sways the tides; nothing of the sea which traverses the whole globe; nothing of the Gulf Stream which warms our coasts, nothing of the trade winds that steadily swell our sails; if he knows nothing of rain and dew, snow or hoar-frost or the lightning, of the vivacity and elasticity of the air.

This is the age, of all others, for progress. To the thirteenth century belongs the name of Roger Bacon; to the fifteenth the name of Columbus; to the seventeenth Newton; and the nineteenth is, of all others, absolute and unsurpassed. In this country your civilization has spread forward with perfectly indescribable progress. Groups of log huts have now grown into immense cities. In your virgin forests is heard the scream of the steam engine. Mountains have been tunnelled; and the lands of the savage are now the metropolis of commerce. Everywhere man has left the impress of power which marks fire, flood, and air. If education had been allowed to remain stationary, it would have been disgraceful.

Of course, one reason for satisfaction in the various list of studies of modern education is because so many minds are differently constituted, and should not be stretched upon the same Procrustean bed. The minds of men differ. Some devote themselves almost exclusively to the study of the thoughts and deeds of men. Other men seem to require not a single gleam of imagination to illumine the mountain heights. I need not go back to the poet who said he had looked through the six books of *Euclid*, and did not think there was much in them; or to the mathematician who after reading *Paradise Lost*, said it did not prove anything.

I once had the honor to receive a letter from Charles Darwin, in which he told me of his school days. He said he had learned little or nothing except what he had taught himself by private experiments in chemistry. Somehow or other this came to the ears of the head-master. The head-master, instead of encouraging the ardent mind of the boy, reproved him severely before the whole form, and called him *Pococurante;* language which had no meaning for him and which he thought must have been something dreadful.

Take such a case as this: St. Bernard was so utterly dead to the outer world, that he rides the whole day by Lake Geneva, and in the evening asks where the lake is. A man like Linnæus is so sensitive to the outer world that, when he beheld a promontory standing boldly forth, all ablaze in the sunlight and aglow with the glitter of the golden gorse, he cannot refrain from kneeling down and thanking God for such beauty. A man like Salmasius fills whole pages with learned dissertations about the silks and linen fabrics of the ancients. Minds like these are radically different in their constitution; and nothing could be so unfortunate as when they despise one another, as they too often do. Reaumer speaks with scorn of Montado, who had written six quarto volumes on the history of flies with four wings and of flies with two wings, with a supplement to the history of flies with two wings, and thought that very contemptible. It seemed to express the scorn of men's mutual ignorance. Every ideal University, must, therefore, have appliances for the study of the whole circle of human sciences, and also have its share in every scheme of modern education.

Allow me to speak of the immense delight of scientific study. God has placed us in a world in which he means us to admire its beauty and its glory. There are beauties and wonders; and God made them all; and we can look from this world into the very arch of Heaven, and it is simply impossible to judge the difference in the degrees of happiness illustrated by the mind of a man who has gone through this world with a hearing ear and a seeing eye, and of another man who has been suffered to grow up blind and deaf to the glories of this planet in which God placed him. We are here to delight in these glories. God has given us the instinct of beauty; and there is no simpler and plainer proof of his being than the fact that He has placed around us the means of abundantly gratifying it. A man of science may see as much as a man of art and letters. The world is no blank to him; it means intensely and means good.

Besides this delight in science, may I not speak of its immense usefulness. Nature may delight us all with its innocent enchantments; but it only reveals its secrets to the followers of Hercules, who are laborers. If I may take a common, conceivable instance, it is only to the mind of a Newton that the falling of an apple reveals the same fact as the orbit of a sphere; and the very same law moulds the tear and preserves the rolling sphere and guides the planet in its course. It is only the mind of a Watts that the condensation of steam upon a spoon revealed the secret of the steam engine and revolutionized the whole life of the world. When a man like Galvani accidentally touches the frog's leg with a scalpel that has been in contact with electrodes, he breathes new life through all known science.

Because a spectacle-maker is an observant man as his children play with the lenses in their father's shop, we have the telescope and the microscope. Galileo, watching the swinging of the great bronze lamp in the cathedral at Pisa, and measuring it by the beating of his pulse, discovered the isochronism of the pendulum, which led to wonderful results. Huyghens, looking through a piece of Iceland spar, observing the causes of the double refraction of the dividing beams of light, put into our hands a means of reading the secrets of the stars. All these things may be called accidents; but they are accidents which happen only to trained and observant minds, and I firmly believe there are hundreds of discoveries which still remain open secrets, and that, I believe, will be discovered by observing minds. I believe the greatest discoveries of modern times might have been anticipated by centuries, had the powers of observation been properly trained.

Then, again, let me allude to the immense increase in the number of sciences. There are sciences that seem to gyrate around, and make no progress. And sciences, properly so-called, are remarkable for their enormous strides. I need but give one single illustration from the science of electricity. The ancient Greeks had discovered that electricity was generated by rubbing a piece of amber. The Greeks named amber *electron*, from a word meaning "to draw," on account of its attractive power. Now consider the enormous strides that have been made to the knowledge we now have. We know now that lightning is nothing more than what a lady may brush out of her cat's back or out of her own hair. Imagine the great stride made in electricity since the days of your own great Franklin. On the 15th of June, 1752, with no more exalted magnetism than a kite, a hempen string, and a little key, he sent up his kite to the dark clouds, and suddenly saw the hempen fibres glistening on the string. He said at that moment of his life, conscious of the immortal name he would gain: "I would be content if that moment were my last." What immense