

## Where Absolute Zero Lies.

The zero of absolute temperature has long been indicated as a mysterious and important point in two ways. The first is the contraction of gases, which in all known gases operates uniformly as the temperature is lowered. As long as they retain the gaseous state, gases shrink in volume so uniformly with each added degree of cold that an exact, unvarying line of diminishing volume is established. This line is as unvarying as the pointing of the needle to the North Pole. It cannot be explained any more than the action of the needle can be explained. As every gas is cooled, however, degree by degree it points unerringly, by the law of diminishing proportions, to a point at which its volume would be nothing. If the shrinkage continued, since the proportion of loss of volume never varies, the gas would shrink to nothingness. It could not do so, of course; and all gases, sooner or later, fall out of the line by becoming liquid, when the law ceases to operate and the proportion of contraction in volume ceases to be the same. As long as they remain gases, however—and the law is precisely the same in all gases—they mechanically point their figurative fingers in one direction, and all these figurative fingers indicate a point which is 461 degrees below the zero of the Fahrenheit thermometer.

In a similar way this point is also indicated by all pure metals. At ordinary temperatures the power of the pure metals to conduct electricity varies exceedingly. Copper, iron, platinum and lead have very different capacities in this regard. As they are cooled, however, a change takes place in all. The resistance to the passage of electricity decreases. The poorest conductors at ordinary temperatures are those which offer more resistance to the electrical current. Under increasing cold these become better conductors rapidly. The line of alteration in electrical resistance, as the temperature goes downward, is not alike in any two. But the lines of the several metals converge; they come closer and closer together as the temperature approaches, say, 328 degrees below zero Fahrenheit. And their lines of convergence point, in the same strange way as the gases, to the same point, 461 degrees below zero Fahrenheit, as the point at which they would all meet. In other words, there is a point at which the electrical conductivity of all pure metals would be the same.

## Long Services.

A religious service, for the worship of God, forty or fifty minutes in length, with a sermon added of twenty or thirty minutes, is sometimes characterized by Christian people as "too long." Popular ideas, "public opinion," often sanction the remark. Indeed, clerical opinions favourable to the idea are not wanting. But whoever seriously thinks of what is meant and involved by the remark, cannot but admit that, for Christian lips to utter such a complaint is a degrading shame! Think of it: thousands of men and women can sit for three or four hours listening to and gazing upon plays that are senseless and silly, or worse, and yet a real or nominal Christian will think an hour or an hour and a quarter too long to engage in the honouring and worshipping of God! Three or four hours devoted, with intense delight, to gratifying the senses; but a little while "too long" for the soul to seek to honour the Almighty!

## Thought.

"Thought is not simply the sea upon which the world of action rests, but, like the air which pervades the whole solid substance of our globe, it permeates and fills in every part. It is thought which gives to it its life. It is thought that makes the manifestation of itself in every different action of man. I hope we are not so deluded as men have been sometimes; as men are to-day, that we shall try to separate those two lives from one another, and one man say, 'Everything depends upon my action and I care not what I think,' or, as men have said, at least in other times, 'If I think right it matters not how I act.' But the right thought and the right action make one complete and single man."—*Phillips Brooks*.

## Sweetness of Pleasant Speech.

It was said of Edward the Confessor, that he could deny a request so sweetly that his "No" was pleasanter than the "Yes" of other people. "The love and admiration," says Canon Kingsley, "which that truly brave and loving man, Sir Philip Sidney, won from everyone, both rich and poor, with whom he came in contact, seems to have arisen from the fact that, without, perhaps, having any such conscious intention, he treated rich and poor, his own servants, and the noblemen, his guests, alike, and alike courteously, considerately, cheerfully, affectionately—so leaving a blessing wherever he went." "Sir Walter (Scott) speaks to every man as if he were their blood relation," said a Scotch peasant seventy years ago of the great story teller.

## Balances.

Self-interest must not so completely sway a man as to blind him to the claims of justice and mercy to his fellow-men; nor must sympathetic impulse so carry him away as to palsy his judgment. A sense of beauty is needed in every life, but it may be indulged so as to crowd out practical essentials. It is the balance of these and many other elements that must make the manly man and the womanly woman; and this should never be lost sight of in our influence upon others. Not the easiest or quickest way of producing an action, however desirable, should be our one chief aim; still less should we confine ourselves to a single motive, though it be the highest. On the contrary, we should ever bear in mind that duty recognizes all parts of the nature and combines them in harmonious proportions.

## Watching the Tongue.

Keep a watch on your words, my children,  
For words are wonderful things;  
They are sweet like the bees' fresh honey—  
Like bees, they have terrible stings;  
They can bless like the warm, glad sunshine,  
And brighten the lonely life;  
They can cut in the strife of anger—  
Yes, cut like a two-edged knife.

Let them pass through your lips unchallenged  
If their errand be true and kind—  
If they come to support the weary,  
To comfort and help the blind;  
Should a bitter, revengeful spirit  
Prompt the words, let them be unsaid;  
They may flash through the mind like lightning,  
Or fall on the heart like lead.

Keep them back, if they're cold and cruel,  
Under bar and lock and seal;  
The wounds they make, my children,  
Are always slow to heal.  
May Christ guard your lips, and ever,  
From the time of your early youth,  
May the words that you daily utter  
Be the words of beautiful truth!

## Take Time for Books.

Give me a nook and a book,  
And let the proud world spin round:  
Let it scramble by hook or by crook  
For wealth or a name with a sound.  
You are welcome to amble your ways,  
Aspirers to place or to glory;  
May big bells jangle your praise,  
And golden pens blazon your story;  
For me, let me dwell in my nook,  
Here by the curve of this brook,  
That croons to the tune of my book,  
Whose melody wafts me forever  
On the waves of an unseen river.

—*James Freeman Clarke*.

In the hurry of modern life the tendency is all away from reflection and contemplation. It is absolutely necessary for one who engages in the nerve-trying competition which has invaded every profession to determine early in life that, while straining every power to excel in his chosen work, he will still read. There are few people nowadays who need to be warned against excessive reading.

Comparatively few can discriminate between first-rate and second-rate, or even tenth-rate, literature, so long as the sense of personal propriety remains unshocked. A most well-intentioned Sunday-school superintendent not long ago publicly advised his pupils to subscribe for a

notoriously sensational weekly. He had read it for months, he said, and had found it "intensely interesting." While not strictly a religious paper, he went on, "its columns are pure, and it bears the sacred name of the family—a guarantee of its virtue."

The immorality of those columns as being absolutely untrue to life had evidently failed to impress him; but the mental stomachs of those who subscribed for the pernicious paper were undoubtedly so injured by its highly-seasoned contents that they can never enjoy the plain, natural food of the strong old classics.

Avoiding, then, all sensational and unlife-like literature, how are we to divide our time between the high-class periodicals and the best of the ancient and modern books? Perhaps the best way is to spend about half one's time on each. Suppose that one has, on an average, two hours per day for reading. The daily newspapers must necessarily absorb a large share of the first hour. The rest of the hour, devoted to the favourite weeklies and monthlies, gives only time for one long or several short articles each day. Then we may seek the books, where the choicest society of the present and of the past is waiting for us. It is better to read a little thoroughly than much superficially; but be sure that, however thoughtfully we read, we shall meet many people who are astonished that we have not read just what they have; and that we shall sometimes hear works discussed as very great, of which we have never so much as heard. One cannot read a thousandth part of even the best literature.

Much of the reading which is done is for show purposes. Perhaps there is no more thrilling, contemptible form of shallow vanity than this. Read for your own pleasure and improvement, and if you get no credit for achieving much, never mind. You have certainly tried to make the most of your opportunities.

Read a little, at least, in your Bible every day. Do you want history? What more than Exodus or Judges or Luke or Acts? Poetry? What lifts up the soul like Psalms or Isaiah? Practical counsel? Study St. Paul's letters. As you read and re-read the works of Shakespeare or Milton or Goethe, their greatness will grow upon you; but most of all will the Scriptures impress you the more deeply you study them.

## The Value of Decision.

Decision is a noble element of character. The vacillating man can never realize greatness. He wastes his impulses and time in hesitancy. He poises too long between opposite forces, and when he moves onward it is with the faltering step of indecision. His faculties are relaxed—they are not condensed into a manly force by a determined will. How many opportunities for doing good in great or small degree, are lost by indecision! Whilst we are asking ourselves, "Shall I, or shall I not?" the moment is passed, and the flower of joy which we might have given is withered, and often can be no more revived even by tears of penitence.

—We ought to think of other people's convenience more than some of us do. The home is the place where this thoughtfulness ought to begin and be cultivated. One who comes late to breakfast admits that he has been guilty of an amiable self-indulgence, but forgets that he has marred the harmonious flow of the household life, and caused confusion and extra work. The other day an important committee of fifteen was kept waiting ten minutes for one tardy member, who came sauntering in at last, without even an apology for causing fifteen men a loss of time that to them was very valuable, besides having put a sore strain on their patience and good-nature. Common life is full of just such thoughtlessness, which causes untold personal inconvenience, and oftentimes produces irritation and hurts the hearts of friends. We ought to train ourselves in all our life to think also of other people.

—Let us not forget that there are two sides to dying—the earth side and the heaven side. The stars that go out when morning comes do not stop shining, only some other eyes in some other land are made glad by them.—*M. J. Savage*.