

HEAT AND VENTILATION.

Ancient philosophers divided the material world into four great elements, namely: fire, air, earth and water, and they supposed that all bodies were constituted of these. Modern chemists have already discovered more than sixty different elements; yet, in a general sense, ancient science was not so very far wrong. At present, we do not know whether heat is a subtle ether or simply an action of matter, but we know a great deal about its operations and effects. All organic creation is dependent upon the proper distribution of heat, moisture, air, and earth (food). Deprive man of any one of these elements for a certain length of time, and he will cease to live. And as the normal temperature of his blood is the same in every climate, if it be elevated above 100° Fah., or depressed much below it, he soon becomes depressed and helpless. Man is so constituted that he only requires food and water at intervals of several hours, but it is far otherwise with air. A constant supply of this element is necessary every moment of his existence; he takes in fresh air and expels carbonic acid gas at every respiration. Our bodies must be maintained at the same heat in all places and at all periods of the year, and yet we live in a climate the temperature of which ranges from blood heat to more than a hundred degrees below it. The air which we breathe is the great vehicle of changes in our atmosphere. It comes warm from the south, mild from the west, and piercing cold from the icy north. To maintain health and life, therefore, we require this element air in certain quantities, and generally in a warm condition. A few words at this season of the year, on this important subject, may be of great service to many persons.

In nature, the currents of the atmosphere distribute pure air over the entire surface of the globe. The primary source of these currents is heat. It rarefies one stratum of air, causing it to extend, thus leaving a partial vacuum which is instantly filled up by the free cool air which forms an under current, thus maintaining a constant circulation. The true theory, therefore, is the production of a current of air by the displacement of the impure with a supply of fresh air. So efficient is this natural system of ventilation that chemists have been unable to detect any difference between the air of the most thinly peopled hamlets. It would be well for humanity if this system was more thoroughly understood and carried out, in cold climates, by those who occupy dwellings. When on a cold day, we enter most public buildings, churches, workshops, stores and dwelling houses, we become sensible of the presence of noxious gases, independent of the warmth of the inclosed atmosphere. These gases are generally exhalations from the lungs; they tend to diminish vitality and produce disease. In cold weather, it is positively necessary to heat the atmosphere of rooms, in order to maintain the body at a constant temperature, but provision should always be made for the production of an artificial atmospheric current. In apartments heated by fires in open grates, this

system is generally carried out in the most simple manner, and in buildings heated by steam pipes, or hot air furnaces, when suitable ventilators opening outward and placed near the ceiling, are employed, the same results are attained, because under currents of cold air generally find access under the doors and by other chinks in the rooms. But there are thousands of houses heated by stoves and furnaces in which no provision is made for the exit of the impure air, consequently, no artificial current is formed in them. Fevers are very common in such dwellings.

A mistake is frequently made respecting the purity of warm and cold air in houses. A cold room may contain very impure air, because it may have remained unchanged for several days, just for want of a little fire to produce an atmospheric current, while on the other hand, a warm apartment may contain very pure air, owing to the maintenance of a constant current in it. With a distinct understanding of these views, every house may be ventilated in the most efficient and simple manner by the very agents which we require to heat them; this is nature's plan. There can be no doubt of the salubrity of warm houses in winter, and it seems that the colder the climate, so in the same degree the human frame requires warmer dwellings. The great object to which attention should be paid—and there can be no excuse for neglecting it—is to secure a constant and sufficient supply of warm fresh air. In this bit of knowledge is concentrated the true theory of artificial heating and ventilation.—*Scientific American*.

MORAL QUALIFICATIONS OF TEACHERS.

The moral qualifications of teachers should be of the highest order. The most extensive learning does not always make the best teacher. Great intellect can never compensate for deficient morals.—The most distinguished teachers have ever been the best, as well as the wisest men. It should be borne in mind, in estimating the dignity of teaching, that the Savior, to whose unsullied moral purity naught human can be compared, came to the earth in the character of a teacher. Great and good teachers have left impressions upon whole nations, and, during thousands of years, lived in their annals. Thus was it with Confucius, Socrates, Plato and Aristotle—men whose names will always be revered, not because they taught with skill, but because they endeavored to teach, by example as well as precept, the lessons of virtue and philanthropy. They, however, were teachers of men; and if upon these they could exert so powerful and permanent an influence, how much more may we not hope to effect, with the impressible minds of children, awake to every moral influence, good or evil, and imbibing, as if by instinct, the impressions of virtue and vice!

Let not the teacher, then, who would shine in his profession, neglect this important qualification. Let him not neglect it, unless he would incur, by so doing, a mountain of responsibility more

fearful than that placed upon the rebellious giants of ancient fable. Patience, forbearance, mercy, justice, kindness, conscientiousness, all have their appropriate sphere in the school-room; and when they are wanting, and instead of them irritability, injustice and passion reign, to none is the true condition of the teachers's mind and character so apparent as to the seemingly heedless youth, who sits a silent but vigilant spectator of all that transpires around. Nor is the impression of to-day merely. It endures as an ineffaceable memorial of the teacher as long as life lasts, the only change being, that the distrust and aversion of childhood become the disgust and contempt of maturer years. Every teacher should bear in mind, that he will inevitably be accountable to the mature judgment and reflection of his pupils in after years, for the manner in which he discharged the duties of an instructor.—Who would wish, for instance, to receive such a sentence as Dr. Johnson pronounced upon the teacher of his youth, in the following terse expression? "The master was severe, and wrong-headedly severe. He used to beat us unmercifully; and he did not distinguish between ignorance and negligence; for he would beat a boy equally for not knowing a thing as for neglecting to know it. For instance, he would call a boy up, and ask him the Latin for candle-stick, which the boy could not expect to be asked. Now, sir, if a boy could answer every question, there would be no need of a master to teach him."

A teacher requires the firm discrimination of a master mechanic. As the latter, by a single rude touch, may utterly spoil the delicate machine which he is employed to repair or construct, so the teacher, by a single harsh reproof or untimely chastisement, may leave a blot upon the delicate texture of his pupil's moral nature, never to be effaced. Reproof and castigation are indeed necessary; but to make every communication to the pupil, as is often done, in terms and tones of reproof and severity, is to blunt the pupil's moral sensibility, and destroy the teacher's influence at the same time. If the words of a teacher are ordinarily those of kindness and gentleness, reproof when necessary will come with ten-fold effect, and the pupil will receive the impression that the teacher has his good in view, and not the gratification of his own passion and spleen.—*H. K., in the New York Teacher*.

THE TEST OF LOVE.—It is a great practical principle in the religious life, that *a state of suffering furnishes a test of love*. When God is pleased to bestow his favours upon us, when his blessings are repeated every hour, how can we tell whether we love him for what he is or for what he gives? But when, in seasons of deep and varied afflictions, our hearts still cling to him as our only hope and joy, we may well say, "Thou knowest all things; thou knowest that I love thee."

READING.—Read not to contradict and confute, not to believe and take for granted; but to weigh and consider.