

other great inventors now living or but recently passed away, for their labours in developing and perfecting the machines, processes and contrivances which have now become the very essentials of civilized life. He is most essentially the true inventor who gives practicability to ideas, whether they have originated in his own brain or in the minds of others.

#### Oxygen Oils.

Before entering upon a description of the methods employed for the purification of the before-mentioned oils, it is considered necessary to give some account of their component parts and their derivatives. Oxygen enters into the composition of all animal and vegetable oils, unless those oils have been submitted to distillation, which, in general, removes their oxygen and changes their characters. The oils distilled from plants with water are known as essences, or essential oils. They seldom contain oxygen, and are therefore called hydrocarbon oils. The volatile vegetable oils contain oxygen, perhaps without an exception.

The oils distilled from the bituminous and oleaginous substances contain no oxygen when they are pure; they are composed of carbon and hydrogen, and are therefore hydrocarbon oils. The greater the quantity of carbon, in proportion to the hydrogen any of them contains, the greater is its specific gravity, the higher its boiling point, density of vapor, and tendency to smoke when employed for the purpose of illumination. An excess of carbon, however, does no harm to any oil designed for lubrication, but rather gives it consistency and durability. Regarding lamp oils, the greater amount of carbon they contain the greater will be their illumination powers, and therefore that is the best lamp, which, when lighted, will decompose the greatest amount of carbon in the flame. It is to the equivalents of carbon and hydrogen contained in oils the attention turns as to a starting point in this inquiry.

#### Wonders of the Universe.

What assertion will make one believe that in one second of time—one beat of the pendulum of a clock—a ray of light travels over 150,000 miles, and would therefore perform the tour of the world in about the same time it requires to wink with our eyelids, and in much less time than a swift runner occupies in taking a single stride.

What mortal can be made to believe—without demonstration—that the sun is over a million times larger than the earth; and although so remote from us, that a cannon ball shot directly toward it, and maintaining its full speed, would be twenty years in reaching it? Yet the sun affects the earth appreciably by its attractions in an instant of time. Who would not ask for demonstration, when told that a gnat's wing, in its ordinary flight, beats many hundred times in a second? Or that there exist animated and regularly organized beings, many thousands of whose bodies laid together would not cover the space of an inch?

But what are these to the astonishing truths which modern optical enquiries have disclosed, and which teach that every point of a medium through which a ray of light passes is affected with a succession of periodical movements, regularly recur-

ring at equal intervals, no less than five hundred millions of millions of times in a single second! That it is by such movements, communicated to the nerves of the eye, that we are enabled to see; nay, more, that it is the difference in the frequency of their recurrence which affects us with the sense of the diversity of color. That, for instance, in acquiring the sensation of redness our eyes are affected four hundred and eighty-two millions of millions of times; of yellowness, five hundred and forty millions of millions of times; and of violet, seven hundred and seven millions of millions of times per second.

Do not such things sound more like the ravings of a madman than the sober conclusions of people in their waking sense? They are, nevertheless, conclusions to which any one may certainly arrive who will only be at the trouble of examining the chain of reasoning by which they have been obtained.

#### Isomeric Oils.

Oil of lemons and oil of turpentine are composed of the same elements in the same proportions; an atom of either being formed by the combination of 5 atoms of carbon and 4 of hydrogen.

#### Rather Severe on the Girls.

An exchange says:—"The number of idle, useless girls in all our large cities seems to be steadily increasing. They lounge or sleep through their mornings, parade the streets during the afternoon, and assemble in frivolous companies of their own and other sex to pass away their evenings. What a store of unhappiness for themselves and others are they laying up for the coming time, when real duties and high responsibilities shall be thoughtlessly assumed! They are skilled in no domestic duties—nay, they despise them; have no habit of industry nor taste for the useful. What will they be as wives and mothers? Alas for the husbands and children, and alas for themselves! Who can wonder if domestic unhappiness and domestic ruin follows?"

#### Small vs. Large Windows.

The *Maryland Farmer and Mechanic* publishes a plea for stone houses, in the course of which are the following remarks upon small windows, which contain a good deal of truth, and are worthy of attention:—"In building the walls (of our houses) we should introduce one important change. For our climate our windows are too large and too many. The multiplicity of panes of glass draw the heat in the summer, as in a hot bed; and present but a thin film of obstruction to the entrance of the winter's cold. These, then, should be smaller, as they invariably are in hot countries elsewhere. It should, moreover, be borne in mind that these smaller windows which keep out the heat in summer, are equally serviceable in winter, in shutting out the cold, and such windows with thick solid walls, are what are demanded by our contrasts of climate. They are also applicable to the two-fold conditions of coolness in summer and warmth in winter."