

3. (a) The acceleration a gravity "varies inversely as the square of the distance." Explain and illustrate the statement in quotation marks.

(b) A cubic block of lead has its weight varying as the cube of its edge. When the edge is 3 the weight is 36. Find the consequent relation between the weight and the surface.

3. (a) This means that if a denotes the acceleration of gravity, and d be the distance,

$a \propto$ or a varies as $\frac{1}{d^2}$.

That is if $a = 1$ when $d = 1$, then $a = \frac{1}{4}$ when $d = 2$, $a = \frac{1}{9}$ when $d = 3$, and generally, $a = \frac{1}{n^2}$ when $d = n$.

(b). Let w be the weight, e be the edge, and s be the surface.

Then $w = m e^3$ where m is a constant.

$\therefore 36 = 27 m$; or, $m = \frac{4}{3}$, and $w = \frac{4}{3} e^3$.

But $s = 6 e^2 \therefore e^2 = \frac{s}{6}$, and $e^3 = \frac{s}{6} \sqrt{\frac{s}{6}}$.

Whence $w = \frac{2s}{9} \sqrt{\frac{s}{6}}$;

or, $2 + 43 w^2 = 2 s^3$.

CONTEMPORARY LITERATURE.

Littell's Living Age for June 3, contains the conclusion of a short story by the author of "A Girl in the Karpathians," and a long and valuable paper on Taine, by Gabriel Monod, from the *Contemporary Review*. Other excellent articles are given, from *Blackwood's*, *The Cornhill* and *MacMillan's*.

The June number of the *Cosmopolitan* is an excellent one, containing poems by two of our Canadian poets, Roberts and Lampman. "Omega," the remarkable fantasy by Camille Flammarion, is continued in this number. "The City of Brooklyn" is described by Murat Halstead, and Herbert H. Gowen discusses "The Rise and Decline of the Hawaiian Monarchy." "A Traveler from Altruria," by Howells, cannot but hold the attention of any thoughtful reader.

An interesting series of reproductions of famous pictures, with accompanying descriptions, is at present appearing in the *Overland*. The usual short stories, poems and articles make up a good number.

Helen Louise Johnson has an article on "Electrical Cooking" in the June *Table Talk*. The Magazine abounds with the most valuable hints to house-keepers. "How to Manage Coal Fires" will be a godsend to many a perplexed manager.

The dainty magazine for small children, *Our Little Ones*, contains in its June number the usual charming selection of wee stories and interesting verses.

Sir Archibald Geikie is the subject of the usual sketch and portrait in the June *Popular Science Monthly*. The most important place is given to "Irrigation in the Arid States," by Charles H. Shinn, a subject which requires attention in the Western States. "Modern Miracles," by Prof. Evans, exposes some of the more recent phases of spiritualism. "Why Grow Old?" is an admirable article on a subject in which we must all at some time feel interested. "The Bay of Fundy Tides and Marshes" is an interesting article by Frank H. Eaton.

The May *Eclectic* contains an interesting article on "The French Canadian Habitant," by Lady Jephson, from the *National Review*. "Poor Abel" is a paper by Ouida on the tendency of modern times to sympathize with the descendants of Cain. An interesting and novel short story is "The Search After Culture," from *Blackwood's*. Among other notable papers might be mentioned "The Private Life of the Renaissance Florentines," by Guido Biagi.