

least carry away with him the instruments of self-education. Yet, as a matter of observed fact, neither reading nor writing is well taught in the lower grades of our schools, and, indeed, both are very imperfectly taught even in the higher grades. In order to learn to read fluently and understandingly one must read much. The pupils in our schools read nothing—as a rule—but fixed lessons of brief extent (and are sometimes kept two weeks and a month on one lesson), the greater part of the time being given to other things. As a result, they read badly in the lower grades, and often even when they pass for the High School. With writing the case is still worse. No person can learn to write easily, rapidly and legibly with character in the result except by much and continuous practice. The schools ought to give such practice, as a few private schools do. Instead, they set the boys and girls the task of laboriously imitating an engraved copy or a blackboard lesson for a certain time each day, and when their schooling is over the best they can do as a rule is painfully to draw an uncertain imitation of their copies as they remember them. They have no facility in writing and there is neither character nor dignity in what they do. In the teaching of

English grammar the fault is still greater, and of one hundred pupils taken from our public schools not ten can or do speak correctly. It should be the care of the schools to teach their pupils to speak and write English with propriety. This is really the sole aim of grammar. But they teach nothing of the kind to the great majority. They muddle their brains with an attempt to make a philosophical analysis of the language—a task in which no one can properly engage till after he has learned the language. The result is profitless, the time mispent. Every merchant, banker or other person who employs boys in his business knows from experience that the boys who come to him from the public schools bring very little to his service beyond more or less limber legs, with such natural shrewdness as they chance to possess. Their education has not fitted them in any valuable degree for work. In too many cases they cannot read well, write well or speak correctly. In fact there is a general lack of proficiency and thoroughness in the three Rs, especially in the reading and writing part. This is the natural result of the system which aims at cramming too many studies in too short a space of time.—*The Free Press* (London).

ASTRONOMICAL NOTES—SEPTEMBER-OCTOBER.

BY THOMAS LINDSAY.

THE very great interest taken in the study of Mars will probably now be somewhat abated, as the planet rapidly increases its distance from the earth and the tiny moons become invisible. We have not heard of their being seen in any telescope mounted in Canada, although we have some instruments which theoretically ought to reveal them.

Deimos, the outer and fainter of the two, is about equal in brightness to a star of magnitude $13\frac{1}{2}$. The relations of aperture to light gathering power in stellar observations is expressed by the formula

$$\log a = \frac{m}{5} - 1.802$$

where a is the aperture in inches and