Now, as to 'social efficiency,' I am equally unconvinced of error. Is it not clear that social conditions powerfully affect the selection of individuals, and therefore a society or nation depends for its existence largely on its corporate virtue? It is a commonplace of history that the success of nations has depended largely on their laws and customs, those advancing and spreading whose social conditions favored the existence of brave and noble men. To the evolutionist, the most discouraging feature of our present day civilization is the survival of knaves and fools, while good men and true so often go to the wall. If this process is not checked, the inevitable result is the breaking-up of society and a return to some form of savagery.

Mr. Reid's argument about alcohol appears to depend largely on his theory of retrogression —a theory which I do not accept. Of course, I do not deny that the general use of alcohol will lead to a process of evolution against it, but I do deny the desirability of any race undergoing such a process. The practices of the Spartans led to the survival of the strongest among their children, while weaklings perished; and while we should not now imitate them, they were justified in so far as the survivors were best fitted to defend the community in a time when physical defense was of prime importance and incapables were a serious hindrance. But the survivors of the pot-house are not particularly valuable individuals in other respects, nor is the ability to remain unaffected in the presence of whiskey a guarantee of good citizenship. Those very nations which are said by Mr. Reid to drink heavily are the leading nations of the world to-day. If Greece was anciently drunken and now is temperate, by all means give us drunken Greece!

There are three kinds of people, thus:

1. Those who have strong desires and keep them within bounds or divert them into suitable channels for social reasons.

2. Those who have strong desires but do not keep them within bounds or divert them into suitable channels.

3. Those who have not strong desires.

Mr. Reid's alcoholic evolution would apparently give us the third class. Savages largely belong to the second. I maintain that both the second and third classes are wholly undesirable, and that the first is the one to make a successful nation and to prove itself the fittest in the struggle for existence.* The second may become the first more easily than the third, and hence is more desirable. As missionaries will say, give us a man who strongly believes something, however demoniacal, and we can do something with him; but give us a man with no beliefs and we are almost helpless.

I fear Mr. Reid will feel strongly the inadequacy of my reply to his criticism, but he will forgive me in view of the difficulty of expressing oneself on such subjects in a few words. One's opinions are founded on the sum-total of one's knowledge and experience, and cannot always find justification in a few paragraphs.

T. D. A. COCKERELL.
MESILLA, NEW MEXICO,
September 9, 1897.

SCIENTIFIC LITERATURE.

Elementary Solid Geometry and Mensuration. HENRY DALLAS THOMPSON, D.Sc., Ph.D., Professor of Mathematics in Princeton University. New York, The Macmillan Company. 1897. 8vo. Pp. vii+199.

* The best nation would be one which contrived the fullest expressions of its desires with the minimum of harm. Some repression would be necessary because some of our desires or feelings were developed under different conditions. Thus the desire to kill an enemy may formerly have been advantageous, but could not be allowed full play under existing social conditions. I think we all at times would be more pugnacious if we permitted ourselves absolute freedom! At the same time, there is no doubt that under present circumstances excessive repression works a great injury, as I stated in my former article. One may compare the desires of the people to water flowing through a valley; if it is permitted to flow where it will it may be useless for agriculture and may even do much damage; if it is merely dammed up it is equally useless and is likely to break loose and do more harm than in the first instance; but if, by skillful engineering, it is directed into suitable channels it may all be made available for mills and irrigation, while dangers of flooding are avoided. Let those who are engineering the United States remember this and aim neither to waste nor repress the desires and energies of the people, but use them all for the good of all.

Professor Thompson's text-book on Elementary Solid Geometry will be received with pleasure by American teachers of elementary mathematics. It fills an almost unoccupied place by confining itself to a narrow field. Colleges that do not require solid geometry for entrance will find it especially useful.

There are six chapters devoted to those parts of the elementary solid geometry ordinarily taught in our colleges and secondary schools, one appropriate chapter on the conic sections and one on mensuration. Each chapter, excepting the fifth, includes a large and well selected set of exercises.

Of course plane geometry is assumed but the first seven pages are given up to a careful, though designedly not exhaustive, consideration of certain fundamental notions. It is well stated that postulates are propositions 'taken without proof and upon which a train of reasoning is to be built,' and 'that it is no part of geometry to justify their use except in so far as their form is concerned.'

The sequence of propositions is developed in a scholarly and logical though decidedly conservative manner. The assumed construction is rigorously excluded. Many of the demonstrations are informal or left entirely to the student. The treatment of mensuration, apart from the geometry proper, is a good feature.

Considering the completeness of the work as a whole, the proof on pages 122 and 123 is noticeable. The theorem is : "The arc of a great circle less than a semicircle is the shortest line on the surface of a sphere between two given points not diametrically opposite." This proposition can only be proved by the use of some such postulate as the following: "The magnitude of a curved line is the limit toward which a broken line made up of consecutive chords of that curved line approaches when the number of chords is increased in such a manner that the chords are all diminished without limit." (Thomas S. Fiske, Science, Vol. IV., p. 724.) The words 'curved line' and 'broken line' are to be understood to mean respectively 'a line no part of which is a great circle arc' and 'a line made up of great circle arcs.' It seems unfortunate that such a postulate was not explicitly stated.

The terminology used is, on the whole, that of the average text-book, but the author has rendered a genuine service to the American geometric vocabulary by the introduction of Mr. Hayward's term 'cuboid' in place of the clumsy expression 'rectangular parallelepipid.'

The pages have a different appearance from those of the majority of our text-books, for they are solidly printed in the English style and no abbreviations are used.

C. B. Williams.

Thirty Years of Teaching. L. C. Miall. London and New York, The Macmillan Company. 1897. Pp. viii+250. $1.00.

There is at present in the educational systems of all countries a circle—to call it a vicious circle would be over-emphatic—discriminating in favor of the classical languages and against the sciences. Those having a classical education at college and university find positions in the schools and in turn prepare boys for the classical course at college. The circle tends to remain unbroken. Teachers of the classics, being a great majority of all teachers, are apt to write most of the educational books. But from the point of view of the man of science a new era has begun when students of biology, such as Huxley, Morgan and Miall, begin to write on educational topics. The circle is broken and adjustment will follow in accordance with the physical principle of gravitation or the biological principle of the survival of the fittest.

Professor Miall's papers, reprinted with some additions from the *Journal of Education* (London), cover a wide range of subjects. He does not hesitate to write on the teaching of history, of geometry and of Latin grammar, as well as on nature study and school musuems, but throughout he urges by precept and by example the methods of natural science, of nature. Treat the child as a child, speak plainly, be interesting—such maxims are sufficiently trite, but they carry weight and influence when put in a book that treats the teacher as a teacher, and addresses him in a plain and interesting manner. Professor Miall's book will repay reading by the teacher, whether of the classics or of science, whether in the kindergarten or in the university.