Hargrave's form but of Mr. Clayton's construction, left the top of Blue Hill at noon. Similar smaller kites were attached to the main wire at intervals, so that the 20,670 feet of wire unreeled, which weighed 59 pounds, were sustained in the air by seven kites, having a total lifting surface of 213 square feet. Angular measurements at the windlass of the meteorograph enabled its height to be determined at definite times. The greatest height was reached at 4:17 p. m., when the meteorograph was 9,255 feet above Blue Hill, or 9,885 feet above the neighboring ocean. The meteorograph remained more than a mile above the sea during five hours. The reeling-in by means of the steam windlass occupied about two hours, and at 6:40 p. m. the meteorograph returned to the ground.

The automatic records were found to be smooth and distinct, with the exception of a portion of the barometer and hygrometer traces which was lost, owing, perhaps, to the temporary drying of the ink in the pens. The altitudes given by the barograph agreed closely with those computed from the angular measurements, showing that the barometric heights were nearly correct for the mean temperature encountered. The thermograph showed the lowest temperature to have been 38° at 9,255 feet above the hill, whereas on the hill at the same time the temperature was 63°, giving a mean decrease of only 1° for each 370 feet of ascent. The relative humidity varied greatly with altitude, although on the Hill it remained near 50 per cent. of saturation during the first half of the flight, increasing to about 80 per cent. at the end. Up to approximately 3,000 feet above sea-level the relative humidity increased, proving the existence of an invisible vapor stratum near the level of the cumulus cloud level. Higher it suddenly decreased, but increased to over 80 per cent. at the height of a mile, indicating the level of the alto-cumulus clouds. Above 8,000 feet the humidity was very low and probably less than 30 per cent. of saturation. The wind veered to west as the kites rose and became steadier, although its velocity was probably greater than near the hill top, since the pull on the windlass, which was counteracted in part by the weight of the suspended wire, exceeded 150 pounds when all the kites were high in the air.

A. Lawrence Rotch.
Blue Hill Meteorological Observatory,
September 27, 1897.

'THE PRESENT EVOLUTION OF MAN.'

The discussion of my review of his work, which is given by Mr. Archdall Reid on pp. 368–372 of your issue of September 3d, deserves some sort of reply. Yet I write with some reluctance, because I can only make such comments as must already have suggested themselves to many readers, without attempting an adequate treatment of the matters in dispute, which would require a book.

As regards Mr. Reid's theory of retrogression, I certainly have to say that I think it is wrong. The general statement 'that the ontogeny recapitulates the phylogeny' was a brilliant generalization when first made, and within reasonable limits accorded with the facts. But surely it has since been made a fetish of, and the version of it accepted in some quarters reminds one of the not uncommon popular notion that all animals are descended from one another in a direct line! According to Mr. Reid's view, I do not quite see how a female can transmit male characters, or *vice versa*, as undoubtedly occurs. If, for example, the beard is a comparatively new character, a woman, having no beard, is so far atavistic. Yet that beardless woman will have bearded male offspring, independently of the hairiness of the the father. But if such illustrations are objected to as being different from those intended by Mr. Reid, we may take the case of a seasonally dimorphic butterfly, which alternately loses and gains a set of characters. Here we have a series ABABAB, etc. If A is the oldest phase, then B reverts to A, and the opposite process should not be possible. When we contemplate the primary and secondary sexual characters and all the phenomena of dimorphism and polymorphism, I do not see how we can avoid the conclusion that germinal selection is a reality. At all events, the writer, after carefully reconsidering the matter in the light of Mr. Reid's new statement, is more than ever convinced of the validity of his former argument.

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.