

listener, with a fuller and clearer knowledge of the Amazon and its tributaries, its basin, its products, its people, its cities, and fragments of towns, its industries, and its probable future, than he could get from reading many other books. The second part especially, containing the results of the journey of 1873 systematically arranged, will be found extremely handy and valuable by anyone who desires in brief space a general view of the physical geography, natural history, ethnology, industrial resources, commerce, prospects, and scenery of the vast Amazonian region. Prof. Orton has evidently supplemented his personal knowledge of the region by an extensive study of the contributions of others who have written on the subject, so that while the classical works of Bates and others, as well as the special papers of Prof. Orton himself, will be resorted to by those who desire to make a thorough study of the Amazonian basin, we know of no single work containing a fuller, more brilliantly written, and at the same time more trustworthy general account of the basin of the Amazon and its many wonders. The following extract on the density of population in the Amazonian valley will give our readers some idea of the style of the work :—

“The valley of the Amazons is probably the most thinly-peopled region on the globe, save the great deserts and the polar zones. There are not 40,000 souls along the banks of the rivers in the whole province of Amazonas and the Lower Marañon. Many of the towns marked on the maps do not exist, or are represented by a solitary palm-hut. The visible population is almost confined to the circumference of the valley; as at Pará, near the mouth of the river; at Moyobamba and Tarpoto, on the oriental side of the Andes; and at Trinidad, Santa Cruz, Cochabamba, and La Paz, on the head-waters of the Madeira. The great basin is filled with a continuous, dark, primeval forest, rarely disturbed by the hand of man, and into which daylight seldom enters. Yet imagination peoples this pathless wilderness with uncounted swarms of savages. There are, it is true, numerous clans (we can hardly call them tribes) of Indians, distinct in language, and often hostile toward each other. But many of these so-called tribes, though dignified with separate names, are insignificant in numbers, barely mustering a hundred; while the Mundurucú, the largest known tribe in the valley, does not exceed 8,000—men, women, and children. Nor are there any remains of ancient walls to indicate a bygone civilisation, or even shell-heaps in memory of a more primitive race.

“Until the close of the Tertiary age the waters prevailed over this heart of the continent; and since then vegetation has had the mastery, leaving little chance for animal life. And until there is a decided change in the physical geography of the valley, a large part of it must remain unfit for permanent settlement, on account of the annual floods; for a rise of 40 feet in the river drives the inhabitants from their summer resorts on the margin of the streams to the higher *terra firma* within the forest. In this way nomadic habits are engendered or perpetuated, and poverty is almost inevitable, for half the year (flood-time) it is hard work to get a living. Furthermore, this regular inundation of the country and the lack of grassy campos (except on the Lower Amazons and the Beni region) prevent the raising of domesticated animals, which, if it does not lie at the foundation of agriculture, certainly does aid in the transition from the savage to a semi-civilised state. In this respect the natives of Central Asia and Africa, as well as the maize-eating tribes of the Andes, have an advantage over the mandioca-eating Indians on the Amazons.”

While minute criticism might find many statements

and hypotheses in Prof. Orton's work to challenge; while some of his chapters may be considered by the lover of severity of style as intolerably florid; while in short anyone who has a mind to might find something to object to, we are sure that all into whose hands the work may fall will agree that few more attractive and at the same time more instructive works of travel have been written. Prof. Orton seems to anticipate that ere long the Amazon will become a highway for tourists, as it well might—even now it has a considerable service of steamers—and therefore gives many hints, directions, and statements of expense that render his work valuable as a guide-book. Not the least attractive feature are the many well-executed illustrations of places, people, scenery, and animal and plant life that enrich the volume. Two large maps, one of the Marañon and its tributaries and the other of Equatorial America, add to the value of the work, which will doubtless be brought within reach of the English reading public by some enterprising publisher.

OUR BOOK SHELF

The Secret of the Circle, its Area Ascertained. By Alick Carrick. Second Edition. (H. Sotheran and Co., 1876.)

The Impossible Problem. By James Alexander Smith. Printed for the Author's Use. (Shaw and Sons, 1876.)

THE only difference we have been able to detect between this edition and its predecessor are that the last lines of pp. 34 to 38 of the first edition are the first lines of pp. 35 to 39 of the second edition, with the corresponding changes of the other lines of the several pages, that a date has been omitted on p. 39, and fig. 2 on p. 41 slightly modified. With our copy we were favoured with a number of *The Welshman* (Sept. 29, 1876) containing a very long notice of it, supplied to the editor of the paper by an enthusiastic admirer of the work. An extract or two will sufficiently illustrate the article. “Don't let the reader run away with the idea that this is a prelude to any long, complicated calculations, understandable only by the initiated. As simple as truth itself, when ascertained, the solution of this problem is as easy and capable of absolute proof as any ordinary sum in addition and subtraction.” “This beautiful problem and mystery that has tempted, attracted, and defeated the skill of thousands of the most subtle and far-seeing minds for thousands of years is found, when looked at in the right way, to be as easy and as simple as the alphabet.” “It will not suffice for mathematicians to endeavour to show by any fallible and inadequate system of computation now in vogue that this result cannot be. The reader can judge for himself.”

We in our former notice pointed out what we considered defective in Mr. Carrick's proof. The work is a posthumous one, hence it is that the second edition has experienced no revision at the author's hands.

Mr. Smith, in his pamphlet (8 pp.), arrives at the same result as Mr. Carrick, viz., that $\pi = 3\frac{1}{2}$, or the area of the circle equals $\frac{3}{4}$ of the square of the diameter + $\frac{1}{8}$ of that square. The roads pursued are different.

Though we cannot agree with Mr. Smith, we have read his work with some interest, for there are some neat little pieces of simple construction in it. His equations on p. 5 may be put into the more general form :—

$$w = (3 + p)x, y = (\frac{3}{2} + p)x, z = (\frac{3}{2} + 2p)x.$$

We have not been able to see, if other values would satisfy his equations besides the one he has selected, which leads him to draw the conclusion he does,