those, the vast proportion, who will have no subsequent regular instruction in the subject, the method and mode of treatment of the author may be heartily commended. It is, we learn, the outcome of actual class work, modified by experience and the mutual play of the minds of teacher and taught. The author has a belief in the especial value of "outdoor chemistry" as appealing to the interests of the learner, and there is an excellent chapter towards the end on plant respiration and nutrition.

One notices a few important omissions and errors. The use of the spectroscope in chemistry is nowhere alluded to. The mention of argon and its companions in the air should be amplified or omitted. As it is, it contains one of the few mistakes, in the statement that the density of argon is forty times that of hydrogen. Helium is not even referred to by name, surely a remarkable omission for an author addicted to "outdoor chemistry." We read, "The exact specific gravity of oxygen . . . is 15·88 (H=1). This makes the atomic weight of oxygen 15·88. . . ." But these few blemishes in no way detract from the general accuracy of the treatment.

It is a pleasure to notice a book of this description, for it indicates the serious and important place chemistry is taking in the school curriculum. It deserves a high place, not only in the school, but generally as an excellent introductory first course, understanding by this term not a mere smattering of the kind deemed sufficient only a few years ago, but a course in keeping with the true position of the science as a serious and profitable part of a good modern education.

Altitude Tables. Computed for Intervals of Four Minutes between the Parallels of Latitude 31° and 60° and Parallels of Declination of 0° and 24°, designed for the Determination of the Position Line at all Hour Angles without Logarithmic Computation. By F. Ball. Pp. xxxii+241. (London: J. D. Potter, 1907.) Price 15*s.* net.

THE main purpose of these tables is to facilitate the determination of the position line from an observation of any heavenly body and to eliminate, practically, the chance of errors of computation in the result. When the idea occurred to the Rev. F. Ball he consulted the Astronomer Royal, who consented to the employment of several of the Greenwich computers on the work, under the direction of Mr. Crommelin; the accuracy of the tables is therefore beyond suspicion. The tables are computed for intervals of every four minutes between latitudes 31° and 60° and parallels of declination 0° and 24°, and they enable the observer to determine the position line at all hour angles without having to solve any spherical triangle. This does away with the necessity for logarithmic computations, and so the probability of errors is eliminated. For altitudes less than 70° it is expected that the tables will give results accurate within 12″; for greater altitudes their use is not recommended. The author hopes soon to publish a companion volume for latitudes 0° to 30°.

Problems in Strength of Materials. By Dr. William Kent Shephard. Pp. vii+70. (London: Ginn and Co., n.d.) Price 6*s.*

Whittaker's Arithmetic of Electrical Engineering for Technical Students and Engineers. Pp. vii+159. (London: Whittaker and Co., n.d.) Price 1*s.* net.

To set students of applied science to work numerical problems involving thought in their subject is a good test as to whether they understand the principles involved. It is customary in many classes to associate the laboratory and lecture work with practice in solving such problems, and teachers will find in these volumes many examples suitable for the purpose. The first volume, in addition to 568 exercises, contains some useful tables, but little in the way of worked-out examples to guide the student is given and no answers are provided. The second book, on the other hand, contains seventy-two typical problems fully solved, and a set of answers.

An Essay upon Disease: its Cause and Prevention. By Dr. G. E. Richmond. Pp. 96. (London: H. K. Lewis, 1907.) Price 2*s.* net.

THE main object of Dr. Richmond's little book is to point out the large number of diseases either spread by food or directly due to impurities in food or articles in common use. It is surprising to find a confession in the preface to the effect that "the essay has been written rather hurriedly," and unfortunate that no index is provided.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.]*

Radium and the Earth's Heat.

IT has been shown by the Hon. R. J. Strutt and other investigators that the materials composing the surface of the earth contain on the average about 10^{-12} gram of radium per gram, while about one-twentieth of this amount is sufficient to account for the heat lost by the interior of the earth by conduction. Mr. Strutt has therefore suggested that the interior of the earth contains less radium per gram than the surface. It is interesting to calculate what would happen if the whole earth contained 10^{-12} gram of radium per gram. If the specific heat of the interior of the earth is taken to be 0·1, and 1 gram of radium is supposed to generate 100 calories per hour, then it is easy to show that the temperature of the interior of the earth would rise by 10^{-5} degree C. per year if all the heat generated by the radium were used up in raising the temperature.

If the temperature of the interior rose 100° C., it is probable that the rise near the surface would be too small to be detected, so that observations extending over at least ten million years would probably be necessary to detect the effect of the heat generated by radium even if the whole earth contained 10^{-12} gram of radium per gram and all the heat generated went to raise the temperature.

I understand that geologists are inclined to think that the temperature near the surface of the earth has not altered much for many million years, but this is not inconsistent with a rise of 10^{-5} degree C. per year in the interior. It is, of course, quite possible that the specific heat of the earth is considerably greater than 0·1. The high pressure in the interior probably makes the specific heat larger than at the surface.

HAROLD A. WILSON.

I MENTIONED the possibility which Prof. Wilson discusses in my original communication on radium in the earth's crust in the Royal Society's Proceedings; but he certainly shows that it is more worthy of attention than I then thought it.

On this theory it becomes necessary to suppose that the primary stock of radio-active material in the earth—uranium—has not been in existence for a longer time than is required for the attainment of thermal equilibrium by conduction, for we know that the uranium is wasting away, and unless the supply is replenished it is clear that the gradient of temperature must diminish, instead of increasing as Prof. Wilson supposes. We cannot at present form any notion as to how the uranium could come into existence, so that any further development of the idea