making a very interesting and instructive volume. We think that the illustrations, which are many and various, reach a rather higher standard of excellence than that to which we have been accustomed. The editor tells us that undoubtedly, in time, all text-composing for printing will be done by a photo-mechanical process, and that this matter is still being worked at and progress made. Collotype, which many used to suppose to be too troublesome to work in this country, because of the vagaries of the climate, appears to be gaining in favour, and can be combined with offset methods to considerable advantage. An example of such a combination is given in a coloured collotype of Messrs. Howard and Jones. The history of the Print Society by Mr. M. F. Whittington, with offset examples, will be appreciated by many artists and collectors who favour etching as a means of expression. Mr. Gamble, in his "Review," refers to the neglect of inventors and inventions, and we would heartily second his desire that such neglect might be avoided. He is, however, unfortunate in one of his examples —namely, the "Electrical Inkless Printing" process, which was shown some five-and-twenty years ago by the late Mr. Friese Greene. Mr. Gamble says that Mr. Greene "was unable to find the necessary financial support, and the process died out of recollection." The weak point of that method was diagnosed in a moment by those who were well grounded in scientific principles. The paper was sensitised all over (essentially by a salt of manganese), but the sensitive material unused was not, and probably could not be economically, removed. The present writer has specimens that were then produced. For years they have been covered with a dirty brown stain, often in smudges, and the staining has extended to the envelope that contains them.

C. J.

Vorlesungen über die Theorie der Wärmestrahlung. By Prof. Max Planck. *Vierte, Abermals Umgearbeitete Auflage.* Pp. xi+224. (Leipzig: Johann Ambrosius Barth, 1921.) 36 marks.

THIS work has now gone through four editions, and it remains the standard book on the theory of radiation. The earlier parts, dealing with the classical theory, are practically unaltered, and constitute still far the most thorough introduction which a student could have into the rather difficult ideas of the theory. The later part differs from the earlier editions very considerably. In the first and second editions the end of the book contained a good deal of rather arid discussion of the radiation problem from several only slightly different points of view. All this has now been replaced by a very interesting development of the quantum theory, in particular of those branches, including radiation, which concern temperature problems. The discussion from the point of view of entropy is very complete, except for the lack of an explanation of why it is right first to define entropy in terms of probability, and then to re-define probability—the so-called thermodynamic probability—so as to derive from it the "absolute" entropy. Apart from this question of the arbitrary constant in the entropy, there is a very clear account of Planck's more recent work on the equation of state of gases.

Der Entropologische Gottesbeweis: Die physikalische Entwicklung des Entropieprinzips, seine philosophische und apologetische Bedeutung. By Dr. Josef Schnippenkötter. Pp. 109. (Bonn: A. Marcus and E. Webers Verlag, 1920.) 15 marks.

To anyone familiar with modern physics it is a frequent occurrence to observe encroachments of the second law of thermodynamics on more and yet more branches of science; but it comes at first as rather a surprise that it covers a still wider field and has also an application in theology. Yet the connection is not so remote as appears at first sight, for alone of all the laws of Nature the second law deals with non-conservative processes. According to a certain school of thought the laws of dynamics and electro-dynamics, being conservative, might be left to run themselves, but the degeneration of energy can only be taken to prove that the world must have been started at some time and must end at some future date—hence the title. The author of this philosophical work has evidently read widely in the literature of the philosophy of science and in science itself. There are discussions of 320 papers in it; indeed, almost every page is covered with references. He draws the cautious conclusion that entropy does not necessarily imply the existence of the Deity.

A Text-book of Qualitative Analysis of Inorganic Substances. By Dr. S. A. Kay. Pp. vii+80. (London: Gurney and Jackson; Edinburgh: Oliver and Boyd, 1921.) 7*s.* 6*d.* net.

THE practical details of analysis are described in this book more minutely than is customary in order to minimise the necessity of constant supervision of the student. All accounts of the theory, even the chemical equations of the reactions, are omitted. These are to be discussed orally. It would, however, have been very much better to have included them, since students usually carry out the tests mechanically unless they have their attention constantly directed to the chemistry involved. The result is rather reminiscent of cookery.

Geography for Junior Classes. By E. Marsden and T. A. Smith. Pp. viii+278. (London: Macmillan and Co., Ltd., 1920.) 5*s.*

THE book under notice is suggestive of the bad old geography furbished and brought up to date. The last three parts cover the British Empire, and a general view of the continents. The first is mainly pure physics of a brand which is not welcome. The phrase "Lines and Belts of Equal Heat" is bad anywhere, but much worse in a head-line. The book will not help to improve school geography.