corners and back. Several daily record sheets are provided, and the student is expected to fill these up, giving particulars of date, portion of the text-book or work studied, remarks, as well as particulars of the time which he has spent at other subjects. The student is expected to certify this record by his signature. Pasted to the interior of the cover are elaborate instructions regarding methods of entering work done, for filling up the record sheet, excuses, collection and distribution of work-books, inspection, and corrected work. Some of these instructions are distinctly good, and might be taken to heart by many teachers of mathematics in this country For example—"as soon as possible learn to draw a light, smooth, draughtsman's line." Those who have had the opportunity of examining the British average mathematical home-work will appreciate this quotation. No doubt the designer of this book has found that it meets perfectly the needs of his own institution and students, but we question whether it will meet with much favour in this country, where it is well known that every teacher prefers to develop his own methods as regards style of home-work, examination, and so on.

The Celebration of the Two Hundred and Fiftieth Anniversary of the Royal Society of London, July 15–19, 1912. Pp. 128. (London: Humphrey Milford, 1913.) Price 5*s.* net.

THE interesting events in connection with the celebration of the 250th anniversary of the Royal Society in July, 1912, were reported in these columns at the time, and the contents of this volume consequently cover ground familiar to our readers. This permanent record of the proceedings contains a full list of delegates and verbatim accounts of the addresses, speeches, telegrams, and letters addressed to the Society from learned societies and other bodies throughout the world. With the new edition of the "Record" of the Society, and the facsimile reproduction of the pages of signatures of the fellows in the Charter book, from that of the Royal founder down to those entered in the summer of 1912, it will form an appropriate and lasting memorial of a noteworthy celebration.

Who's Who in Science: International, 1914. Edited by H. H. Stephenson. Pp. xx+662. (London: J. and A. Churchill.) Price 2*s.* net.

THIS excellent work of reference contains, in addition to its 9000 biographies of men of science of all nationalities, other useful information. Especially convenient are the tabular statements, arranged alphabetically, of particulars about the universities of the world, which include the names in each case of the head of the university and the senior occupants of the various scientific chairs. A valuable list of the "World's Societies" is also included, and from it the name, address, number of members, the name of the secretary, and other facts can be seen at a glance. An exhaustive classified index adds greatly to the value of the volume.

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.*]

The Pressure of Radiation and Carnot's Principle.

I GATHER from a letter on this subject which appears in your last issue that Lord Rayleigh endorses the opinion that the partial pressure p of any particular frequency in full radiation may properly be deduced from the intrinsic energy-density E/v of the same frequency by Carnot's principle.

The other point to which I wished to direct attention is that, in the case of a steady stream of radiation of constant frequency, the heat quantity measured is the total heat of formation per unit volume, $E/v+p$, and not the intrinsic energy-density E/v as commonly assumed. The disagreement with experiment of Wien's well-known formula for the partition of energy in full radiation, is readily explained if we assume that it represents only the intrinsic energy. The corresponding value of the pressure is very easily deduced by reference to Carnot's principle, as Lord Rayleigh has indicated. The formula which I have proposed (*Phil Mag.*, October, 1913) is simply the sum of the pressure and energy-density thus obtained, and gives very satisfactory agreement with experiment, both for radiation and specific heat. I prefer it to Planck's formula (among other reasons) on the ground that the latter cannot be reconciled with the classical thermodynamics, and involves the conception of a *quantum*, or indivisible unit of action, which is unthinkable. The corresponding physical magnitude on my theory, which I have elsewhere called a molecule of caloric, is not necessarily indivisible, but bears a very simple relation to the intrinsic energy of an atom, which is all that is required to explain the fact that radiation may in special cases be emitted in atomic units which are multiples of a particular magnitude.

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Atomic Models and X-Ray Spectra.

IN his letter to NATURE of January 1 on "Atomic Models and X-Ray Spectra," Dr. F. A. Lindemann deals with the approximate agreement between the recent experiments of Mr. H. G. J. Moseley on "The High-frequency Spectra of the Elements" (*Phil. Mag.*, December, 1913), and the calculations given in my paper, "On the Constitution of Atoms and Molecules" (*Phil. Mag.*, July, September, November, 1913).

In Dr. Lindemann's opinion a theoretical explanation of Mr. Moseley's results can be obtained in several ways; and he therefore concludes that the agreement in question cannot be considered to support the assumptions used in my paper. By the help of a consideration of dimensions he seeks a relation between the five quantities, ν, r, Ne^2, m, and h. He shows that an infinite number of different expressions can be obtained for ν in terms of r, Ne^2, m, and h; and he indicates how several of these expressions may be brought in approximate agreement with the experimental results.

This procedure does not appear to me to be justified. Just as little as the five quantities ν, r, Ne^2, m, and h, the four quantities, r, Ne^2, m, and h, may be considered as independent of each other. By a consideration of dimensions we can obtain a relation