

in 1874. The resulting product, "chemical" wood pulp, is used for the better classes of paper.

The wood pulp industry in a little more than half a century has grown to an enormous extent in Scandinavia, Germany, and North America. This is not to be wondered at, as the consumption of paper is increasing all over the world by leaps and bounds. In 1922 the paper used in the United States for newspapers alone amounted to 45 lb. per head of the population.

Mr. Kellogg gives a detailed account of the pulp industry as it is now carried on in Canada and in the United States. He describes the various processes of manufacture and the different species of woods employed, and gives statistics and charts of costs and production. He deals very fully with the important question of the timber supply now available in North America; and discusses the annual drain on the forests, due to felling for all purposes and loss by fire, insects, and disease. It is estimated that the timber in the United States at the present rate of consumption will last only for sixty-four years. The need for scientific forestry and better modes of protection is urgent in the extreme. The book is well illustrated with diagrams, maps, and reproductions of photographs, which depict forest scenes, pulp mills, and machinery. The view of a nursery in Canada, where five million seedling trees are raised annually, shows that some of the great lumber companies are at last taking active measures to replenish the areas that have been devastated by reckless felling and disastrous fires.

*An Introduction to the Theory of Optics.* By Sir Arthur Schuster. Third edition, revised and enlarged by the author and Prof. John William Nicholson. Pp. xv + 397. (London: E. Arnold and Co., 1924.) 18s. net.

THERE is no need to set out here the merits of Sir Arthur Schuster's book on optics, and in describing the new edition, in which he has had the collaboration of Dr. J. W. Nicholson, we may confine ourselves to the novelties that have been introduced. These include descriptions of some of the newer optical instruments and processes, among them an excellent account of Michelson's method of measuring stellar diameters.

The main addition is in two chapters at the end, which deal with the quantum theory. In the first of them there is a good account of Bohr's theory of the hydrogen spectrum, which is followed by a short discussion of Planck's law of radiation. In this there is an unfortunate misprint, giving preference to Planck's second hypothesis over his first, instead of the other way about. We may also regret the absence of any mention of the thermodynamic principles which should serve as the basis of any discussion of radiation; indeed a detailed discussion of "black body radiation" would be a proper complement to the excellent descriptions of white light that are found earlier in the book. The account of the partition law is adequate, though we may confess a doubt whether a student coming fresh to the subject would find it convincing. However, this objection applies to nearly all presentations of the subject which approach it without a thorough consideration of statistical principles.

The last chapter deals with the dynamical theory

of spectra. It follows mainly the work of Sommerfeld and his school, giving the three dimensional quantisation, fine structure, etc., and then Sommerfeld's construction of the formulæ of Rydberg and Ritz. It also contains an account of ionisation potentials and concludes with the dynamical theory of the separation of variables, the principle of adiabatic invariance and the correspondence principle which is applied to the Stark effect. Altogether the whole constitutes a good outline of many of the more recent optical applications of the quantum theory.

*James Dewar, 1842-1923: a Friday Evening Lecture to the Members of the Royal Institution, on January 18, 1924.* By Henry E. Armstrong. Pp. 32. (London: Ernest Benn, Ltd., 1924.) 1s. 6d. net.

EULOGY, whether spoken or written, makes greater demands upon judgment, knowledge, and taste than any literary task—so difficult is it, while maintaining equipoise between the elements that compose virility and virtue, to avoid transgression into adulation too fervid or into praise too faint. When eulogy relates, however, to a friend who has passed beyond mortal life, the task is to some writers made easier, for thoughts then spring from the depths in proverbial abundance, and there is more of reverence to steady the balance. It is in these circumstances that Prof. Armstrong pays tribute to his friend James Dewar. He extols the great philosopher in terms the substance of which is already familiar to those who early in the year followed the proceedings of the Royal Institution; but it is well that the discourse then so finely wrought in the rough, and now polished, and set in the gold of generous appreciation, should take this permanent form. Here and there some comparisons may be too vivid, here and there the detail may be weak, and the allusions may occasionally be inconsequent and in excess, but the work as a whole reveals with truth and justice the skill, genius, character, and nobility of purpose of James Dewar, in a manner to encourage and to inspire all who study it in a mood to respond. R. A.

*Assyrian Medical Texts: from the Originals in the British Museum.* By R. Campbell Thompson. Pp. vii + 107. (London: Oxford University Press, 1923.) 42s. net.

IN our issue of April 12, p. 529, we published a note on a reprint from the Proceedings of the Royal Society of Medicine by the same author on the same subject. The present work is a series of 107 plates containing the text of 660 cuneiform medical tablets for the most part previously unpublished. They are from the Royal Library of Ashurbanipal, now preserved in the British Museum, and date from the seventh century B.C. It is perhaps to be regretted that the preface is not given in greater detail, as otherwise the work is intelligible only to Assyriologists.

*Bell's Card of Logarithms and Science Tables.* 10 in. × 8½ in. (London: G. Bell and Sons, Ltd., 1924.) 2s. net per dozen.

THIS is a single card of convenient size for use in classrooms, giving four figure logarithms, trigonometrical tables for intervals of one degree, and a number of useful physical and chemical constants.