

with corresponding singularities. A mathematical student will find it an excellent exercise to dualise all the theorems contained in this volume. Again, in discussing cyclides, the author has missed the chance of referring to Lie's one-one correspondence of lines and spheres in space. A real cyclide is the envelope of a real sequence of spheres; Lie's transformation leads to a sequence of complex lines, and it would be interesting to see what the cyclide corresponds to.

Prof. Jessop duly appreciates the late R. W. H. T. Hudson's book on Kummer's surface; he has himself composed a work of the same kind, in the sense that it is a valuable introduction to some of the latest results obtained by geometers.

G. B. M.

OUR BOOKSHELF.

A Manual of Fire Prevention and Fire Protection for Hospitals. By Dr. O. R. Eichel. Pp. v+69. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1916.) Price 4s. 6d. net.

THE British Fire Prevention Committee, whose fire surveyors have been undertaking the fire precautionary arrangements in innumerable hospitals throughout the country, recently indicated in one of its reports that medical men who are prone to forethought are particularly ready to take precautions in such establishments as hospitals. We therefore specially welcome the little book before us, from the pen of a medical man connected with the New York State Department of Health. As it is largely based on American practice, much of the detail does not hold good in this country, yet the principles enunciated are sound.

Taking up a question of detail and having regard to the unfortunate tendency of some hospitals in this country to purchase dry-powder extinguishers, we observe that the author deals with them as follows:—

DRY-POWDER EXTINGUISHERS.—"These are the least reliable and most inefficient extinguishers known. Unfortunately, they are also very widely used, and can be found in many hospitals. . . ." Again, referring to another unfortunate type of fire appliance (*sic*), the glass hand grenade, which will be found in many hospitals, the author says:—

GRENADE TYPE.—"These types usually consist of bottles containing fluids, a large percentage of which is water, and are of so little value as to be practically worthless. The false sense of security which may result from their presence, and the time lost in attempting to quench the fire with them, may be very dangerous. They are hardly equivalent in value to a pitcher full of water. . . ."

Whilst we have mentioned specific examples of the author's comments on appliances, we should like to emphasise that he wisely gives fire prevention precedence to fire extinction. He deals with lighting hazards, heating hazards, etc. He also has some words to say on the organisation of the staff from the fire point of view, *i.e.* what he describes as the "Hospital Fire Department."

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The Portland Cement Industry. By W. A. Brown. Pp. x+158. (London: Crosby Lockwood and Son, 1916.) Price 7s. 6d. net.

THE cement industry presents striking resemblances to the aniline dyes industry. The first aniline dye was discovered and manufactured in England. Afterwards the sustained attention devoted to the subject by trained minds in Germany so changed the conditions through the introduction of new colours and cheaper methods of production that eventually a monopoly was acquired. Similarly, Great Britain first produced cement—Parker's (afterwards called Roman) cement in 1796 and Portland cement in 1824, to which may be added reinforced concrete (covered by Elkington's patent) in 1854. So, too, though partly from different causes, the cement industry has developed far more rapidly in Germany and the United States than here. The remarkable progress in America is attributed to the close co-operation during the past fourteen years of Associations of Cement Manufacturers and Cement Users. Fortunately, British cement machinery is now equal to any made in Germany, though it cannot compare favourably with American machinery. The improvement of cement has been facilitated by the general adoption of the "British Standard Specification," but ample scope remains for research with a view to increased economy and efficiency in the manufacturing processes.

The book before us is eminently practical, and deserves serious consideration because the author has had important American experience, and is now managing a large modern cement works in South Wales. Special attention is bestowed on the vital question of costs, particularly working costs for economical production, and the book may be profitably consulted by those interested in the industry. There are numerous illustrations, including thirty-six full-page plates, and some notes on physical testing constitute a valuable feature.

J. A. A.

Actualités Scientifiques. Le Principe de Relativité. By E.-M. Lémeray. Pp. 155. (Paris: Gauthier-Villars et Cie, 1916.) Price 3 fr. 75 c.

THE aim of this work is not to give a historical or critical survey of the development and significance of the principle of relativity, but rather to develop some of its consequences for dynamical theory so far as they are independent of all hypotheses as to the electrical constitution of matter. Three principles are assumed: the constancy of the velocity of light, the principle of virtual work, and the fundamental law of inertia, the last only for the most restricted case. From these the author develops conclusions as to the limitations to be placed upon the theorem of equality of action and reaction, upon the law of gravitation, and upon the meaning of mass. The extent to which the principle agrees with and requires experimental results is barely touched upon, but this is probably because the book is the record of a series of lectures aiming at a presentation of a particular point of view.