

## SOCIAL STUDIES IN ENGINEERING

### (1) Spanning Space

By Claude A. Claremont. ("Science in Action" Series.) Pp. 125. (London: Sir Isaac Pitman and Sons, Ltd., 1939.) 3s.

### (2) The Development of Power

By Eugene C. Wittick. Pp. xiv+164. (London: Cambridge University Press; Chicago: University of Chicago Press, 1939.) 5s. net.

THESE two small books deal with engineering subjects in a popular way, and though their methods of treatment differ, there is a considerable measure of unity of plan to be observed in them.

(1) The first volume is an English publication, one of the "Science in Action" series the purpose of which is to describe, in a readable way, interesting and important activities and the scientific principles underlying them. Here the object is to explain to the general reader the several types of bridges in use and the ideas and principles on which their designs were based. The author, besides being an engineer, is co-principal of the Montessori Training College, London, and has dedicated his book to two small boys. He reasons out, in simple yet graphic language, the fundamental concepts in the design and construction of twelve different kinds of bridge. One could wish that such a book were

largely adopted by teachers. The main subject is so familiar both to teacher and child. The historical notes and development, the properties of the materials suitable for each type, and the constructional details make up an impressive picture of purposeful adaptation which must convey a valuable lesson to a child's mind.

(2) In the second volume, the range of the subject is wider. It treats of the several sources of power and describes the machinery used to develop or transmit power in its different forms. The historical notes provide a background which explains and adds interest to later developments. This American publication is intended as a college text-book to stimulate the minds of students and to provide a source of information regarding the influence of this branch of engineering on social life. It may well be imagined that the Egyptian who had roughly devised a wheel which he could turn to raise water more easily than by buckets must have noticed that the flow of the river caused the wheel to turn. By combining the two functions he got a self-operating means of irrigation which left him free for other pressing work. The same simple impulses are at work to-day, though not so obviously, and if such books as these two were generally read and understood, the basic laws operating in our social life would be better appreciated.

## A COURSE OF PHYSICAL CHEMISTRY

Kurzes Lehrbuch der physikalischen Chemie  
Von Prof. Dr. Karl Jellinek. Heft 1: Grundprinzipien der physikalischen Chemie, Lehre von den reinen Stoffen und Mischungen von Nichtelektrolyten (Physikalisch-chemische Thermodynamik). Pp. xiv+314. 8.50 fl. Heft 2: Elektrochemie Phasenlehre, Lehre von den Phasengrenzflächen (Kolloidchemie), chemische Kinetik. Pp. xii+292. 7.50 fl. (Deventer: N. V. Uitgevers-Maatschappij *Æ. E. Kluwer*, 1938, 1939.)

THESE are the first two of four parts of Prof. Jellinek's book, each part being independent. The first part deals with fundamental principles and their application to pure substances and mixtures of non-electrolytes.

The subjects fall under the two main headings of thermodynamics and kinetic theory, and in both cases the subject is fully and clearly treated, all mathematical requirements except the elements of

the calculus being explained. There are many worked examples, and this is a very good feature of the book. The diagrams are neat and instructive, although the lettering is sometimes rather small, and there are some useful tables of numerical data. The symbols are well chosen, but a list of them would have been useful. The subjects include Nernst's theorem, which is dealt with from the modern point of view of entropies, and activity as far as it concerns non-electrolytes.

In most cases, alternative proofs of thermodynamic formulæ are given, one based on a cyclic process and the other on the thermodynamic functions, so that the reasoning is always made perfectly clear.

The second part of the book treats of electrochemistry, phase rule, surface and colloid chemistry, and chemical kinetics. The section on electrochemistry deals with electrolytes (including