

than the five milliards of indemnity paid to Germany after the war of 1870". Mr. Burnham rightly says, "Scientific research is essential to any attempt to develop or expand British industry".

Steam Turbines. By Eng. Lieut.-Comdr. T. M. Naylor. Pp. viii+207+13 plates. (London: Chapman and Hall, Ltd., 1929.) 12s. 6d. net.

THIS book takes rather an unusual form and is perhaps best described as being something intermediate between a textbook and a handbook. It is primarily designed to meet the requirements of engineering students in their final years at colleges, etc., and for this purpose should prove exceedingly useful. The object throughout is to give all essential information without any unnecessary overloading. Fundamental and derived formulæ are given with a skeleton connexion between them. This method of presentation not only gives all that is really necessary, but also provides a little mental stimulus in following the steps.

In the interests of brevity, the general treatment of the properties of steam, thermodynamics, and the theory of lubrication have been entirely omitted, it being considered that these subjects will have been dealt with in a more general study. A chapter on condensers is wisely included, since the vacuum requirements of turbines are special to themselves. The descriptive matter is concise but not quite up-to-date. As an example, the recent development of marine installations having reciprocating engines and exhaust steam turbines is not mentioned. This defect, however, is a consequence of the rapid progress made in this branch of engineering, and is an almost general characteristic of books on this subject. A future edition would be improved by some addition and a little elimination of described examples.

Geology and Geography.

Die Kriegsschauplätze 1914-1918 geologisch dargestellt. In 14 Heften. Herausgegeben von Prof. Dr. J. Wilser. (1) Heft 6: *Reims, La Fère und Ardennen.* Von Dr. C. Schnarrenberger. Pp. iv+45. 8 gold marks. (2) Heft 7: *Artois und Hennegau.* Von Prof. Dr. H. Stille. Pp. vi+40+2 Tafeln. 14 gold marks. (3) Heft 10, Teil 2: *Bodenschätze im Ostbaltikum (Ostbaltikum, Teil 3).* Von Dr. C. Gäbert und Prof. Dr. H. Scupin. Pp. vii+112+1 Tafel. 16-80 gold marks. (Berlin: Gebrüder Borntraeger, 1928.)

THREE more of the expensive monographs on the geology of the fields of War have now been issued. (1) The sixth in the series is an account by Dr. C. Schnarrenberger of the district between Reims, La Fère, and the Southern Ardennes. It includes an account of the Jurassic iron ores, of the Cretaceous rocks of this district, and of the Kainozoic between the Montian, which is left in the Cretaceous, and the Aquitanian, which is included in the Oligocene.

(2) Prof. Stille of Göttingen describes Artois and Hainault (Hennegau), where the rocks range from the Palæozoic to the Cretaceous, and, after the Lamaride folding, to the Kainozoic, of which in one respect his classification is less satisfactory than that of Dr. Schnarrenberger; his Palæocene includes the Landenian, which is said to be overlain by the Lower Eocene Thanetian, and thus reverses the sequence of the ordinary correlation. The most interesting section in this book is the account of the distribution of the ground-water which was such an important influence during the War on the trenching and mining. The memoir is illustrated by valuable hydrogeological maps and sections.

(3) The mineral deposits of Esthonia are described in the second part of No. 10 of the series. The useful minerals are varied and include materials used for building, cement, and bricks; there are also various mineral springs and peat. The two most important are the Ordovician phosphates and the oil shale, the remarkable kuckersite, which has been known since 1777. The author shows that its age is Middle Llandeilo; he gives a valuable account of the origin of the economic constituents in both the phosphates and oil shale.

Westward to Mecca: a Journey of Adventure through Afghanistan, Bolshevik Asia, Persia, Iraq and Hijaz to the Cradle of Islam. By Sirdar Iqbal Ali Shah. Pp. 224+12 plates. (London: H. F. and G. Witherby, 1928.) 12s. 6d. net.

THIS is an account of the adventures of an Afghan sirdar in the course of a journey from his native country to Mecca. The journey may be performed in two ways—the shorter, the sea route via Karachi or Bombay, or the longer way, round through Afghanistan, Persia, Iraq, and the Arabian desert to the City of the Prophet.

The longer the route, however, the greater the merit, so after a preliminary failure to take the shorter route, our author determines to make his way from India across the Himalayas, Central Asia, Persia, Iraq, and thence across Arabia to the Holy City. His first attempt failed, as the friend he was travelling with died in the Himalaya mountains, and he had to return to India and start afresh via Kabul, Persia, and Turkistan. Eventually he reached Baghdad, but finding he could not continue his journey by land, owing to the disturbed state of affairs on the Arabian frontier, he decided to go by sea to Bombay and start again from there in one of the pilgrims ships, and so to Jeddeh and Mecca.

The author certainly did go the longest way round, and we must hope acquired corresponding merit. We scarcely know what to make of the somewhat extraordinary adventures he had on this long drawn out journey, they seem to be so different from those of which one generally reads. The book is well illustrated, but contains no map. It may be recalled that the author broadcast a talk on Afghan affairs a short time ago.

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