

lesson as an example. The sixth lesson, on diffusion and liquefaction of gases, comprises revision of experiments on these subjects; Graham's law, and practical applications; then some historical notes leading to a very sketchy notice, without diagrams, of liquefaction of gases by self-cooling; and lastly, as "topics for discussion," commercial liquefaction of gases, separation of oxygen and nitrogen from liquid air, uses of liquid air, methods of nitrogen-fixation, uses of liquid sulphur dioxide, chlorine and ammonia, carbon-dioxide "snow."

It is regrettable that attempts are still made in our schools to turn out ready-made chemists and physicists. Enlightened university teachers, and employers, do not want students of this kind; they want youths with acute and alert minds, having a sound knowledge of elementary principles and a keen desire for more.

*Arabische Alchemisten. 1: Chālid ibn Jazīd ibn Mu'āwija.* Von Julius Ruska. (Heidelberger Akten der von-Portheim-Stiftung, Heft 6.) Pp. 56. (Heidelberg: Carl Winter's Universitätsbuchhandlung, 1924.) 3 marks.

THIS scholarly dissertation upon Khalid ibn Yazid will receive a hearty welcome from all those who are interested in the history of chemistry. It must serve as a foundation for all future work upon Khalid, who is one of the most attractive of early Muslim chemists. Much that is legendary has been associated with him from a very remote period, and this apocryphal matter has naturally increased with the passage of time. Prof. Ruska carefully examines the principal sources for the life of Khalid and is able to show that they contain numerous inconsistencies and anachronisms. It is clear that none of them is entirely trustworthy, and the same may be said of the various books and poems in Arabic ascribed to Khalid, which are probably all spurious, even though they may contain authentic passages.

Prof. Ruska considers the Khalid-Morienus story at some length, and rejects it. He explains that in its earliest form the story makes Stephanus, contemporary with Herakleios (died 641), the teacher of Khalid (died 704), but suggests that when Muslim historical knowledge came to recognise that Stephanus had died before Khalid was born, a "pupil of Stephanus," Marianus or Morienus, was invented to act as a link between the two.

All the Latin works which pass under the name of Khalid or Morienus are declared by Ruska to be falsifications, particularly the "Liber Secretorum Artis compositus per Chālid filium Jaichi," and "Liber Trium Verborum Kalid Regis acutissimi." While this is probable enough, there is good reason to suppose that certain sections are of extremely ancient origin, as they may be found in Arabic in the "Kitāb al-Muktasab" (c. 1300), which goes back to "Ares" and Khalid for its authorities and is quite independent of the line of development passing through Rhazes and the Spanish Arabs.

One small error may be noted. On p. 49, Prof. Ruska attributes the "Rutbatu'l-Ḥakīm" to Maslama al-Majriti; it was in fact written about 100 years after Maslama's death. E. J. H.

*The Fauna of British India, including Ceylon and Burma.* Edited by Sir Arthur Shiple. *Birds.* Vol. 2. By E. C. Stuart Baker. Second edition. (Published under the authority of the Secretary of State for India in Council.) Pp. xxiii + 561 + 8 plates. (London: Taylor and Francis, 1924.) 30s.

THE second of the volumes on Indian birds undertaken by Mr. E. C. Stuart Baker, for the "Fauna of British India" series, is a worthy successor to the first. It contains a further instalment of the Passeres from the Cinclidæ (Dippers) to the Regulidæ (Goldcrests, etc.), and deals with 473 forms in a remarkably thorough manner. So far as is known, the vernacular names, nomenclature, and habits of each form, in addition to a complete systematic description, are given, and it is hoped that further observations under the first three headings will be recorded by Indian ornithologists. A noteworthy feature, as in the first volume, is the numerous coloured plates executed by the author himself, which are a credit to his artistic ability. A few eggs and nests might with advantage have been figured; a series of the former as a coloured plate would have made a fitting frontispiece, or a figure of the egg of each of the forms of which plates have been given might have been included in them. The absence of a full synonymy is again noticeable, but we learn with satisfaction that a sixth volume has been sanctioned which will contain a full synonymy of the forms dealt with in the previous volumes, and such addenda and corrigenda as are necessary.

The "Fauna of British India" series is, we believe, meant primarily to serve as complete handbooks on various groups for Indian collectors, and if this object is to be fulfilled in dealing with the birds, Mr. Baker would do well to take the opportunity of introducing a brief but complete introduction to Indian ornithology, containing notes on collecting, geographical distribution, and a map, with some account of the topography of the region inasmuch as it concerns the Indian birds, in the sixth volume of his series. Mr. Baker's extensive knowledge of Indian field ornithology would make such an introduction most valuable. He is to be congratulated on producing a series which again makes it possible for those who have not his special knowledge to identify Indian birds correctly without wading through a mass of confusing synonymy.

C. DOVER.

*Engineering Non-Ferrous Metals and Alloys.* By Leslie Aitchison and William R. Barclay. (Oxford Technical Publications.) Pp. xx + 300. (London: Henry Frowde and Hodder and Stoughton, 1923.) 21s. net.

A TRUSTWORTHY account of the non-ferrous metals and alloys used for engineering purposes has been needed for some time, and Dr. Aitchison and Mr. Barclay have made an excellent effort to meet this need. Without entering into processes of manufacture, they discuss generally the properties of cast and wrought metals, and then describe in detail the several metals and alloys with their physical and mechanical properties, together with their principal uses. The statements of the authors are based on a wide practical experience, and may be regarded as authoritative. The section on the alloys of nickel will be found