Book Reviews

Stormy Life. Memoirs of a pioneer of the air age. Ernst Heinkel. Jurgen Thorwald, Ed. Translated from the German. Dutton, New York, 1956. 256 pp. + plates. $5.

This book is the autobiography of one of the great pioneer designers and builders of aircraft, Ernst Heinkel, whose genius resulted in the world's first flight of an aircraft under rocket power alone, in the summer of 1937, and the world's first turbojet airplane flight, on 27 Aug. 1939. It is not a history of scientific and technical development of the airplane but rather an intensely interesting, human, and perhaps somewhat biased, account of the stormy resistance offered by most elements of society to the technologic innovator. As such a case history it is of value to scientists and engineers generally, especially to those who feel that conditions favorable to new ideas were to be found in greater degree in pre-World War II Germany than elsewhere.

Heinkel early demonstrated powers of creative design, an intuitive knowledge of aerodynamics and of the role of aerodynamic improvement in good performance, and a clear vision of the path of technologic progress by way of the monoplane. At first, science as such was absent. But in 1930 Heinkel discovered and recruited two "theoreticians who never flew themselves and were probably incapable of mechanical work. But they both possessed a certain 'something.'" They were Siegfried and Walter Günter, identical twins—one a mathematician, the other an artist with a flair for the proper aerodynamic shape. Thus the scientist joined the designer.

Within a few years the rugged individualist began to feel pressures from the political and bureaucratic environment in which he lived. Throughout the manifold phases of expansion of his factories, with emphasis on production and in the face of many obstacles, Heinkel contributed an amazing number of advanced designs, particularly those incorporating, for the first time, rocket and jet propulsion. The story of their slow acceptance is told in detail. In truth, science and technology exist and advance in an environment of human motivation, of human competition and conflict, as universal as the characteristics of the human race. Scientists would do well to understand the interplay of these forces as well as those of the physical world with which they may prefer to occupy themselves.

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Nouveau Traité de Chimie Minérale. vol. I, *Généralités, Air, Eau, Hydrogène, Deutèrium, Tritium, Hélium et Gaz Inertes.* G. Bouissières, M. Haïssinsky, G. Pannetier, P. Pascal, R. Villard. Masson, Paris, 1956. 1097 pp. Illus.

Nouveau Traité de Chimie Minérale. vol. X, *Azote—Phosphore.* Paul Pascal and R. Dubrisay, Eds. Masson, Paris, 1956. 964 pp. Illus. Cloth, F. 7500; paper F. 6600.

In this new treatise on inorganic chemistry, the plan is to present the material in 19 volumes, which are scheduled to appear between the years 1956 and 1960. So far, volumes I and X have been published.

The first 345 pages of volume I are devoted to a general introduction that discusses such subjects as stable and radioactive isotopes, coordinate systems and phase diagrams, classification of the elements, structure of the atom, structure of ions, simple ions, complex ions, covalence, bond types, bond energies, molecular structure, macrostructure.

The next 80 pages are concerned with the composition and properties of air, followed by 140 pages on water, 122 pages on hydrogen, 233 pages on deuterium, 30 pages on tritium, 133 pages on helium and other enert gases, and 10 pages on radon.

Volume X consists of an exhaustive treatise on nitrogen and phosphorus, 713 pages of which are on nitrogen.

Each of the two volumes contains a bibliography that lists libraries in Paris and also throughout France, together with abbreviations of scientific journals, their exact titles, and the French libraries in which these journals may be found. A list is likewise given of symbols for various constants of nature and for other physical constants used in physicochemical equations, in accordance with the recommendation of the 14th conference of the International Union of Chemistry.

The various sections of the work carry the name or names of the particular authors at the bottom of each page as well as the page on which the list of references is given. For easy consultation, the lists of references are divided into groups of ten references. Each volume has a subject index. The paper used is of good quality, and the printing is clear and pleasing. Tables and graphs are numerous.

The material of the remaining proposed volumes is distributed as follows: II, lithium, sodium, potassium; III, rubidium, cesium, francium, copper, silver, gold; IV, beryllium, magnesium, calcium, strontium, barium, radium and radioactive derivatives; V, zinc, cadmium, mercury; VI, boron, aluminum, gallium, indium, thallium; VII, scandium, yttrium, lanthanum and the lanthanides, actinium; VIII, carbon, silicon, germanium; IX, tin, lead, titanium, zirconium, hafnium, thorium; XI, arsenic, antimony, bismuth, vanadium, niobium, tantalum, protoactinium; XII, oxygen, sulfur, selenium, tellurium, polonium; XIII, chromium, molybdenum, tungsten; XIV, uranium, and the transuranic elements; XV, fluorine, chlorine, bromine, iodine, astatine, manganese, technetium, rhenium; XVI, iron, cobalt, nickel, and their simple salts; XVII, complexes of iron, cobalt, and nickel; XVIII, ruthenium, rhodium, palladium, osmium, iridium, platinum; XIX, theory and description of metallic alloys.

If completed as planned, this modern treatise on inorganic chemistry will be a welcome addition to the reference library, replacing the older publications which now are so much out of date.

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Molybdenum. L. Northcott. Academic Press, New York; Butterworths, London, 1956. $6.80.

This book is the fifth of a series on metallurgy of the rarer metals, published by Academic Press. The quality of both the print and the paper is excellent. The author has collated the information available up to the end of 1955 on molybdenum and its alloys, and the book covers the following topics: history and occurrence in nature, extraction, processing and fabrication, physical properties, mechanical properties of molybdenum and molybdenum alloys, equilibrium diagrams of binary and ternary molybdenum systems, oxidation resistance, protective coatings and joining processes.