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Communications relating to the Editorial Department should be addressed to the Editor, HENRY T. BOVEY, 31 *McTavish Street, Montreal.*

The Editor does not hold himself responsible for opinions expressed by his correspondents.

No notice will be taken of anonymous communications.

NEW BOOKS.

The Materials of Engineering in Three Parts. Part III. By Robert H. Thurston, A.M. C.E. (New York: John Wiley & Sons. Montreal: Dawson Bro's.

Parts I and II. of this valuable and important work have already been noticed in the pages of this magazine, and Part III. the volume now before us, does not fall below the high standard of merit attained by the first two parts. It deals with non-ferrous metals and alloys such as copper, tin, zinc, brass, bronze, &c., opening with the history and characteristics of the metals and their alloys, which is more or less a repetition of the introduction to Part II.

Chap. II. deals in detail with the history, distribution, qualities, uses and manufacture of copper, zinc, lead, bismuth, nickel, and their respective ores, of aluminum, mercury, platinum, magnesium, arsenic, iridium, manganese, and the rarer metals. It concludes with an article on the market prices of the various metals referred to. In Chapter III. the author discusses the properties of the alloys, and, begins by giving the following resume of the results of his investigations as to their characteristics :—

"Alloys, being composed of metallic bodies, possess all the physical and chemical characteristics of metals; they have the metallic lustre, are more or less ductile, malleable, elastic and sonorous, and conduct heat and electricity with remarkable facility. In retaining these properties, however, the compound is so modified in some of its qualities, that it often does not resemble either of its constituents, and might consequently be regarded as a new metal having characteristics peculiar to itself. This is especially the case with those which are used in the arts. It would almost seem there is no department of the arts requiring the use of metals for which an alloy may not be prepared possessing all the requisite qualities, when these are not found in the original metals. The physical properties of an alloy are often quite different from those of its constituent metals. Thus copper and tin mixed in certain proportions, form a sonorous bell-metal, possessing properties in which both metals are deficient; in another proportion, they form speculum metal, which is as brittle as glass, while both of the constituent metals are ductile. It is impossible to predict from the character of lead metals what will be the character of an alloy formed from given proportions of each. In most cases, however, it will be found that the hardness, tenacity and fusibility will be greater than the mean of the same proportion as the constituents, and sometimes greater than in either, while the ductilty is usually less, and the specific gravity is sometimes greater and sometimes less. Thi coleur is not always dependent upon the colours of the constituent metals, as is shown by the brilliant white of speculum metal which contain 67 % of copper. Chapter IV. treats of the bronzes, chapter VI. of the kalchoids and miscellaneous alloys, and Chapter VII. of the manufacture and working of the alloys. In Chapters VIII. to XIV. the author gives an instructive discussion of the strength and elasticity of the non-ferrous metals and the alloys, as well as of the conditions affecting the strength and concludes a clear and well-written work with a chapter on the *mechanical* treatment of metals and alloys.

The Meteorological System of the Great Pyramid. By F. A. P. Barnard, L.L.D., S.T.D. (New York: John Wiley & Sons. Montreal: Dawson Bro.)

This work, will be noticed in the next number of Magazine.

We have also received from the Yale and Town Manufacturing Co.; a pamphlet entitled "a new system of weighing Machinery," in which is elaborately described the justly celebrated Emery Scales and Testing Machines.

THERE is being built at the Delamater Iron Works, an iron steamboat designed to run under water. It is 30 feet long, 7½ ft. broad and 6 ft. deep. Water ballast under control of the crew will enable them to sink or float her, and by the device of two rudders whose planes are at right angles to each other, she can be pointed in any direction. The usual outfit of electric engines, compressed air and diving suits, with which readers of Jules Verne are familiar, is included in the design. In war times she may also be used as a torpedo boat.