NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.
This is a review of the progress achieved in the field of the electrolytic deposition of both magnetically soft and hard alloys, supplemented by investigations carried out by the author. The mechanism is discussed of the electrodoposition from different electrolytes of nickel-cobalt and of cobalt-tungsten alloys with a high coercive force, and also the influence of the composition, of the temperature and of the pH of the electrolyte and of the current density on the physicochemical properties of the alloy. The crystal structure of Co-W alloys was determined from X-ray photographs and it is assumed that Co₃W, an intermetallic compound, is formed after the deposit has been heated to 600°C. The production of good magnetically soft alloys is more complex and has been less investigated. The author deposited iron-nickel alloys from electrolytes containing either hydrochloric or sulfuric acid, and the lowest coercive force for an alloy deposited from the latter at a current density of 2A/cm² was equal to 0.4 oersted. There are 12 figures and 6 tables, and 29 references.