Resistance of Thick Cylinders to Rupture. MALAVAL. (*Rev. de Métallurgie,* x, 214.)—In a tube of the proportions of gun practice, the thickness about equal to the calibre, there are two distinct periods besides the elastic range. This is followed by the range of semi-elasticity or partial failure, which is of sensibly the same duration in stress. With increasing applied pressures the area of overstressed metal widens radially outwards. Thus if the pressure is released the outer elastic zone is prevented from returning completely to its original shape by the permanent deformation of the inner plastic zone. The mutual action causes the unloaded tube to be stressed in tension in the outer region and in compression in the inner, so that it is in the condition of an ideal shrunk composite tube—*i.e.,* one with an infinite number of indefinitely thin components whose mutual pressures are such that under rising internal pressure all parts reach the elastic limit simultaneously and bear equal parts of the load. The semi-elastic period ceases when the outside layer reaches the limit of elastic deformation and is followed by the periods of general failure. During this period, covering an increase of resistance much greater than those of the first two periods, all parts show an increase of resistance, the inner region being in compression and the outer in tension. It follows that the metal, whose capacity for deformation is greater in compression than in tension, can withstand very considerable internal strains. It is concluded that the ordinary shrinking process might be replaced advantageously by one involving initial overstraining of a solid tube. A gun so constructed would withstand a pressure of over 1500 kilogrammes per square centimetre (213,300 pounds per square inch).

Graphite Industry of Madagascar. ANON. (*Board of Trade Journ.,* June 12, 1913.)—His Majesty's Consul at Antananarivo reports, on the authority of the Chief of the Mining Department of Madagascar, that the graphite industry in the island is making considerable progress, the quantity exported during the first quarter of the year amounting to 980 kilogrammes, as compared with 474 kilogrammes during the corresponding period of last year, and 259 kilogrammes for the corresponding period of 1911. It is believed that by 1916 there will be 20 metric tons exported annually.

Motor Car Bronzes. ANON. (*Metal Ind.,* ii, 7, 298.)—The American Society of Automobile Engineers has adopted the following specification for bronzes: Hard Bronze—Copper, 87–88 per cent.; tin, 0.5 to 10.5 per cent.; and zinc, 1.5 to 2.5 per cent. Gear Bronze—Copper, 88–89 per cent.; tin, 11 to 12 per cent., and phosphorus, 0.15 to 0.30 per cent. The hard bronze is similar to the United States Government bronze *G,* and has a tensile strength of approximately 35,000 pounds per square inch. The gear bronze is commonly known as English gear bronze.