

**French Railways.**—The new railways now under contract will increase the French lines from 22,193 kilometres (13,790·73 miles) to 40,000 kilometres (24,855 miles). Most of the work will be done under the superintendence of the government agencies, and the lines will be managed under state supervision, but not at government expense. The freight tariff is lower than in any other country except Belgium.—*Chron. Ind.* C.

**New Use of Nickel.**—Nickel is more infusible than iron, more malleable, more ductile, tougher, and not affected by atmospheric influences. M. Fleitmann has found that when melted it absorbs some carbonic acid, and if a small quantity of magnesium is then added the metal becomes remarkably ductile and malleable. It can be drawn out into very fine wire or beaten into extremely thin leaves, and can be readily welded either to nickel or to iron.—*Chron. Ind.* C.

**The Longest Geodetic Arc.**—By the joint labors of Spanish and French engineers, under the direction of Ibañez and Perrier, science possesses the measurement of a meridional arc of  $27^{\circ}$ , the longest that has yet been measured on the earth and projected astronomically in the heavens. Biot and Arago, on their return from Spain, anticipated the possibility of such an undertaking, if the revival of Spanish civilization should ever open the way, and their dream has been realized, after ten years' work, in an arc which extends from the northernmost of the Shetland isles, in lat.  $61^{\circ}$ , to the Saharan desert, in lat.  $34^{\circ}$ , covering nearly one-third of a quadrant.—*Comptes Rendus.* C.

**Coal in India.**—Theodore W. H. Hughes begins a paper on the coal fields of India by saying: "It will doubtless surprise many to learn that both in the superficial extent of its coal measures and associated rocks, and in the actual amount of its coal, India is surpassed by few countries, and that with respect to the size of some of the seams it stands pre-eminent in the history of mining." Even the United States cannot boast of seams 100 feet, 120 feet and 160 feet thick, like some that occur in Bengal. He calculates that the coal fields of India cover 35,000 square miles, and according to estimates drawn up by Dr. Oldman there cannot be less than 20,000,000,000 tons of coal in the Empire. Much of the material, however, is of an inferior quality and fit only for very rough use.—*L'Ingen. Univ.* C.