By the famous Perron’s theorem, for any strictly positive matrix $A : \mathbb{R}^d_+ \to \mathbb{R}^d_+$ we have $\| A^nx \|^{-1} A^nx - x^* \| \leq K \beta^n$, where $K > 0$, and $0 < \beta < 1$ are constants. The paper under review concerns its nonlinear generalization. Let $\alpha : \mathbb{R}^d_+ \to \mathbb{R}_+$ be a functional satisfying: A1) $\alpha(\lambda x) = \lambda \alpha(x)$ for all $\lambda \geq 0$ and $x \in \mathbb{R}^d_+$, A2) $(\alpha'(x))^T x > 0$ for all nonzero $x \in \mathbb{R}^d_+$, and A3) $\alpha \in C^3$. Given a (nonlinear) mapping $F : \mathbb{R}^d_+ \to \mathbb{R}^d_+$ define $Tx = [\alpha(F(x))]^{-1} F(x)$ for $x \in \mathbb{R}^d_+$ with the projective metric $\rho$. In the main result of the paper (Theorem 3) it is proved that whenever the following condition (*) $A(x) = F'(x)(I - x\gamma(x)^T) + F(x)\gamma(x)^T \geq B > 0$ is fulfilled (where $\gamma(x) = [\alpha'(x)^T x]^{-1} \alpha'(x)$ and $I$ is the identity matrix) then there exist constants $N = N(F, \alpha)$, $0 < \lambda = \lambda(F, \alpha) < 1$ such that $\rho(T^n x, T^n y) < \lambda \rho(x, y)$ for all $n > N$ and $x, y \in S$. It follows that there is a unique fixed point $x^* \in S$ such that $\sup_{x \in S} \| T^n x - x^* \| \leq K \beta^n$ for some constants $K > 0$, $0 < \beta < 1$. An important class of mappings $F$ satisfying (*) is described by Theorem 4. It appears that (*) holds if $\alpha'(x) \geq 0$, $F(x + (1 - \lambda)y) \geq \lambda F(x) + (1 - \lambda) F(y)$, $F'(x) > 0$ for all $0 \leq \lambda \leq 1$ and $x, y \in \mathbb{R}^d_+$, and $F(x) \leq F(y)$ whenever $x \leq y \in \mathbb{R}^d_+$. Besides the main topic several interesting remarks on extensions of Perron’s theorem in other directions are included. Nonlinear extensions of Perron’s theorem were obtained in the past by U. Krause [compare Nonlinear Anal. 47 (2001), no. 3, 1457–1466; MR1977031; J. Math. Econom. 15 (1986), no. 3, 275–282; MR0871157].