

**Foreign, National, State, and County Indebtedness.**

The total and per capita indebtedness of foreign nations, the United States, the several States, and their respective counties, presented in a condensed form, is given in a recent Census Bulletin, prepared by Mr. J. K. Upton, special agent of the Census office.

The indebtedness of the world for 1890 and 1880, as far as it has been possible to collect the data for the present bulletin, with the amount of increase or decrease, is as follows :

	Debt less sinking fund.	
	1890.	1880.
Total debts.....	\$26,917,096,680	\$25,818,521,219
Foreign nations.....	25,696,075,340	23,481,572,185
The United States.....	815,962,112	1,022,517,244
States and Territories.....	223,107,883	290,226,643
Counties.....	141,850,845	124,105,027

From the summary published it will be seen that relatively the burden of debt falls far heavier upon the

with the increase of population, and the per capita has been reduced from \$2.47 in 1880 to \$2.27 in 1890.

Aggregating the national, State, and county indebtedness, the per capita shows a decrease from \$46.59 in 1880 to \$20.46 in 1890, or more than one-half, and this decrease has been brought about mainly by voluntary taxation. The aggregate surplus receipts of another decade like the one just past would relieve the country from nearly all national, State, and county indebtedness, could they be distributed for the purpose.

**COALBROOKDALE BRIDGE.**

In the accompanying engraving is represented one of the most interesting bridges in England. It is located at Coalbrookdale, and is the oldest cast iron bridge in the world. It was erected by Mr. Darby, the quondam owner of the Coalbrookdale Iron Works. Owing to its novelty, it was for years considered a great curiosity, but it now owes its fame to its antiquity and to the fact that it belongs, as Mr. Andrew Carnegie said at the late meeting of the Iron and Steel Institute, to the genus of "firsts."

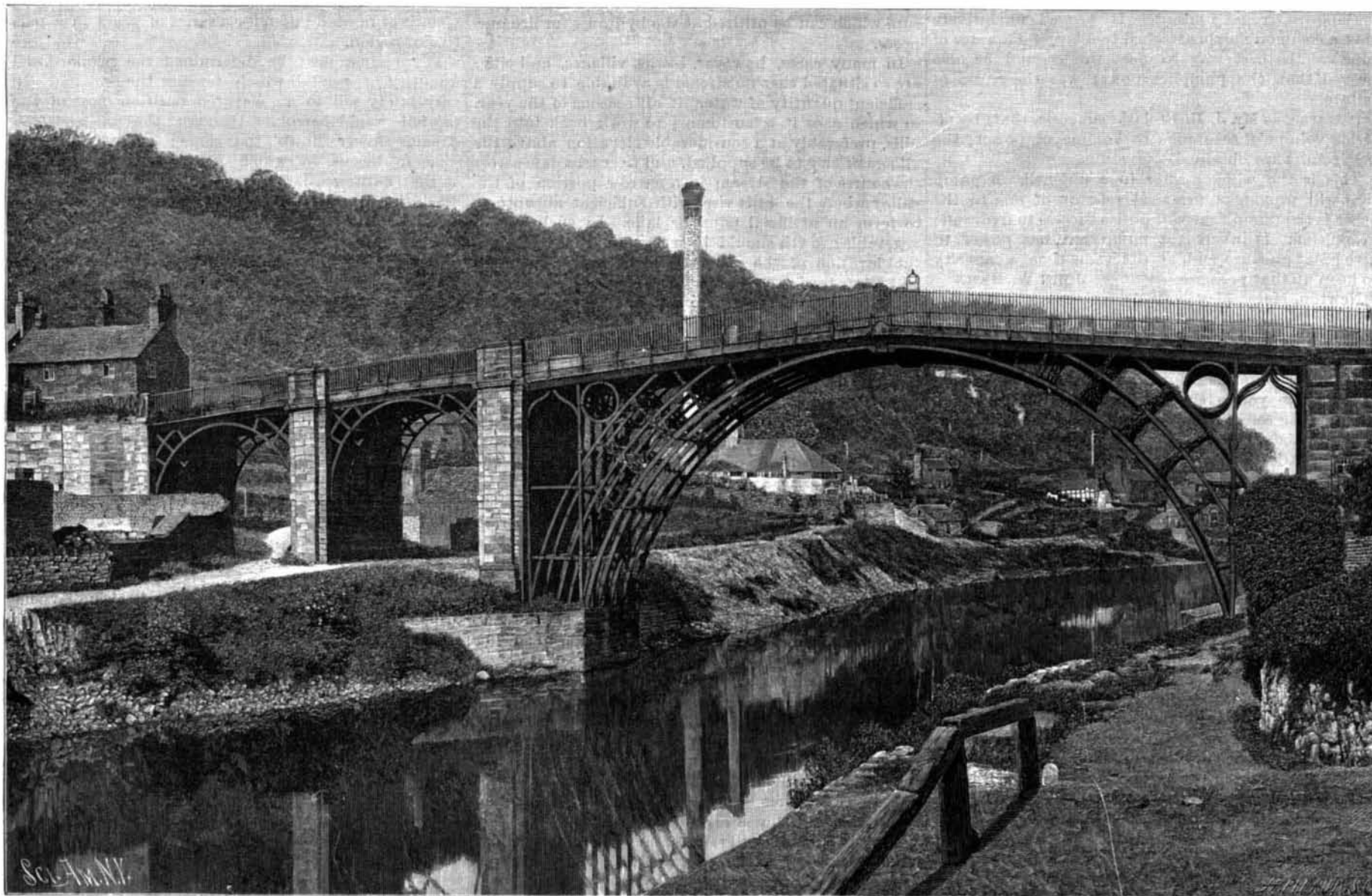
It was a bold experiment in a new line, and its beauty and durability still testify to the ability of its

The solution thus obtained constitutes an excellent reagent for the purification of the waste waters from industrial operations, and also for sewage, its cheapness rendering it available for the treatment of large volumes.

Its efficacy has been compared with that of the various reagents proposed for the chemical treatment of waters. It has moreover been tried on many very bad waters, such as the River Deule, which receives the sewage of Lille, the effluents from starch manufactories and wool scouring works, the water of the Espierre, a brook which receives the waste waters from the industrial center formed by the towns of Roubaix and Tourcoing, where so many dye and wool scouring works are located. This latter water, which is contaminated with the fatty matters resulting from the removal of the natural grease from wool, is a most difficult one to purify.

From the treatment of the water of the Espierre in particular, the following advantages, resulting from the use of ferric sulphate, have been demonstrated :

The sulphate of iron, being soluble, effects a more complete precipitation than is obtained by the addition of milk of lime. The cost of the actual process adopted for the purification of these waters, includ-



COALBROOKDALE BRIDGE, THE OLDEST CAST IRON BRIDGE IN THE WORLD.

inhabitants of the principal foreign countries, except those of Germany, than upon those of this country. France in 1880 had a debt per capita of \$116.35, and it is understood that this does not include certain annuities of an unstated but large amount; Great Britain, though slowly decreasing its debt, had a burden at that time of \$87.79 per capita; Russia, \$30.79; Austria Hungary, \$70.84; Italy, \$76.06; Belgium, \$63.10; the Netherlands, \$95.56; while that of the United States was but \$14.63, and of its indebtedness nearly one-half was made up of non-interest-bearing notes.

While individual fluctuations in the amounts of indebtedness of the seventy-nine foreign nations reported have been considerable during the decade, the aggregated indebtedness shows relatively but little change, especially if compared with the increase of population.

The public debt of the United States shows a gratifying decrease within the last ten years, the burden per capita having been reduced from \$38.33 in 1880 to \$14.63 in 1890.

The indebtedness of the States and Territories has also decreased \$67,218,760 during the decade, reducing the per capita from \$5.79 in 1880 to \$3.56 in 1890. It should be remembered, however, that of the total decrease of State debt as reported there has been sealed by refunding in some of the Southern States about \$28,500,000.

The indebtedness of the counties, though increasing somewhat within the decade, has not kept pace

founder. It was erected in 1779. It consists of five curved ribs nearly semicircular in shape and each formed of three concentric arcs connected by radial pieces. It reaches across the Severn with a span of 100 ft., while it has a total rise of 40 ft.

It is very light and graceful in design, and has given a name to the neighboring town, which has sprung up within recent years, and is known as Ironbridge.

**The Purification of Works' Effluents and Sewage.**

BY P. AND A. BUISINE.

Ferric sulphate has been very little used up to the present as an economical reagent for the purification of water by manufacturers.

The authors have succeeded in preparing the reagent from the residual burnt pyrites from chemical works, from whence there is an abundant supply at a very low figure.

By mixing the burnt pyrites with sufficient sulphuric acid of 66° B. to form a stiff paste, and keeping the mass stirred at a temperature of 100-150° C. for some hours, the pyrites become covered with a whitish coat of ferric sulphate. When the mass has again become dry, and crumbles, the acid is almost neutralized. It is then only necessary to add sufficient water, to obtain a solution of ferric sulphate of the strength desired. By working methodically, the pyrites may be completely decomposed, and converted into ferric sulphate.

ing a sufficient quantity of the reagent to effect complete precipitation, did not exceed what lime alone would cost. Again, the water purified by ferric sulphate was perfectly clear, colorless, odorless, neutral, or very slightly acid, while, where lime is employed, the water is alkaline, remains colored, possesses an unpleasant effluvia, and contains in solution a large amount of organic matter, which rapidly becomes a source of putrefactive fermentation.

The precipitate produced by sulphate of iron settles rapidly, and does not possess to such a high degree the unpleasant feature connected with lime sludge, of rapidly putrefying under the influence of heat.

Moreover, on treatment with carbon disulphide—after drying—the grease which the precipitate contains can be recovered, as the fatty matters (owing to the small quantity of free acid in the reagent) exist in the deposit in a free state.—*L'Industriel du Nord.*

**Growth of the Hair after Death.**

The body of E. M. Haskell, who has been dead for over twenty years, was recently removed from his grave, at Northfield, Minn., it being purposed to put the body in another lot. When his body was exposed it was found that he had a beard over twenty-three inches long. His wife said that before he died he had been shaven, and all his hair must have grown after burial.