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STEAM: ITS INFLUENCE ON THE ARTS AND MANUFACTURES.

In a series of most instructive articles on this subject, from the pen of the late Prof. F. A. P. Barnard, occurs the following admirably written eulogium of the services rendered by this mighty agent of civilization in the maintenance of the commercial and industrial supremacy of Great Britain, and a graphic picture of the slowness with which the revolutions caused by the introduction of steam were brought about, because of the lack of due appreciation of its enormous powers of usefulness. We quote from Prof. Barnard in what follows:

There remains to be mentioned one additional and most important consequence of the invention of the steam engine, which has impressed profoundly not merely the industrial but the political history of the world. If the cotton-gin has been responsible for much in controlling the political and social destinies of the Western continent, the steam engine has been for still more in fixing for England her place among the nations of the earth. At the time when this splendid invention made its appearance, England called herself mistress of the seas, and assumed to be the equal, if not the superior, of any military power upon the land. This place she still claims, perhaps justly, though her title to the exclusive dominion of the waves can no longer pass unchallenged. But without the steam engine, the power of England would have long since suffered a hopeless paralysis. It is from the depths of her mines that she has drawn the aliment which has sustained her manufactures and fed her boundless commerce and built up the enormous wealth which is the basis of her present strength.

Her iron and coal have made her a hundred times richer than she could possibly have been if she had possessed instead of them all the gold of California and all the diamonds of Brazil. But a century ago, just as Watt was turning over in his mind his first crude notions of the motor which was destined to transform the constructive industry of the world, many a thoughtful patriot and statesman of Great Britain must have been regarding with anxiety and alarm the stagnation which seemed to be gradually creeping over the mining industry of his country, and the danger which menaced with speedy total extinction this great source of her national wealth. As the mines were

sunk deeper, the expense of lifting to the surface the mineral extracted, of course increased; but this was a trifling consideration compared with the vastly greater expense of withdrawing the water which flowed in, in constantly increasing abundance, and which had to be raised from a constantly-increasing depth. In many instances mining had almost ceased to be remunerative; in many others quite. One after another the mines were abandoned and the water was allowed to fill them up. What had already happened in many instances could not fail to happen at length in all. An early ruin plainly impended over the mining industry of Great Britain, which could not fail to bring with it, and with the consequent failure of her fuel, an equal ruin to the manufactures, the commerce, the wealth and the political power of the British empire.

It was at this critical juncture that the new motor appeared. For some time after its appearance, it was only for the drainage of mines that its immense powers of usefulness seem to have been recognized; so imperfect at that time was the state of advancement of the mechanic arts! But applied to this purpose, then of paramount importance, it averted at once the imminent danger which menaced British industry, and restored to Britain the commercial sceptre just as it was about to fall from her grasp. The greatness of the British empire to-day is, therefore, clearly due to her early possession of the steam-engine. Without it she must inevitably and speedily have sunk to a level of comparative insignificance.

It is remarkable that, vast as was the revolution which the steam engine was destined to effect in the industrial world, the steps by which this was accomplished did not succeed each other with great rapidity. The first impression which the invention produced was in the relief it brought to mining. Its influence was next most distinctly felt in the development that it gave to textile manufactures. Then metallurgy yielded to its transforming power, and by degrees the same influence extended itself into every branch of mechanic art. But the application of the new power to locomotion upon the water and upon the land, applications which were destined to infuse into commerce a life and activity which it had never known before, and so to react upon production indirectly no less effectually than the same cause had already done directly, came at long intervals, and required the greater portion of a century for their full realization. It is