

*On the production of Coke suitable for metallurgical purposes from refuse  
Small Coal of Collieries.*

By G. M. WARD, M.S.E. (Abstract.)

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THE author in this paper points out the desirability that coke for smelting purposes should not only be capable of producing high pyrometric effects, and of sufficient strength to bear the immense burden of the column of material in the modern high furnaces, but should be especially free from sulphur. The separation in the first instance of the solid impurities is effected by washing the small coal, prior to its being coked, in a coal washing machine, by the agitation of the coal in water, whereby the various substances arrange themselves in layers according to their specific gravities; the coal, which is the lightest substance, forming the uppermost layer, and the heavier substances, viz. the slate, pyrites, and other solid impurities, forming the lower layers, the slack being deposited on a grid through which the agitation is given; and the machine is so constructed that the agitation shall not only divide the substances into layers, but gradually separate and remove the pure coal. The ovens are constructed so that the remaining volatile matter is perfectly and economically expelled. The pyrites being largely separated from the slack during the washing process, the sulphur is further reduced to a minimum by watering the coke at its highest temperature immediately after the coking process is completed, and it is desirable to continue the watering after the heat has ceased to be sufficient to convert the water into steam, as there remains in the coke sulphur in a state capable of being washed out. The author tells us that coke which has been condemned as too sulphurous to be used for smelting purposes has, after exposure to the weather for several years, been used with satisfactory results. Next to its purity, density and hardness are the tests of coke which has to be subjected to the blast and bear the burden in a furnace; density being obtained by reducing the coal to small and equal particles, and hardness by coking at high and uniform temperature.