Machinery and Appliances.

A NEW SMOKE CONSUMER.

The problem of how best to perfectly consume fuel and the gases liberated or generated during combustion in boiler furnaces, is one of very old standing, dating at least from the days when Watt invented his steam engine and the factory system of industry began to give strong evidence of its future large development. At first the volumes of carbon thrown into the air were regarded with surprise, but their rapid diminution, and the comparative absence of fumes contributing to the pollution of the air, hardly made sufficient impression upon public sentiment to silence any opposition to the practice. Another powerful factor in disarming objection to the blackening of the skies, the scarring of the landscape, and the destruction of vegetation that was steadily increasing, was the prohibitive nature of the permits in the course of which smoke and deleterious fumes were evolved. "It's the smoke that makes the money," said the part child said to the new person who, coming upon a truly rural district, looked with some degree of apprehension upon the atmospheric surroundings of his future home under the smoky-stained skies of a busy manufacturing town. Though not strictly accurate, the remark of the child contained a substratum of truth. The evil has since continued to grow, both in extent and intensity, with our expanding industries, until it may properly be said to have become simply measurable. Many endeavours have been made to devise a satisfactory method of abating or preventing the formation of smoke, or otherwise of preventing its escape from our furnace chimneys. The problem has been attacked at almost every point where it admitted of approach, but hitherto, failure, or a very qualified degree of success, has been the only result attained.

In our issue of September 27th, Dr. F. H. Borrowman, of Halifax, a thorough scientist and practical cotton spinner, stated the present condition of matters in relation to the question with great clearness and ability. We cannot do better in this place than reproduce a few extracts from Dr. Borrowman's admirable paper, which it will well repay those of our readers who may not have seen it to obtain and peruse—

"The production of smoke," says Dr. Borrowman, "is the result of imperfect combustion. Combustion is a chemical change, by means of which, so far as the burning of ordinary coal is concerned, the carbon and hydrogen contained in the coal are united with the oxygen of the air, and during the course of this change, which is attended by the evolution of heat, the carbon and hydrogen are changed into carbonic acid and water vapour or steam, both of which are invisible gases. It is clear, therefore, that when perfect combustion occurs, there will be no production of smoke, which is simply carbonised or unburnt carbon.

"As such, it represents a direct loss to the producer, because if the carbon had been united with its equivalent of oxygen, it would have produced its equivalent of heat, which is lost when the carbon is unburnt."

"In almost all our industrial processes we use solid fuel, such as coal, coke, etc., and no solid can enter into combination, or undergo combustion, without first assuming the gaseous state. For perfect combustion a gaseous condition is indispensable, as in this state alone can perfect
THE TEXTILE MERCURY

In order to accomplish this it is necessary that the smoke made should pass through another furnace, the heat of which should be so great that, of the compounds matter forming the black smoke, not a particle should escape combustion. To obtain and maintain this economically is the chief of the problem. The idea of an independent supply of heat cannot be entertained; therefore the heat generated by the furnace for use in producing steam must be utilized and delivered to the boiler for making steam without dilution, or loss will result. This requires it necessary that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point. This dictates in a manner that the second furnace, whatever might be its form, or the material of which it is composed, shall be placed in the boiler house in order to obtain the heat at its maximum point.