A New Process for Quickly and Economically Converting any Mass of Cast Iron into Steel. By M. GALT-CAZALAT.

From the London Chemical News, No. 320.

The author passes superheated steam into the fused iron. In traversing the mass the steam is, of course, decomposed; the oxygen burns progressively the carbon and oxide of iron, while the hydrogen combines with and removes the sulphur, phosphorus, and other metal-loids which render the steel brittle. When the color of flame at the top of the mass indicates a proper amount of decarburation the steel is run out. The author operates either in a cupola or a reverberatory furnace of his own construction, in which the waste heat from the furnace is utilized to produce the steam. There has always been a difficulty in knowing when to stop the decarburating current, the process often being carried too far; but to-day, says the author, common steel can always be regularly produced by completely decarburating the cast iron and then adding 10 per cent. of spathic cast iron, which restores to the iron the amount of carbon necessary to effect the conversion into steel. By a peculiar contrivance the author shuts off the current of superheated steam from the metal and passes it into the chimney, where it serves to increase the draft in the furnace, and thus leaves the steel in a state of tranquil fusion for about fifteen minutes, by which he gets a perfectly homogeneous mass. To remove bubbles in his castings he has a very ingenious device. A cannon, for example, being cast, while the metal is still hot and soft, he covers the mould hermetically with a sort of hat, from the top of which rises a pipe, in which is placed 6 or 10 grammes of a mixture 80 parts of saltpetre and 20 parts of charcoal. By opening a stop-cock the powder is allowed to fall on the metal, where it gets ignited, producing a large quantity of gas which exerts pressure on all parts of the casting, removing the bubbles and increasing the tenacity of the metal.

New Differential Anemometer. By E. SWANN, F.C.S.

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I beg to forward, for insertion in the *Chemical News*, a description of an instrument for measuring slight variations of pressure, trusting that the information may be of interest to many of your readers, not only on account of its practical value, but also as an ingenious application of a philosophical principle.

The instrument in question is in use at the London and North Western Works at Crewe, and is the invention of Mr. Ramsbottom, the company's mechanical engineer.

At these works Siemens's system of gas furnaces is being introduced for the manufacture of iron and steel, and as it has been found advisable to register the pressure of the gas, which only varies a few hundredths of an inch of water, an instrument of more than ordinary delicacy was required.

It occurred to Mr. Ramsbottom that an instrument having the requisite sensitiveness might be constructed on the differential principle