1306 the outcry became so general, that the Lords and Commons in Parliament assembled, presented a petition to King Edward I., who issued a proclamation forbidding the use of the offending fuel, and authorizing the destruction of the furnaces and kilns of all who should persist in using it. This was the year before the monarch's death, and the year which saw the overthrow of his life-long attempts upon the throne of Scotland, through the intrepidity of Robert the Bruce. But the proclamation against coal was as abortive as the endeavor to conquer the patriotism of the Scots. Prejudice gradually gave way as the value of the fossil fuel became better known, and from that time downwards its use became more extended; and it is very probable that throughout the 14th and 15th centuries, coal was extracted near the outcrop of the beds over most, if not all, of the coal-fields of Britain and Ireland. Historical records are still extant, from which we learn that collieries were opened during the 14th century in various parts of Yorkshire, Durham, and Northumberland.—*Hull's Coalfields of Great Britain.*

On the Detection of Bisulphide of Carbon in Coal Gas. By Dr. E. HERZOG.

From the London Chemical News, No. 78.

A solution is prepared by saturating absolute alcohol with ammonia gas. Then a concentrated aqueous solution of acetate of lead is made, and, to insure saturation, a small portion of the solid salt is left in contact. Both these fluids must be preserved in well-stoppered bottles.

The gas to be tested may be conveniently delivered from a length of vulcanized india-rubber tubing, to the end of which is adapted a narrow glass tube, about five or six inches long. Five drops of the sugar of lead solution are then mixed in a test-tube, with about sixty or seventy drops of the alcoholic ammonia. No precipitate will be formed providing the latter solution has not been allowed to absorb any carbonic acid.

The glass tube delivering the supply of coal gas is now immersed in the mixed solution to a depth just sufficient to allow the gas to be forced out by the existing pressure, and to escape in small bubbles. In the event of bisulphide of carbon being present, the liquid becomes gradually colored, and soon afterwards a yellowish-red precipitate is formed, which, by longer action, assumes a brownish color. If carbonic acid existed originally in the gas, then a white precipitate is thrown down, which imparts to the yellow-red a somewhat lighter color.

As a confirmatory experiment, the gas may be first passed through the alcohol ammonia fluid alone, and the lead solution subsequently added, when an orange-colored precipitate, appearing either immediately or very shortly afterwards, will be formed if bisulphide of carbon is present. In order to meet the objection that sulphuretted hydrogen may perhaps have occasioned this reaction, let some of the gas be first passed through a small quantity of the simple lead solution.

The smallest trace of sulphuretted hydrogen causes a blackening of the liquid, whereas bisulphide of carbon does not alter it in the slightest degree.

It should be mentioned that if the yellow-red precipitate be allowed to remain under the fluid, it gradually changes color, and becomes white after the lapse of about twenty-four hours. If, however, the precipitate be filtered immediately, slightly washed, and dried, it becomes a dark brown.

With regard to the explanation of the chemical reactions which occur in this process, the interesting observations made by MM. Zeise and Debus may be quoted as proving that, by the action of sulphide of carbon on ammonia, according to the concentration and temperature of the fluids and the proportion borne by the ammonia to the sulphide, so will the relative amounts of the products of decomposition vary. In concentrated solutions, and when the ammonia is in excess, sulphocarbonate of ammonium and sulphocyanide of ammonium are formed; in dilute fluids and when sulphide of carbon is in excess, xanthonate of ammonia. Therefore, by this experiment one or other product will preponderate according to circumstances, dependent upon the larger or smaller quantity of sulphide of carbon contained in the gas. In any case, compounds of lead are formed corresponding to the ammonia compounds, which possess at first an orange-red and afterwards a golden-yellow color.

Notwithstanding the complicated nature of the chemical reactions involved in the testing of gas by this process, the author recommends its adoption on account of the practical simplicity which, in his hands, attended the working of a great number of comparative experiments. —*Chemischen Centralblatt.*

New Process for Tinning Iron.

From the London Engineer, No. 282.

The chief object we have in view in coating iron with tin is to protect it from oxidation, since victuals cooked in untinned iron vessels, far from acquiring any poisonous quality, as they would in copper, would, on the contrary, become more invigorating in proportion to the iron they might absorb; only their taste would be impaired, and the vessel itself soon become useless. On the other hand, the tin-coating is not very durable, and the process of tinning has, therefore, to be often repeated. To obviate this inconvenience, MM. Vivien and Lefebvre have imagined a process for covering iron vessels with a film of nickel before applying the tin. They accordingly begin by scouring the vessels in a mixture of 320 grammes of sulphuric acid and 7 litres of water; this is done in a wooden cylinder which is made to turn round for about ten minutes; after which the following substances are added to this bath:—60 grammes of white kitchen-salt, 30 grammes of corrosive sublimate, and 2 grammes of pure sulphate of nickel, and the rotary motion is then continued for about an hour longer. At the end of this time, the vessels are found to have received a fine, uninterrupted, and very adherent coating of nickel,