certain account of chimneys, however, with which I am acquainted," says Beckman, "occurs in the year 1347; for an inscription, which is still existing, or did exist at Venice, relates that, at the above period, a great many chimneys were thrown down by an earthquake. This circumstance is confirmed by John Villavi, the historian, who died at Florence, in 1348, and who calls the chimney *punajuoli*."

The opinion of the Gottingen professor, however, is disputed by Mr. Tomlinson, who in his Rudimentary Treatise on Warming and Ventilation, says, "Winwall House, in Norfolk, which has been described as the most ancient and perfect specimen of Norman domestic architecture in the kingdom, has not only recessed hearths, but flues rising from them, carried up in the external and internal walls. Now, if Winwall House really be an Anglo-Norman edifice, its chimneys must have been built in the twelfth century, and consequently the claim of the Italians to the invention cannot be supported. The chimneys at Kenilworth and Conway were also probably erected anterior to the date of those on which the Italians rest their claim. Leland, likewise, in his account of Bolton Castle, which, he says was "finished ere King Richard the Second died," notices the chimneys. "One thing I much noted in the Hall of Bolton, how chimneys were conveyed by tunnels made on the side of the walls, betwixt the lights in the hall; and by this means, and by no covers, is the smoke of the hearth in the hall wonder strangely conveyed."

The contradictory opinions in reference to both the period and the country in which these important additions to domestic architecture took place, is not surprising, when we reflect on the darkness of the ages in which it is said they occurred. When chimneys were once either invented or introduced into England, however, they soon became common; this was to be expected from the great comfort which they must have yielded to the, hitherto, smoke-dried residents of most habitations, whether in town or county. In the reign of Queen Elizabeth, they had become so highly appreciated, that apologies were made to visitors, if they could not be accommodated with rooms provided with them; and it would appear that ladies were frequently sent out to other houses happily supplied with this luxury so much desiderated even in the days of "good Queen Bess." At that time, coal had not come into fashion as a domestic fuel, from the supposition that the smoke which it exhaled, produced a deteriorating effect upon the atmosphers and wash likewise, prejudicial to health.-Sanitary Reporter.

Technical Chemistry.

On a Means of obtaining Bismuth, by M. Balard,

The high price of bismuth for some years past induced M. Balard to undertake the search for this metal in old type materials. When it was cheaper, bismuth entered into the composition of the alloy for printing purposes. M. Balard proposes to effect this industrial analysis in the following way:

1. Dissolve the material in nitric acid, so as to transform all the tin into metastannic acid, which isolate by filtration from the acid solution of ni-

trates of lead and bismuth; wash with acidulated water, dry and reduce by charcoal.

2. Into the liquid, neutralised as much as possible, plunge plates of lead, which precipitate all the bismuth in a metallic state; dry and melt with a reducing agent.

3. Precipitate the lead from the last liquid by carbonate of soda; separate, wash, dry and reduce with charcoal.

This way of operating gives the three metals in a metallic state; it may undergo several modifications for isolating the metals under another form according to the arrangement of the products. To obtain extremely pure subnitrate of bismuth, says M. Balard, it is necessary only to neutralize the liquid containing the soluble nitrates, and dilute with a large quantity of water naturally free from carbonates, chlorides, or sulphates. After again neutralising and diluting with water and repeating the operations several times, the greater part of this metal becomes isolated in the state of white bismuth.—Journal de Pharmacie et de Chemie.

Extraction of Auriferous Silver from its Ores, by BI. J. Nickles.

Though the treatment of argentiferous ores is easy, and that of auriferous ores not very complicated, it is otherwise when the two metals are associated, for then the properties of the one prevent the manifestation of the properties of the other. If, for instance, auriferous silver is treated by chlorine water, the core immediately becomes covered with a coating of chloride of silver, which protects the rest from the action of the solvent. If this is attacked by salt water, ammonia, or hyposulphite of soda, the core becomes unmanageable, the chloride of silver dissolves, it is true, but leaves behind it a layer of metallic gold which in its turn resists the action of the solvents of chloride of silver.

After many tentative trials the simple plan occurred to the author of associating the two solvents, chlorine and chloride of sodium. He took salt water concentrated and saturated with clorine, and digested the auriferous alloy in it. By burning an ore of this kind and then washing it with the above solvent, the chlorine attacks the metallic particles, and then transforms them into chloride, which is dissolved by the sea salt.

It is thought that this solvent may serve for the treatment of ores so poor in metals as to be discarded for the ordinary extracting processes.— *Polyt. Notizblatt*, vol. xviii. p. 286.

On the Preparation of a Green Colour without Arsenic, by Dr. Elsner-

Having recently had occasion to study a pulverulent green colouring matter which he had been requested to analyse, and which was called green cinnabar, the author found that this matter, all shades of which could be obtained, from the lightest to the darkest, contained, various proportions of prussian blue and chromium green. This colour, applicable to the manufacture of paper hangings, will not serve for painting walls containing lime, as its action alters the tint of the prussian blue. Neither will it serve for colouring bonbons or for any other culinary purpose, because, though it contains no arsenio, it is not free from