

phate of lime. I have already noticed it in my paper upon a "*Recent Formation of Sandstone.*"

JOHN AYRTON PARIS.

VI.—A NEW SUBSTANCE, FOUND ACCOMPANYING
"WELSH CULM."

The species of coal known by the name of culm, "*Glanz Kohle,*" is imported on account of its purity, for the purpose of smelting tin. Mr. William Gregor informed me, shortly before his death, that he had observed amongst the heaps of this coal, lumps of a much more dense texture, and which were perfectly un-inflammable. In order to decompose it, he powdered it, and added twice its weight of *nitrate of barytes*, and subjected it to heat in a platina crucible; when, to his great astonishment, a violent detonation took place, accompanied with a copious evolution of *prussic acid* vapours, and upon examination he found the residue in the crucible to consist of the *prussiate*, and *carbonate of barytes*. Since Mr. Gregor's death, I have examined his chemical memoranda, and am thereby enabled to extract the following facts. From different experiments, the specific gravity of this substance appears to be 1,627. Fifty grains of the coal were mixed with 200 of *nitrate of barytes*,

reduced to powder, and placed in a platina crucible, which was set in a common fire; before the crucible became red hot, a violent detonation took place, with the disengagement of a brilliant light and vivid heat, which rendered the crucible and its cover red hot; a porous light greyish mass, mixed with black streaks, remained, which smelt of prussic acid; this was separated from the crucible and pulverized, when it was introduced into a matrass. Muriatic acid operated upon the powder, and a considerable quantity of an elastic fluid was disengaged; the solution assumed a dark blue colour, and a very light powder was suspended in it, resembling *Prussian blue*. It was poured off with the fluid, and the remainder was a portion of the undecomposed mineral, which, when dried, weighed $23\frac{3}{4}$ grains. This residuum was mixed with 100 grains of *nitrate of barytes*, and treated as before, when a detonation again took place, but with less energy, a greyish mass remaining, which was treated with muriatic acid as before; there was now no blue powder separated, but the lixiviated mass became opaline, the undissolved residuum now weighed $15\frac{7}{8}$ grains; this was again mixed with 50 grains of the *nitrate of barytes*, a brisk detonation and vivid flame were produced; in this case the vessel was exposed to a stronger heat than before, and on the addition of muriatic acid, a blue powder was again separated, when the undecomposed residue was edul-

corated and dried; it weighed $8\frac{1}{4}$, which was mixed with 40 of the nitrate, with the same phenomena, and the same separation of a blue coloured powder by the effusion of muriatic acid; the residue now weighed only $2\frac{1}{2}$ grains; this underwent a similar treatment, and after this, as not one grain remained undecomposed, it ceased to be an object of experiment. A strong smell of prussic acid accompanied the detonations.

I can find no farther account of this curious discovery; indeed increasing ill health put an end to all the chemical enquiries of Mr. Gregor. Imperfect as this notice is, I thought it proper to present it to the Society, as it might induce some of our members to undertake a farther examination, and perhaps to discover an œconomical application of the substance to the formation of *Prussian blue*; at all events, I feel confident that any extract, however crude, from the manuscripts of Mr. Gregor, will be respectfully received by every mineralogist in Europe.

JOHN AYRTON PARIS.

VII.—ON STONES AND CLAYS ANNUALLY EXPORTED FROM CORNWALL, FOR THE PURPOSES OF ARCHITECTURE, MANUFACTURES, AND THE ARTS.

It may be interesting and useful to place upon record the nature and quantity of the