

be a doubt that if manufacturers and mechanics will come liberally forward and exert themselves to display their work, it will warm into life a spirit of equally liberal encouragement and a determination to sustain home manufactures and home industry to the utmost degree.

THE INTERNATIONAL EXHIBITION.

(Extracts continued from "The Mechanics Magazine.")

The Eastern Annex.

Referring to the trophy in class II. Chemical Substances and products, the *Mechanics Magazine* remarks:

"The anomaly of this trophy is that finer specimens of most of its constituents are to be seen in other parts of the class. Thus we find the most magnificent crystals of red and yellow prussiate of potash, in the case of the Hurlet and Campsie Alum Company, No. 535, and Bramwell & Company, No. 484. Of the prussiate of potash, we would remark that it fills a very important place in our manufactures. Albeit it is made from such apparently worthless materials as rotten wool, rags, hoofs, horn waste, or any other azotized organic matters. These are mixed with the impure carbonate of potash and iron filings, and, whilst being stirred with an iron rod, submitted to a red heat in close iron vessels, the whole is afterwards treated with hot water, filtered and evaporated, when crystals are obtained of ferrocyanide of potassium. By passing chlorine gas through a solution of the ferrocyanide, the ferrid cyanide is formed, or by another process, too elaborate to describe here, cyanide of potassium is the resulting product so much used in electroplating, gilding, and photography, the finest specimen of which may be seen in the case of Messrs. Hopkin and Williams, No. 530. Again, from ferrocyanide of potassium, or the yellow prussiate of potash and sulphuric acid, the deadly hydrocyanic, or prussic acid, is formed, and prussian blue is an admixture of this same substance with a salt of iron.

"We have already spoken of the utilization of the ammoniacal liquor of the gas works. This leads us to consider the truly marvellous results that have been developed in the new product, aniline, from coal tar. Not long since gas was the only product that was obtained from coal, of a profitable character. Coke could scarcely find a purchaser; tar was a bug-bear of defilement—ponds of it seemed to beg for a hiding place from the anathemas of mankind. Yet from this very tar have we now a series of most valuable and surpassingly beautiful results. Witness the crowns of dazzling beauty made from the acetate of rosoline, the crystals of which, when dissolved, form that brilliant colour, the magenta; in fact, so far as colours are concerned, a fairy-land of ethereal blues, and deep rich crimsons, not to speak of violet, reds, and yellows, seem to have issued, at a touch of the chemist's wand, from the styx of all abomination, coal tar. Messrs. Perkins exhibit their beautiful blues, purple, and mauve, as also a jar of coal tar, from which they obtain twelve grains of aniline. On the opposite side is a similar jar, containing one grain of this highly dispersive and wonderful

salt in water, producing in that infinitesimal quantity the colour that has been so much and so long the rage amongst the fair sex.

"Messrs. Maule and Nicholson, the manufacturers of the resplendent crowns of acetate of rosoline just referred to, have the more abundant, if not the finest specimens, of the coal tar products, and apropos of the aforesaid crowns, we must not forget one acid that has been called in to aid their production—we mean the acetic acid. It must appear wonderful enough to the uninitiated to learn that their white wine vinegar is obtained, in the form of acetic acid, from the smaller branches of the oak and other hard woods, and yet more so to learn that it is now also obtained from that apparently useless material that has so long sought a satisfactory destination—sawdust. This dust now finds itself entering the mouth of a long retort through a hopper, is coaxed forward by an endless screw occupying the whole diameter of the retort, and brought under a heat that implies *destructive* distillation, thus parting with its volatile products, and leaving the retort at the far end fairly exhausted, it has the satisfaction, whilst assuming its sombre carbonaceous form, of having become the parent of the acetates, whose names are legion, and are of so great a commercial value amongst dyers, as also in chemistry and pharmacy. Sawdust also yields, at the hands of Roberts and Dale, some fine specimens of oxalic acid. The Melinevythan Co. (case 566), as also Messrs. Wright and Francis, shew beautiful specimens of acetate (sugar) of lead; indeed the acetates are exceedingly well represented in this class.

"Passing by, though not without an acknowledgment of their usefulness, the thousand and one products that constitute our ordinary list of chemical and pharmaceutical substances, we halt ever anon at the beautiful specimens of crystallography that has proved our chemists to have been on the *qui vive* in their contest for the palm with our Continental neighbours, and amongst these unique specimens we would mention those of the bichromate of potash by White and Co., and codeine by McFarlane & Co., indeed, a list made of even the most noteworthy would occupy far too much of our limited space, so we trust that our readers will find an early opportunity of forming their own estimate of the excellence of this department of our International Exhibition.

"A vast improvement in quality and price is shown in the alkalis, especially in soda. Our readers may remember reading in their catechism of chemistry, in their youthful days, how that soda was made from the ashes of marine plants, but most of them know that now-a-days Salt is the great source from whence we are supplied with this useful alkali. Salt is a chloride of the metal sodium; by pouring sulphuric acid upon it the sulphate of soda salt-cake is formed, and the chlorine set free:

"This sulphate of soda is then furnaced with chalk and small coal, the sulphuric acid is thus exchanged for the carbonic acid, and an impure carbonate of soda is the result. Again, lime is made to supply its oxygen in exchange for the carbonic acid, and we have, as a final result, instead of salt (the chloride of sodium), soda (the oxide of sodium), at a price just one-half that of