

with a different scale. Such is literally the case with the magnetical publications referred to, all of which inconvenience would probably have been saved if the machine we refer to had formed a part of the equipment of such establishments, thus allowing a scale of any special value required to be produced as often as needed—with the ordinary engines, the generation of a new scale is a serious undertaking. In fact the uses of Perreault's machine as an addition to general philosophical apparatus, owing to the extreme minuteness and accuracy of the linear measurements of which it is capable, and the great variety of scales which can be produced are as numerous as we think they would be found in the more practical pursuits above referred to, and we should be glad to hear of some enterprising mechanic in Canada providing one of them. The price in Paris is about £42 currency; for £20 additional the means of circular division are added.

Penny Wisdom.

There is a huge heap of chemical refuse now near the banks of the Tyne at Gateshead, which is not only a commercial nothing, but the manufacturer who unwillingly calls it his property, would most kindly greet any one who would take it off his hands; for he has to leave sundry acres of land for no other purpose than to deposit this refuse thereon. It is of such nothings as these that we would speak; and of the ingenuity which, from time to time, draws something therefrom. And we would also direct attention to a few miscellaneous examples of the useful application of materials long valued—the causing “a little to go a great way.”

Schoolboys display great skill in breaking their slates. Shall they be allowed to continue the exercise of this interesting practice; or shall we invite them to use the new Wurtemberg slates? A manufacturer in that country has invented a mode of applying a surface coating to sheet iron, which enables it to take freely the mark of a slate pencil; it is said to be much lighter, and much less liable to injury, than a common slate. If we have sheet iron slates, why not sheet-iron paper? Baron Von Kleist, the proprietor of some iron works at Nandek, in Bohemia, has lately produced paper of this kind, from which great things seem to be expected. It is remarkable for its extreme thinness, flexibility and strength, and is entirely without flaws. It is used in making buttons, and various other articles shaped by stamping; and it is capable of receiving a very high polish. Whether the world is ever to see the *Times* printed on a sheet of iron, we must leave to some clairvoyante to determine; but, no sooner did our manufacturers become acquainted with this Bohemian product at the Great Exhibition, than they instantly set their wits to work to produce better and thinner sheet-iron than had before been made in England. In the Birmingham department, before the exhibition closed, there made its appearance about five inches by three, consisting of 44 leaves of sheet-iron, the whole weighing about two ounces and a half. We are getting on: the age of iron literature may yet arrive.

Our learned chemists have lately discovered that, in making or smelting iron, not less than seven-eighths of all the heat goes off in waste; only one-eighth being really made available for the extraction of the metal from its stony matrix. What a sad waste of good fuel is here: what a provoking mode of driving money out of one's pocket! So thought Mr. Budd, of the Ystalyfera ironworks in Wales. He found that the heat which escapes from an iron furnace is really as high as that of melting brass; and he pondered how he might compel this heat to render some of

its useful services. He put a gentle check upon it just as it was about to escape at the top of the furnace; he gently enticed it to pass through a channel or pipe which bent downwards; and gently brought it under the boiler of the steam-engine which worked the blowing machine for the furnace. A clever device this; for this economised caloric heated the boiler without any other fuel whatever, and there was a saving of three hundred and fifty pounds in one year in the fuel department for one boiler alone. Mr. Budd told all about this to the British Association, at Swansea, in 1848; and at Edinburgh, in 1850, he was able to tell them much more. He stated that he had applied the method to all the nine smelting-furnaces at the Ystalyfera works; and that it has also been applied at the Dundyvan Works in Scotland. The coal used in the Scotch works is of such a kind that the wasted heat from one furnace is believed to be enough to heat the air for the hot blast, and to work the blast engines for three furnaces. Mr. Budd states that his plan enabled the Dundyvan proprietors to smelt ore with a ton and a quarter less coal to a ton of iron than by the old method; and he shows how this might arise to a saving of one hundred and thirty thousand pounds a year for the whole of Scotland. A pretty-saving this—a veritable creation of something out of a commercial nothing.

Horse-shoe nails, kicked about the world by horses innumerable, are not the useless fragments we might naturally deem them. Military men may discuss the relative merits of Minie rifles, and needle guns, and regulation-muskets; but all will agree that the material of which the barrels are made should be sound and tough, and gun-makers tell us that no iron is so well fitted for the purpose as that which is derived from horse-shoe nails, and similarly worn fragments. The nails are in the first instance made of good sound iron, and the violent concussions which they receive, when a horse is walking over a stony road, give a peculiar annealing and toughening to the metal, highly beneficial to its subsequent use for gun barrels.

An advertisement in the *Times* notifies, that “the Committee for managing the affairs of the Bristol Gas Light Company are ready to enter into a contract for a term, from the twenty-first December next, for the sale of from sixteen thousand gallons of ammoniacal liquor, produced per month at the works of the Company.” What is this ammoniacal liquor? It is a most unlovable compound, which the gas-makers must get rid of, whether it has commercial value or not. After coal has been converted into coke in the retorts of a gas-house, the vapours which escape are extraordinarily complex in their character; they comprise, not only the gas which is intended for illumination, but acids, and alkalis, and gases of many other kinds—all of which must be removed before the street gas arrives at its proper degree of purity. By washing in clean water, and washing in lime water, and other processes, this purification is gradually brought about. But then the water, which has become impregnated with ammonia, and the lime, which has become impregnated with sulphuretted hydrogen and other gases, are dolefully fetid and repulsive; and in the early history of gas-lighting these refuse products embarrassed the gas-maker exceedingly. But now the chemists make all sorts of good things from them. The lady's smelling-bottle contains volatile salts made from this refuse ammonia, and sulphate of ammonia is another product from the same source; the tar, which is another of the ungracious consequences of gas-making, is now made to yield benzole—a remarkable volatile liquid—which manufacturers employ in making varnish, and perfumers employ in making that which is honoured by the name of oil of bitter almonds, and housewives employ in removing grease spots, and economical ladies employ in cleaning white kid gloves; the naphthalene, which annoys the gas-maker by choking up his pipes, is made to render an account of itself in the form of a beautiful red colouring matter, useful in dyeing—in short, our