METALLURGY AND THE MANUFACTURE OF METALS.

Of Nails.—To the United States are due the invention and introduction of cut nails, and the power machines which cut and head them with such astonishing rapidity. The following extract from the writings of the celebrated Dr. Ure, will show in what high estimation this branch of purely American industry is held in England:—

"As nails are objects of prodigious consumption in building their block houses, the citizens of the United States very early turned their mechanical genius to good account in the construction of various machines for making them. So long since as the year 1810, it appears, from the report of the Secretary of the Treasury, that they possessed a machine which performed the cutting and heading at one operation, with such rapidity that it could turn out upwards of 100 nails per minute. 'Twenty years ago,' says the Secretary of the State of Massachusetts in that report, 'some men, then unknown and then in obscurity, began by cutting slices out of old hoops and, by a common vice gripping these pieces, headed them with several strokes of the hammer. By progressive improvements, slitting mills were built, and the shears and the heading tools were perfected; yet much labor and expense were requisite to make nails. In a little time Jacob Perkins, Jonathan Ellis, and a few others, put into execution the thought of cutting and heading nails by water power; but, being more intent upon their machinery than upon their pecuniary affairs, they were unable to prosecute the business. At different times other men have spent fortunes in improvements; and it may be said, with truth, that more than $1,000,000 has been expended. But, at length, these joint efforts are crowned with complete success, and we are now able to manufacture at about one-third of the expense that wrought nails can be manufactured for—nails which are superior to them for at least three-fourths of the purposes to which nails are applied, and for most of those purposes they are full as good. The machines made use of at Odiorne,—those invented by Jonathan Ellis and a few others, present very fine specimens of American genius.'"

The manufacture of wrought nails in the U. States, which, for some purposes, cannot be substituted by cut nails, because of their brittleness, was so limited, in consequence of the expense of performing the whole operation by hand, that, until a few years since, it was scarcely worthy of consideration; but, after many attempts, machines were finally invented, and are now in successful operation, for making this kind of nails with no more hand labor than is necessary to supply the rod of iron to the machine, which completes the nail by a series of connected operations: cutting off a piece from the bar, rolling it into the required form, and then forming the head. These machines have been very successfully applied to the making of large nails, called spikes, employed in frame structures and in ship-building. When these machines, however, were applied to the making of what are termed "hook-headed spikes"—that is, a spike with the head all on one side, used for fastening the iron rails of railroads—it was found that the head, formed by simply bending over the metal was not sufficiently strong to resist the jar to which they were subjected, and therefore were inferior to those made by hand, and strengthened at the head by the skill of the workman. This difficulty, however, soon yielded to enterprise and ingenuity; and machine made spikes are now preferred to those made by hand. Those simple and successful improvements cannot be dwelt upon too much, as they indicate that important results are generally attained by the simplest means. Instead of bending the head entirely over at one operation, the part of the metal of which the head is formed is only bent over to form an angle of about 30 degrees with the shank of the nail, and then it is struck by a second die moving in a line, or nearly so, with the shank, which finishes the head, and forces or concentrates the metal in the angle uniting the head and shank—thus giving all the requisite strength where it is required. As the brittleness of the cut nail constitutes its inferiority in one respect, and its sharp and serrated edges its superiority in another respect, to the wrought nail—the former being due to the fact that the length of the nail is formed from the breadth of the bar from which it is cut; and the latter because it is cut by a sharp instrument, instead of being rolled or hammered—many attempts have been made to make nails which would have the combined advantages of the cut and wrought, by rolling the bars or rods from which the nails are to be cut, of the desired form, and then to cut them in the length of the bar, so as to have the grain of the iron run in the length of the nail. I believe, however, that so far, these attempts have been unsuccessful.

Door Hinges.—The making of hinges, either of cast or wrought iron, is a branch of manufacturing industry which has made great progress in the United States, and which has been the fruitful source of many valuable and ingenious inventions and improvements. The casting of hinges on to a wrought iron pin with a free and good joint, is truly one of the triumphs of mechanical ingenuity. One half of the hinge is cast on the wrought iron pin in a sand mould other half is cast on to it, in such a manner as to chill the surface of the molten iron when it comes in contact with the cold iron of the half first formed, which prevents the two halves from adhering. Many improvements have been patented for various methods of forming the moulds, most of which, I believe, are in successful operation. The price of hinges thus made is, of course, very low, and peculiarly adapted to the condition of this country.

The wrought-iron hinges are made of plate iron, the plates being cut into the required form by powerful steel dies operated by lever power, and the knuckles formed to receive the joint pin by being forced into a die which curls or bends over the knuckles. The parts are then filed, and the pin introduced to unite the top halves. The introduction of this method of working wrought-iron hinges has, of course, greatly reduced the expense of manufacturing them.

Of Horse Shoes.—The manufacture of an article of such general and extensive use, the process of which affects so large a portion of the population of all countries as horse shoes, at an early period attracted the attention of ingenious manufacturers and mechanics in this country, who made many attempts to render this an automatic instead of a handicraft operation. As early as the year 1809, a patent was granted by this office for a machine for making horse shoes; but which, from a want of knowledge of the nature of iron, and the manner of working it, did not succeed. Within a few years past, several machines have been patented in England and the United States, that answer the full expectations of the projectors. To one acquainted with the nature of iron, the various operations to be performed in giving the requisite form to a horse shoe, presents many difficulties; and, therefore, it required a mind of no common order to perfect this automatic operation."

Cure for Burns.—The *Medical Times* says:—"After opening the vesicles, if they are formed, the part is dipped in cold water, and then plunged, still wet, into flour, keeping it there for a moment or two; by this means a certain quantity adheres to the parts, and prevents the access of the air. It is remarkable that the flour falls in scales from the surrounding parts the next day, whilst on the burn it remains adherent.

Croup.—Two or three spoonsful of strong ley, made of oak ashes, and mixed with molasses, are recommend as a positive cure for croup.

Artificial Oysters.—Take young green corn, grate it in a dish. To one pint of this add one egg well beaten, a small teacup of flour, half a cup of butter, some salt and pepper, and mix them well together. A table spoonful of the butter will make the size of an oyster. Fry them a little brown, and when done butter them. Cream, if it can be procured, is better than butter.

NEW METHOD OF OBTAINING CREAM.

We extract the following from the valuable Report of the Hon. Mr. *Ellsworth*, Commissioner of Patents.

New method of obtaining Cream from milk; by G. Carter of Nottingham Lodge, near Eltham, Kent.

The process of divesting the milk of its component portion of cream, to an extent hitherto unattainable, has been effected by Mr. Carter, and is thus detailed by that gentleman, in a paper presented to the Society of Arts:—

A peculiar process of extracting cream from milk, by which a superior richness is produced in the cream, has long been known and practiced in Devonshire; this produce of the dairies of that county being well known to every one by the name of "clotted" or "clouted" cream. As there is no peculiarity in the milk from which this fluid is extracted, it has frequently been a matter of surprise that the process has not been adopted in other parts of the kingdom. A four-sided vessel has been formed of zinc plates, twelve inches long, eight inches wide, and six inches deep, with a false bottom at one half the depth, the only communication with the lower appartment is by the lip, through which it may be filled or emptied. Having first placed at the bottom of the upper apartment a plate of perforated zinc, the area of which is equal to that of the false bottom, a gallon, or any given quantity, of milk is poured (immediately when drawn from the cow) into it, and must remain there at least for twelve hours. An equal quantity of boiling water must then be poured into the lower apartment through the lip. It is then permitted to stand twelve hours more, (i. e. twenty four hours altogether;) when the cream will be found perfect, and of such consistency that the whole may be lifted off by the finger and thumb. It is, however, more effectually removed by gently raising the plate of perforated zinc from the bottom, by the ringed handles, without remixing any part of it with the milk below. With the apparatus, I have instituted a series of experiments, and, as a means of twelve successful ones, I obtained the following results:—

Four gallons of milk, treated as above, produce, in twenty four hours, 4¼ pints of clotted cream; which after churning only fifteen minutes, gave 40 ounces of butter. The increase in the cream, therefore, is 12½ per cent., and of butter upwards of 11 per cent.

The experimental farmer will instantly perceive the advantage accruing from its adoption, and probably his attention to the subject may produce greater results.

FROM MR. FOX, ON PRESERVING BUTTER.

Hartford, Jan. 12, 1844.

SIR,—In answer to your enquiry,—What has been your practice in putting up butter, especialy for preservation in hot climates, for long voyages? I will cheerefully state that I have had considerable experience on this subject, and, in some particulars, good success. There are many things required to ensure good butter. The butter itself must be well made; that is, worked enough and not too much, and salted with rock salt. This being well done, and the buttermilk all expelled, the butter may be packed in good white-oak, well seasoned casks, well filled. In cool climates larger can be used. In hot climates it is best to have small casks—say from 25 to 30 lbs.—so that too much need not be exposed while using. Then put these small casks into a hogshead, and fill up the same with a strong pickle that will bear an egg, and the butter may be shipped to the West Indies or Europe, and kept perfectly sweet. I have never found saltpetre or sugar of any benefit. Butter of my packing has opened as good in the West Indies as it was in Connecticut. I will remark, that to keep butter in ice houses, when it remains frozen, will answer, if the butter is to be continued in the same temperament; but if it is expected to warm weather after long taken from the ice house, it will not keep as long as if it had not been exposed to so cold a temperature. Yours, respectfully, G. Fox,

Hon. H. Ellsworth,
Commissioner of Patents.