

er forget. Before the corn was perfectly ripe (I had not patience to wait for that) a younger brother of mine and I resolved to have a quiet and unobserved start by ourselves. That could not be got while the sun was in the heavens nor for a considerable time after he was set; and, accordingly, about eleven o'clock at night, in a dark autumn evening, when every man, woman, and child were in their beds, the machine was quietly taken from its quarters and the good horse Jock was yoked to it, and we trio wended our way through a field of lea to one of standing wheat beyond it—my brother and I the meanwhile speaking to one another in whispers. We reached our destination and the machine was put in position right in the end of a ridge. My duty was to look ahead, and my brother's to guide the horse. I gave the word of command to go on, and on the implement went; but it had not proceeded above five or six yards when I called upon my brother to stop. Upon examining the work we found it far from satisfactory. The wheat was well enough cut, but it was lying in a bundle before the machine. For a moment we were both downcast; but, recollecting myself, I had yet great hope and said so, the whole of the machine not being used, the reel or collector having been left behind. I ran across the field and brought the reel and everything connected with it upon my shoulders, and adjusted it as well as the darkness of the night would permit, and we were soon ready for a second start. Taking our positions respectively as before, the machine moved forward, and now all was right. The wheat was lying by the side of the machine as prettily as any that has ever been cut by it since. After this we merely took it back again to the end of the ridge and made a cut with the open edge to ascertain how the swathes would lie upon the stubble, with which being well pleased, we, after some pardonable congratulations, moved the machine back to its old quarters as quickly and as quietly as possible."

WHAT OLD BONES AND LEATHER ARE GOOD FOR.

Under the heading "Science familiarly illustrated," the *Scientific American* weekly publishes in its columns some very interesting short articles, some of which also afford valuable information. The following is of that character:—

Articles are not to be despised because worn out, for wearing out means, almost always, only a change of use; when an article becomes useless for one purpose its being fitted for others. This fact is well exemplified in the value of old leather and bones. Let us consider the latter first because of its variety of uses. The fresh bones from the butcher's stall, as those of beef, which have been entirely stripped of the flesh, are excellent basis for soup. Indeed, bones alone make a far better soup than meat alone; and even after being cooked, unless boiled, bones are superior materials for this purpose. Even the rib bones of a piece of roasting beef, after having been placed once on the table, although marrowless, are good soup bones, and the skeleton of the turkey, gosling, or chicken, which as a roast has done its duty, will make a

nourishing broth. Gelatin and not fat is the true foundation for soup, and this is largely contained in bones. So much for the domestic uses of bones; now let us look at their other uses.

First, then, the bone boiler deprives them of their fat, which is used for a hundred purposes, from the basis of fancy soaps and pomatums to the "slush" of ships' masts. The gelatin becomes the "isinglass" put up in fancy colored papers and sold at the groceries for making jellies, soups, and blanc mange; or it enters into the composition of jujube paste and gum drops. Old bones are the foundation of the much valued fertilizer known as superphosphate of lime. Ground and mixed with sulphuric acid they restore to the soil what it had given us in our wheat.

But they are almost invaluable in the arts. Very much of our "ivory handled" cutlery, probably nearly all of our ivory handled umbrellas, parasols, and whips, many similarly ornamented canes, etc., are handled with bone and not true ivory; In fact, some of the bones in our domestic animals approach very nearly in texture to genuine ivory.

We have seen a complete set of dental instruments handled with horse bones, which made as fine an appearance as the real ivory. Bone buttons are so commonly used that only an illusion to them is necessary. Almost all, if not quite all the phosphorus employed in the arts and sciences is produced from old bones. It is probably the most valuable extract which bones yield.

But it may be questioned whether any other use for old bones can equal in value that to which they are put in the manufactures of iron and steel; and here comes in the value of old leather. The carbon contained in bones and leather is a necessary element in case-hardening iron, and also in some instances of hardening steel. For the first purpose prussiate of potash, or ferro-cyanide of potassium is largely used, but it is a general belief among mechanics that its effects are not so thorough as those from the employment of ground bones and leather scraps. The article to be carbonized or case-hardened is packed in an iron box with the ground bones and leather and exposed to a red heat for several hours—more or less, as the depth of the cementation desired—then removed and plunged into water. Its surface becomes hardened steel.

For some parts of gun work and of machinery this is a very necessary process.

Then there are occasions when an extra hardness to steel is desirable; such as hardening the dies for raising "the steel mills" used in engraving calico-printing rollers. These are treated in precisely the same manner as articles of iron to be case-hardened. They are prepared for being engraved—which is done by hand—by being deprived of a portion of their carbon by a process of annealing, when they become nearly if not quite as soft as silver. To harden them this carbon must be restored, and for this purpose it is doubtful if anything is better than the old bones and leather scraps which we so thoughtlessly cast aside as valueless. Fortunes were made during our late war by gathering and sending to market the bones of horses, mules, and the edible animals which accompanied our armies, together with the cast-off scraps of leather, in the form of equipments. The above