

to get rich seeing that they cannot deprive us of the blessings of intellectual research and exertion.

But here I must cease my illustrations from the insect kingdom. The subject is a large one, and I hope some day again to bring it before you. I have before said there is no part of an animal which is not of use. So when they are dead, they ought not to be buried or cast away. I wish here to illustrate the whole subject of the uses of dead animals by this diagram, drawn up by Dr. Playfair, which gives you the value and uses of a dead horse. The value is not a large

Value of a Dead Horse, from 20s. to 60s.: Average value, 40s.

Weight in pounds, from 672 to 1,138; Average weight in pounds, 950.

	WEIGHT	VALUE.	USES.
Hair .....	1lb. 1½	8d. to 1s. per lb.	Hair-cloth, mattresses, plumes, and bags for crushing seed in oil mills.
Hide.....	30	About 8s.	Leather.
Tendons .....	6	.....	Glue and gelatine.
Flesh, boiled .....	224	1l. 8s.	Meat for men, dogs, and poultry.
Blood.....	60	.....	Prussiate of potash, and manures.
Heart & Tongue.....	.....	.....	A mystery.
Intestines.....	80	.....	Covering sausages and the like
Fat .....	20	3s. 4d.	Used for lamps after distillation.
Bones.....	100	4s. 6d. per cwt.	Knife handles, phosphorus, super-phosphate of lime, bone dust.
Hoofs.....	6	8s. to 10s. per cwt.	Buttons, gelatine, prussiates and snuff boxes.
Shoes .....	5	5s. to 10s. per cwt.	Shots and old iron.

sum,—from 20s. to 60s. on an average; but recollect that every application to art or science of this dead horse renders him of greater value; and it is for us, engaged in various ways in the arts of life, to see whether we cannot apply things that have hitherto been wasted. Five hundred horses die every week in London. The hair, you see, is worth from 8d. to 1s. per lb., and it is used for making hair-cloth, for stuffing mattresses, and making plumes, and bags for crushing seed in oil-mills. Then the hide, weighing 30 lbs., is worth 8s., which is perhaps not a great deal of money; but when you have from 300 to 500 a week dying within a radius of five miles from Charing Cross, it comes to some money. Then the skin is used for a variety of purposes; tendons you know may be made into gelatine, and glue, and jellies. I told you that you must not be particular about these jellies: when the poor old horse has drawn your carriage, served you in omnibus and cab, and died at last; even then you have not done with him, for his tendons may then serve you for your delicious jellies. Then again it is not an uncommon thing for man to eat horse-flesh. We do not eat it here knowingly, but they eat it on the continent of Europe. There is a story of a Frenchman, who thought we sold meat for almost nothing, for we sold it on skewers for a penny a skewer-full. Then there is the blood, which is carried to the prussiate of potash manufacturers. Then there are the internal tubes, which are used for the coverings of sausages; and, as I said of the jellies, we need not ask any questions about these coverings as long as they are sweet. The heart and tongue are evidently great "mysteries," for no one knows what is done with them. There is almost as much mystery about

them as about the manufacture of the cloth of your coat. The heart, however, can be chopped up and mixed with sausage meat, and the tongues may be sold for ox-tongues. On a recent occasion, when I stated this fact, a newspaper which reported my lecture added that it was all a mistake, and that the tongues were never sold for so inferior an article as ox-tongue: they were always sold as reindeer tongues. Now, passing over the fat, which is worth 3s. 4d., I need not tell you that horses' bones are as good as any other bones, and can be employed for the various purposes to which other bones are applied. The bones of a horse weigh about 160 lbs., and are worth 4s. 6d. per cwt. Then there are the hoofs, 6 lbs. of these, at 8s. to 10s. per cwt., which can be used for making buttons, prussiates, and snuff-boxes. I do not think that it is correct to say they are used in making glue. I think horses' hoofs are composed of the same material as hair. They are sold, it is true to the glue-maker, but he sells them to the prussiate manufacturer. Even the poor old shoes are worth from 5s. to 10s. per cwt.; and even with regard to all these substances employed, there is nothing which cannot be used again and again.

## Miscellaneous.

### The Adulteration of Butter.

In order to distinguish between pure butter and that adulterated with lard and other substances, proceed thus:—First satisfy yourself, by melting a portion of the suspected butter over a water-bath, and observing if there be any insoluble admixture of farinaceous matter, such as wheat-flour, potato-starch, arrow-root, or turmeric, (said to be sometimes used,) which the microscope and chemical tests will prove; then mix the melted butter in an evaporating dish with four or five times its bulk of hot water, and allow it to stand for two or three hours to collect on the surface and solidify. Detach the resulting cake of butter, and place it on a piece of blotting-paper to dry, by the absorption of all adhering aqueous matter. If a piece of this prepared butter be introduced into a wide-mouth stoppered bottle, and surrounded with ether, at the temperature of 65° Fah., it ought to entirely dissolve, forming a clear lemon-yellow coloured liquid.

On the other hand, the purest lard, which, on being melted, leaves no residue, is more or less insoluble in ether, at that temperature, as a thick milky fluid results, which, on standing, deposits to a considerable extent. The same may be said of other fats, such as dripping, mutton-suet, tallow, &c., the precipitates from which are of a much coarser and flocculent character than that from lard in ether. Hence we perceive there is a striking peculiarity about butter, which, if treated as above, enables us to readily determine its purity and the probable proportion of foreign fatty matters mixed with it. The solution of lard and other fats in ether is considerably influenced by temperature, for if the bottle containing them be held in the hand a short time, liquefaction takes place, but on a reduction of temperature they are again precipitated. The character also of the various precipitates is remarkable, and gives us some clue to their nature,—the precipitate from lard being very fine and smooth, whilst that of dripping is granular and crystalline, and that from tallow long and thread-like, laying piled up one above the other. A solution of butter in ether, exposed to a less temperature than stated, yields beautiful stellar-like tufts of very fine acicular crystals.—J. Horsley.