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THE CARE OF TOOLS.

We believe—although we are not certain that it is capable of demonstration—that more tools are ruined by want of care than broken or worn out by proper use. It is surprising how easily the man forgets the "bridge that carried him over," how ready even the thoughtful workman is to leave to neglect the tool which has just subserved his purpose. Carelessness in the use of tools is a source of enormous annual expense to manufacturers and others, an expense which, if aggregated would probably surprise even the most observant. On the farm the plow is left in the furrow, the hoe between the rows of corn, the shovel in the pit, the scythe on the tree, and the ax in the log—left to rust and to the liability of accidents. The wood-worker, called away suddenly from the job he is doing, leaves his plane on the board he has been smoothing, to be knocked off by the first passer-by, or allows the auger bit or the saw to remain in the half-pierced timber to be broken by the first swinging board in the hands of the apprentice. The blacksmith leaves his tongs at the vise when he needs them at the anvil, and the machinist drops tap, drill, reamer, or hammer, where last used.

Order is the "first law" in the shop as in heaven, and care, no less than cleanliness, is "next to godliness." Next to the advantage of having a place for every thing is the wisdom of keeping every thing in workable condition. In the machine shop the use of impure oils in drilling, tapping, etc., is an expensive economy. Oil containing mineral or earthy matter is only a grindstone in solution. It cuts and abrades the edges of the tool, while in use, precisely as does the grindstone or buff-wheel. Gummy oils are scarcely less injurious. They add to the friction of the tap or drill and demand increased strength to resist torsion. A "gummed-up" tap or file is almost useless until thoroughly cleaned. The application of warm soapsuds, benzine, or turpentine, will not always remove this gum. In such a case they can be readily cleaned by covering them with oil, turpentine, or any inflammable substance, and exposing them for a moment to a flame until the liquid takes fire; then card or wipe them and they will be found to be in excellent order. Finishing files not unfrequently become clogged, and when the card is useless to remove the "gurry," this process will be found efficient.

Sometimes, also, in filing wrought iron the tough particles of the iron are torn off by the teeth of the file and lodge, producing scratches on the work, and thus impairing the efficiency of the tool. A simple device, which we used for years, that easily and quickly dislodges these clinging particles, is a piece of soft iron wire flattened under the hammer at one end to a chisel point, or disintegrated like a broom and used thus: The point of the file resting on the bench, the handle held by the left hand; then strike across the face of the file, in the direction of the "first cut" teeth, with the flattened end. It certainly and thoroughly dislodges the snags, and the file is ready for work. The wire instrument may have a ring turned at the handle end, or be affixed to a wooden handle. No. 8 wire is large enough.

Turning tools, after being tempered and ground, are frequently left wet from the stone until wanted for use. In this state the keen edge is acted upon by rust, and a re-grinding becomes necessary. If not put at once to the oil stone they should be wiped with oily waste. These little matters are more important than they seem at first sight. A saw or chisel which has been used in unseasoned wood, should be carefully wiped and oiled, otherwise it contracts rust and wears away fast. A new file should not be put upon the scale of cast iron or of unannealed steel, and a file kept for brass or bronze should not be used on a harder metal. Back saws for cutting

iron and other metals are often ruined in inexperienced hands. If drawn forward and back too rapidly they heat and lose their temper, when they become almost useless.

A hundred other instances might be adduced to show the depreciation of tools by neglect and the necessity of paying attention to these "little things." The real economist, however, needs but a hint, while the constitutionally careless are slow to see their errors.

PRESERVATION OF MEAT.

It is a well known fact that lean meat, as beef, for instance, becomes dry, hard, and innutritious by salting. Salt being chloride of sodium, and its chlorine having a great affinity for the soluble portions of the flesh—albumen, fibrine, etc.—it attracts the juices, forming a brine, containing the larger portion of the nutritious qualities, with the elements of phosphoric acid, potash, and other mineral ingredients. As these are removed from the meat so is its fitness for food diminished. When lean meat is subjected to the action of salt, the deliquescent properties of the salt attract the juices of the meat, and the brine resulting contains the mineral bases of the meat—the phosphoric acid, potash, etc.—with the albuminous elements, all being held in the saline solution.

Fat meat, or rather fat itself, is impervious to salt. The outside becomes indurated by the salt, and refuses entrance to the decomposing gases. Still, salt is a solvent, and it assimilates with the substances with which its solvent properties harmonize. If not adapted to its action as a chloride of sodium, readily uniting with the elements of animal substances except the fatty principle, it drains the meat subjected to its operation of its most valuable qualities. The action of salt, it will be seen from these brief remarks, is almost confined to the lean flesh to which it is applied; although, in fact, it is a necessary element in the preservation or preparation of animal food for the market.

In this connection we desire to say a few words as to the management of animals designed for the slaughter house and the market. Animals which have been subjected to considerable fear and agitation before being slaughtered have their flesh relaxed. They have been in just the worst condition to preserve the fat already deposited on their bones, and in just the best condition for them to make good the waste, if offered the opportunity, to which they have been subjected. How necessary it is then, for the cattle brought from peaceful pastures to the abattoirs of the metropolis to have some days of rest, with proper shelter and good food, before being hurried to the shambles.

The albumen, from which waste of exercise or work is to be made up, is exhausted. Why? Simply this. Muscular action is supported and sustained by the decomposition of carbon in the food eaten, and violent exercise, like a high chimney, induces a strong draft. The carbonaceous or life-giving elements burn out rapidly, when either forced exercise is demanded, or the agitation of the mind is allowed to react on the physical organism; and we are among those who believe that mind, or reason, or intellect, exists among the lower orders of animals as well as in the *genus homo*. These animals, then, intended for the slaughter, may, by the exercise or the excitement of driving, or the fear of unknown harm while *in transitu* on the cars, waste the vitalic force stored in the cellular tissues of their fat and be in a collapsed condition, to speak mechanically, when they arrive at the shambles.

A few weeks ago we made a notice of the new abattoir at Communipaw, and we had something to say as to the matter of bringing meat to market. We then approved of the principle of the management at that establishment, especially in regard to its humanitarian tendencies, believing that what is merciful to the beast is merciful to the man, thereby reversing the form of the old saw: "A man that is merciful to his beast, is merciful."

In fact in this preservation of animal food for human consumption there is involved a law of nature. We have not time nor space to detail the particulars. There is a latent force, or there is a latent heat—in this respect synonymous terms—in all substances, and especially in substances taken by the animal as a part of its organism. Vegetable substances are taken up by grazing animals and as soon as the processes of digestion act, in fact sooner, become a living force in the animal. This force can be expended by violent exercise or by anxiety or trouble, reaching through the sensual or the mental perceptions and affecting the tissues of the physical structure. This may be seen every day. A worried man is never a fleshy man. Swine sometimes refuse to be fattened. They have trouble on their minds. To be made fat they must be free from care and take to their food kindly. Care in their case is dyspepsia. In the case of men, anxiety, producing or at least inducing dyspepsia.

The flesh of wild animals, those we obtain as food, is lean. They are full of anxiety, have no time to get fat, and their meat when salted is not nutritious. Take our domestic animals and they live "in clover," having no care, not harassed nor troubled. They grow fat, and not only put layers of fat over and under the muscles but extend it through the lean tissues. This is the meat, when properly killed, that delights the taste of the epicure and nourishes the frame of omnivorous humanity. We seldom think of preserving the meat of wild animals, especially those which hold their lives by a tenure of grace from unrelenting enemies, by salt. We view them like fish as fit to be eaten only while fresh. We do not salt down lean animals. Even from the meat of those given to fat we select, the fat for salting, the lean for eating fresh or at most "corning."

Our meat for preservation by salt must be either fat in itself or have fat enough in the lean to neutralize the de-

liquescence quality of the salt and leave us the juices which contain nutriment, otherwise our "corned beef" would be only the whaleman's "mahogany" or the soldier's "salt horse," and we should be subject to the mishaps of the long sea voyagers or the commissaries of the camp.

PATENT LAW OF PRUSSIA.

The recent extraordinary military success of Prussia, and the consequent expansion of her dominions, have attracted great attention in this country. We notice a manifestation of this interest very marked among the large class of our citizens known as inventors. They are making many inquiries of us concerning the patent system of Prussia, which we regret to say does not correspond in its scope and application to the liberal and enlightened character of the past, present or future of the kingdom.

The existing ordinance relative to patents in Prussia went into operation, if our impression is correct, as long ago as October, 1815, and has as little in common with the modern age in spirit as in date. Under it, the tenure of a patent right in Prussia is analogous to that of real estate in Turkey: it can be held only by a subject of that power. Foreigners can obtain no foothold in the kingdom for their ingenuity or enterprise, but in the name of some Prussian and dependent on the equity of a private contract with such representative before the law as they may be able to employ. Furthermore, the patented manufacture must be actually introduced within six months, or the protection is forfeited. These two restrictions operate to deter ingenious Americans from undertaking to procure Prussian patents. The protection is too indirect and uncertain, and the time allowed for introduction is much too short to be of any use in most cases, especially with the more important class of inventions. In the absence of available protection, without which men will not engage in new branches of manufacture, the introduction of many valuable improvements and industries that enrich a nation, is retarded or wholly prevented, to the great detriment of that country. It cannot be that a government so enlightened and enterprising as that of Prussia should remain insensible to the mistake in principle and policy contained in this obsolete kind of legislation. Our own patent system is very liberal, and does not discriminate against inhabitants of other nations unless the laws of those nations discriminate against our citizens. The impulse which has been given to invention in this country since the liberal Patent Amendment Act of 1861, has been truly wonderful. During the five preceding years, from 1856 to 1860 inclusive, the number of patents granted was about 18,000. From 1861 to 1865, inclusive, the number increased to nearly 22,000, and that in the midst of our deplorable war, which shut off nearly one half the states from the privilege of the Patent Office.

It seems most probable that the subject will come before the re-organized German Federal Government of which Prussia is the predestined and acknowledged head. Demands are already put forth through the German press, for a uniform patent system for the whole German Confederacy embracing the following points:

Patents to be issued for fifteen years, securing the article patented to the inventor, his heirs, administrators and assigns; no preliminary examination to be required, and inquiry into novelty or priority of invention to be made only when protest is entered against the application; patents to be refused on general principles, without reference to the particulars of construction or use, excluding such articles as may be opposed to public morals or welfare; no limitation of the period for introducing patented articles; patents to be granted without charge until after a limited period, when the fees will be exacted and will be gradually increased; the Government to have the right of appropriating a patent to its own use by paying a suitable fee to the inventor; aliens and citizens to have equal rights before the German Patent Law, and local laws conflicting therewith to be over-ruled.

CHEESE AS FOOD.

Compared with other people the Americans place but little value on cheese as an article of food. We use it as a condiment, sauce, or side dish, rather than as necessary or proper food. In England, Scotland, Ireland, Wales, and in many parts of continental Europe, it is regarded as a common and sometimes a necessary article of food. There is reason why it should be so regarded. Its composition is very similar to that of flesh, the casein representing the muscular fiber, and the buttery matter the fat portion. Casein is an albuminous substance, useful in building up the muscles, and the buttery matter is a concentrated carbon as useful, in its way, for food as fat meat. The Swiss chamois hunters take on their expeditions among the higher alps, where they remain sometimes for days together, exposed to intense cold and undergoing the hardest of exercise, only a small quantity of cheese and a flask of brandy. The English harvesters live on ale, cheese, bread, and occasionally a bit of mutton. The Germans and Hollanders use cheese as a common article of food.

With some persons cheese is not in favor because of its constipating qualities. Eaten raw it is less so than when toasted or made into the popular dish known as Welsh rarebit. In this form it is scarcely fit for the human stomach. The fatty particles are separated from the albumen and appear simply as liquid oil, while the albumen is changed to a tough, stringy substance, without nutritious qualities and almost as indigestible as sole leather.

Cheese derives a factitious and market value from the districts in which it is produced. The Stilton cheese is a synonym of superior excellence to the English palate, and those who have made themselves acquainted with Teutonic tastes understand well what is meant by Limburger and Switzer