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POISONED BY HANDLING HIDES.

In New York city, a short time ago, a man died from poison, communicated while handling some buffalo hides sent from India. His companion worker employed on the same job was taken sick, and after a severe illness finally recovered. Both the men became warm, perspired freely, and repeatedly wiped the sweat from their faces with the bare hand, each of the men having a pimple on the face. Whether the death of the one and the illness of the other was caused by the virus from the hide of a diseased animal, or by the absorption of arsenic used in the preservation of the hides, is not positively known. Probably, however, the cause was disease communicated from an infected animal through its hide, as the Calcutta packers use, frequently, an arsenical preparation on the hides to kill a small brown worm that otherwise might destroy the hides, and instances of poisoning in handling these hides are not uncommon.

Some years ago an importer of hides in New York died from the effects of a bite or sting of a fly which inhabited the loft where the hides were stored.

SPONTANEOUS COMBUSTION.

With all the facts to show the possibility of the spontaneous ignition of certain substances under certain circumstances, there is a perpetually renewed demand for more information. So it is well enough to cite instances of fires caused by spontaneous combustion, even although it may be that "line upon line, precept upon precept" should be the rule.

A pile of cloth—cotton—left in a heap just as it came from the loom, and probably more or less saturated with oil, blazed up and fired a building in which there never was a fire or light before. This fire was probably caused by the piling of cotton cloth in heaps, the fibers of the cotton being saturated with oil—in this instance sperm oil, the only lubricating oil then in use.

A stone warehouse filled with cotton and woolen waste took fire on a summer afternoon, and resulted in the destruction of several buildings. In this case the waste, filled with oil, was packed closely in bins, or compressed into bags for convenience of stowing. Evidently compression, or weight, was an element in this case of spontaneous combustion.

A large establishment for the manufacture of machinery was burned by being fired from a heap of iron turnings thrown out from a convenient window, the greasy cotton cleaning waste being intermixed. It is hardly necessary, however, to have the element of greasy cotton waste in order to produce, or to communicate, fire from a heap of iron turnings, chippings, and filings. The mass of disintegrated iron and its contained oil are enough to incite heat and combustion. And careful observers can sometimes see, in the dark, the blue luminous shivers of flame over a heap of iron driblings, chips, shavings, and filings, adjacent to machine shops.

One of the finest blocks of buildings in an eastern city was destroyed, just before being ready for occupancy, by a fire started in an unused closet in which painters had thrown their overalls, these garments being presumably loaded with linseed oil and turpentine.

To these instances may be added some which were recently cited in *Chambers's Journal*. One of them dates back to 1780, when a Russian naval vessel took fire, and no cause except that of spontaneous combustion could be found or surmised. The fire was traced to a package of matting containing lampblack made from the smoke of fir and hemp oil varnish. A carefully observed experiment demonstrated the fact that a closely bound parcel of this mixture of lampblack and oil took fire within seventeen hours.

Wool-combings, packed in a warehouse in bins and trodden down hard by the workmen, set fire to the building. The wool was saturated with oil, or was, at least, oily, and the compression was probably one of the elements to spontaneous ignition.

Oily hemp and flax, in bales and heaps, took fire spontaneously in Plymouth dockyard and caused great destruction of property. In 1861 or 1862 there was a great fire in the Liverpool dock warehouses, caused, as far as could be ascertained, by the spontaneous ignition of wet cotton in bales.

The naval ships Imogene and Talavera were burned in Devonport dockyard by the spontaneous combustion of oakum and tow that had been used as waste for wiping greasy tools and machinery, and thrown into a bin.

Experiments prove that cotton waste wet in boiled linseed oil, placed under a temperature of 170° F., took fire in one hour and a quarter. Raw linseed oil on cotton required four or five hours under similar preliminaries; olive oil, six hours; rape oil, ten hours; and castor oil, two days. As to animal oils, lard oil with the cotton produced ignition in four hours; seal oil, in one hour and twenty minutes; and sperm oil—probably adulterated with petroleum—did not fire in two days. It is generally conceded that the mineral oils, of whatever specific gravity or constituent characteristics, are not liable to aid in spontaneous combustion.

But there are other causes of spontaneous combustion not usually considered, and yet established as facts by experiments and observation. Grain, either in the kernel or the straw, if packed into bins or piled into stacks while damp or only partially cured, will sometimes generate heat enough to cause combustion. Some of the supposed incendiary fires, by which barns have been burned, have been traced to this cause of spontaneous ignition; and in some other instances only that supposition was left as a reason for the fire. One case can be quoted as characteristic. It is taken from the *Annales d'Hygiène:* A quantity of oats stored in a barn had been consumed by fire, and the proprietor suspected the act to be one of incendiarism. Several experts were consulted; and on inquiring into all the circumstances, they unanimously concluded that the fire was the result of spontaneous combustion, caused by the fermentation of the grain stored in a damp state. Several things pointed unmistakably to this conclusion, such as the fact that the oats were proved to have been stored damp; that laborers had noticed the heat of the oats several days previous to the fire; that some of the sheaves that had been removed the day previous to the fire to be thrashed were charred and discolored; and above all, that the center of a large pile of sheaves was burnt and blackened, while the outside of the sheaves retained their natural color.

SCIENCE IN COLORING.

A London journal of high standing has inaugurated the criticism of paintings as viewed from a scientific standpoint —noting aspects which do not accord with the teachings of science and cannot, therefore, be in harmony with nature. It is impossible to make strict rules for the guidance of the artist in all cases, but he can be given rules, a wide deviation from which will produce discord, and the following of which will produce the grandest harmony. His own study and taste must guide him the rest of the way. It is also difficult to predict from what calling in life will come the best criticism. A rainbow painted with the order of the colors reversed will destroy the effect of the picture to the scientist; the milkmaid and the cow, with the maid on the wrong side of the cow, places that artist low in the estimation of the gazing farmer. The first violates nature, the second violates custom. That there is no excuse for such flagrant mistakes will be readily granted, but it is, perhaps, open to question as to which is the more to be censured. Each class (these two instances may be considered as types) shows lack of attentive study, or it may be that the first was so intent on the effect his rainbow would produce that he overlooked the correct coloring, while the outline of the maid and the cow so engrossed the second that he forgot that the position of the maid endangered the milk.

Scientific observation can be of great service to the artist, not so much in the arrangement of the subject as in the proper use of colors. In landscapes—in fact, in all attempts to portray outdoor scenes—it will enable him to name the colors which will not violate natural laws; he will properly arrange them, and he will do this by infallible laws. In the treatment of sky give him the conditions, and the scientific artist will name the colors so as to yield the most pleasing effect, for the simple reason that he knows those particular colors could be produced in the great laboratory, and he also knows that a promiscuous grouping would create dissatisfaction even to the uneducated eye.

THE LATHE.

The oldest machine tool known is the most valuable. It contains the germs of all others, whether rotary or reciprocating, and can be made to take the place and do the work of any one of them at a time, and all of them as desired. Its origin is lost in the mist of prehistoric times. It is as old as the loom, and was used by the oldest nations. As constructed in these times, it has reached great perfection, and is made in various special forms; there are boring and chucking lathes, turning lathes, screw cutting lathes, drilling lathes, and polishing lathes. But a screw cutting lathe with rack or friction feed, and the other ordinary appliances of a complete lathe, comprehends in its capabilities almost all the offices of the other special tools used in the machine shop.

Take a single instance of its capabilities, the production of a screw tap. The lathe will cut a piece from the steel bar; it will drill its centers and countersink them; turn the tap, whether straight or taper; cut the thread on it; score the tap, either by a cutter in the tool post while the tap is suspended on the centers of the spindles, or by means of a rotary cutter or milling tool on the spindle centers while the tap is held on temporary centers on the tool carriage. Even the top end of the tap can be squared, by similar means, for the reception of the tap wrench.

Now, all this work represents the cutting-off machine, the drilling lathe, the turning lathe, the screw cutting lathe, the planer, or the milling machine. And unlike many combination tools, the lathe can be made to do all this work well.

With a cheap attachment the lathe can be made to cut gears, making the teeth with practical accuracy, and the lathe itself can be used to produce the index plate that insures this accuracy. A job of planing—or surfacing—where the work will swing in the lathe, can frequently be better and quicker done on the lathe chuck than on the planer platen. The rapidity is much greater because the surface to be worked is continually under the action of the tool, instead of having more than one-third of the time wasted in the running back of the platen for the return chip.

In short, all the other machine tools, either of a rotary or reciprocating character, are simply modifications of the lathe; and with the lathe and its convenient appliances and necessary tools, the mechanic can by the exercise of his taste and skill perform almost any ordinary job in the working of metals possible on machine tools. The possession of a screw-cutting slide-rest foot lathe and a common bench vise, with their accompanying hand tools, is an excellent outfit for the amateur.