

THE
Scientific American.

MUNN & COMPANY, Editors & Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN, S. H. WALES, A. E. BEACH.

VOL. X. NO. 5... [NEW SERIES.]... Twentieth Year.

NEW YORK, SATURDAY, JANUARY 30, 1864.

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DRYING FLOUR.

In the market columns of a Liverpool paper, American *sour* flour forms one of the items, and is always quoted at a low price compared with good flour. It consists of flour that has been damaged by exposure to water, or which has become heated by an excess of moisture contained in it. Such flour is used for making starch, also the sizing that is employed for dressing cotton warps. Much of this flour is damaged by water, when being carried on our lakes, canals, and rivers, and with more care this might be prevented. But the carrier is not to blame for the flour which becomes damaged by internal heating from containing too much moisture, when it is stowed in the hold of his vessel, as the same results will follow when it is kept in quantity in a store. But all this damage to flour may be prevented by drying it before packing in barrels, and the operation should not entail much extra expense when properly conducted. In France, where large quantities of flour are stored by wealthy bakers, much attention has been devoted to this subject, and drying machines are now employed for expelling the moisture from flour before it is stored up. The summer of 1860 was very damp in France, and much of the stored flour became heated, and was attacked with mildew. All the flour so affected lost much of its nutritive qualities, and yielded less bread according to the government standard. To obviate such a great evil, flour-drying machines have been introduced. The most successful resembles a long, vertical cylinder, in the interior of which is a spiral plate extending from top to bottom, revolving on a spindle. The plate is heated by steam pipes. The flour to be dried is received by a spout at the top, and is carried down on the warm spiral plate, when it is stirred by brushes to expose it uniformly to the heat. The moisture which escapes is carried off by a funnel, and the flour is discharged at the bottom, in a dry room, in the lower story of the mill, and is cooled before it is packed. It has been found that water-proof bags are the best article in which to pack it for long-continued storage. Of course, flour which is designed for use soon after it is made does not require to be thus treated, and as the climate in the interior of America is drier than that of France, our flour contains less moisture and is not so liable to heat. But allowing for this, it has too much moisture for lengthened preservation in store; and all that is designed for distant shipment, or for long storage, would be rendered more secure if submitted to such a drying process. It is well known that vegetables and most organic bodies will remain unchanged for a long time in a dry atmosphere, while they will decay rapidly when exposed to air and moisture. Kiln-dried meal and dessicated vegetables remain unchanged in places where they would, if moist, begin to deteriorate in a few days. These facts should not be overlooked in the preparation of flour for shipment, as vast quantities of it are injured annually for want of sufficient care being bestowed upon its preparation.

A CALAMITY AND ITS LESSON.

The shocking accident which recently occurred in Santiago, the capital of Chili, by which upward of 2,000 men, women and children were burned alive, is one of the most terrible incidents in modern history, and seems to have been the result of reckless and criminal mismanagement. The occurrence of a festival in the Romish church in that city, was made the occasion of a grand illumination, which was effected by the suspension of kerosene lamps in great numbers among fluttering streamers of muslin, garlands of flowers and articles of a similar light and flimsy nature. As was to be expected, the lights communicated to the inflammable materials, ran up to the frame roof of the church, and precipitated the blazing kerosene in showers of liquid fire upon the shrieking victims below; who, finding no escape from their doom, the one narrow entrance being choked by the tremendous pressure, perished miserably, within arms-length of their agonized friends without.

Passing from further discussion of this terrible theme, let us turn to our own land and see what insurance we have against a similar catastrophe. It is true that little danger is to be apprehended from illumination, but are the means of egress ample for any sudden emergency? Are not most of the principal theaters and churches restricted as to their outlets, and is there any positive assurance that in the public schools which are piled up, story on story, there will not some day, be another slaughter of the innocents, similar to that in ages past, differing only in the means or cause of death? Are not winding staircases with countless steps, so torturous that the brain whirls in ascending them, the rule, and straight exits, and broad, free outlets, the exception? Most certainly they are. And nearly every tenement house is at this moment another Chilian church. In the basements of these dwellings there are stores blazing away with kerosene lamps, above which precious human lives are hived like bees; a blow, a jar, is all that is necessary to spring a mine as destructive to life as the most infernal machine that could be devised by an engineer.

And who is to blame for this state of things? Simply the people themselves, that they do not compel their representatives to insist that immediate action be taken upon this subject by the authorities. Indignation is cheap, but grief is sacred; lives are as precious, and love as dear to the tatterdemalion as to the millionaire, and when a holocaust of human life is offered up as a burnt sacrifice to mammon, there are shudderings; "horrible," "horrible," passes from mouth to mouth, and soon the tragedy is forgotten. How long shall such things be tolerated?

STEEL BOILERS.

Some very practical, thorough and interesting experiments have been made in Prussia with steel steam boilers, an account of which has been published in *Dingler's Polytechnic Journal*. A steel boiler of the egg-and-shape, 4 feet in diameter and 30 feet in length, without flues, was tried. It had a steam drum 2 feet in diameter and 2 feet in height, and the plates were one-fourth of an inch in thickness. Beside it there was placed another boiler, similar in every respect, excepting that the plates were of iron 0.414 of an inch in thickness. The steel boiler was tested by hydraulic pressure up to 195 pounds on the inch, without showing leakage, and both the iron and steel boilers were worked under a pressure of 65 pounds on the inch for about one year and a half. During this period, the steel boiler generated 25 per cent more steam than the iron one, and when they were thoroughly examined after eighteen months practical working, there was less scale in the steel than in the iron boiler. The former evaporates 11.66 cubic feet of water per hour; the iron boiler 9.37 cubic feet. The quantity of coal consumed was on an average 2,706 pounds for the steel one in twelve hours, and 2,972 pounds for the iron boiler. The plates of the steel boiler over the fire were found to be uninjured, while those of the iron one were about worn out. In Prussia several worn-out plates of iron boilers have lately been replaced with steel, which, it is stated, lasts four times as long. As steel is twice as strong as iron, thinner plates of the former may be employed for boilers, and more perfect riveting can be secured. A greater quantity of steam can also be generated in the steel boiler on account of its thin plates, and thus much

fuel may be economized. Such steam boilers should engage the attention of all who make and use steam boilers for engineering and manufacturing purposes.

REFORMATORY INSTITUTIONS.

Since the world became more civilized and enlightened it has taken a new view of criminal and pauper institutions, and these places, from being simply horrible dens of cruelty and torture, have risen through the efforts of noble men and women to be in some respects homes or asylums for the sinning or oppressed of all ranks in society. This is at least the view taken of the subject by the thinkers of the period, and the pens of the most profound logicians, of the most entertaining authors, have been well employed in directing attention to the abuses which have existed in conducting public asylums and jails for the unfortunate and depraved. Crime and misery in all its shapes will exist while human nature remains unchanged, and if we cannot trace any decided moral effect on society by reason of the different systems observed in penal establishments, there is at least a very marked popular prejudice in favor of reasonable kindness and leniency instead of brutality and harshness toward convicts and paupers, so as to give them every possible chance for reformation.

It is left for Boston, a city priding itself upon its refinement, philanthropy and cultivation of the social virtues, to outdo in respect of cruelty toward social outlaws the most abominable practices of the middle ages. For savage barbarity, indecency and utter disregard of the ordinary promptings of instinct, to say nothing of virtue, the superintendents of the Boston prisons have earned special infamy. It appears from investigations recently made that boys of tender age who play truant from school are sentenced for one and two years to the House of Correction, and when once committed to the mercies of the brutes who controlled it, were kept in special ignorance of everything except such wickedness as they inevitably acquired by contact with the more depraved inmates. Thus a frolicsome, sportive child, who may have erred in not going to school, is rapidly converted into a criminal of the first class by this enlightened mode of correction. The vagaries of "Squeers," immortalized by Dickens, are not equal to the development of such an ingenious mode of making convicts out of honest youths in the shortest space of time.

In addition to this, the Boston institution possesses peculiar facilities for blunting what little remains of virtue and modesty the unfortunate females who enter it may have retained; for a common custom was to compel members of both sexes to bathe *in puris naturalibus* in full view of each other. So also, with horse-whips and rattans, half an inch thick, these overseers enforced their authority, and not only with the scourge, but by the terrors of darkness, silence and restricted diet, did they endeavor to turn these unfortunate wretches, whom the chances of the law had delivered up to them, into maniacs. It is well for these outragers of public feeling that the war furnishes them a shield, so to speak, for by its more absorbing interest they are placed in the back-ground. The people of Boston are fully alive to the enormity of the offense, at last, but it is astonishing how such iniquity could have been carried on unchecked for any length of time.

The moral reform of delinquents is a subject for serious thought; how can it best be accomplished? Certainly, the lash and cruelty seem to have but little effect, while kind and humane treatment at least appeals to whatever spark of virtue may remain in the offender's breast, and in the long run is undoubtedly more effectual as a means of curing moral obliquity than severity. All experience both in the old world and the new, tends to show that criminals are converted into hopeless imbeciles by steadfast and unremitting punishment; while, on the other hand, a moderate degree of indulgence has been the means of restoring some hope of a better life in future to the breast of the repentant transgressor. Of the two systems there can be no doubt but that judicious leniency is better as a means of attaining the end desired—namely, to restore the wanderer to usefulness and a life, if not of honor, at least of quietness and peace.

THE New York *Herald* publishes a list of fires in the United States during 1862, involving a loss respectively of over \$20,000. Of these there were 150, with an aggregate loss of \$14,060,000.