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THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 417,

For the Week ending December 29, 1883.

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PINK EYE.

Horse scarlet fever, or the so-called "pink eye," forms the subject of an interesting paper by Dr. John C. Peters in the New York *Medical Journal*, of December 15. The conclusion is that various diseases of animals, communicable to man and *vice versa*, had frequently prevailed in our great car stables and in stables along the river fronts, among such diseases being diphtheria, scarlatina, and true measles, or a hybrid of measles and scarlet fever. Inoculations with the blood, tears, and usual mucus have produced the disease, the so-called "pink eye" having thus been conveyed from a partly blooded horse to a cart horse, from that to Guinea pigs, and from them to a pony. Young horses take the disease more frequently than older animals, although the latter are not always exempt. On the seventh day improvement generally commences, but the disorder seems most contagious at that time. The trouble is self-limited ordinarily, so that palliative treatment is all that is required.

LIGHT IRON CASTINGS.

Many years ago articles of cast iron of a light, fragile, and ornamental character, known as "Berlin [German] jewelry," were quite fashionable. It seemed, then, almost impossible that these should be simply castings of iron, and it is within a comparatively recent period that the possibility has been proved by the production of similar articles in this country. When of an ornamental design, as shoe buckles, belt buckles, shawl clasps, and hair pins, iron frequently has the market name of steel, and such "steel" ornaments are very common and in general use. But they are made of iron cast in sand moulds exactly as massive lathe beds, planer beds, and anvils for drop hammers, weighing several tons each, are cast.

The brilliant polish on the ornamental articles is produced by means of emery wheels, rag, rotten stone wheels, and rouge wheels, prefaced by the action of the tumbling barrel.

Of course, only the easiest flowing iron is fit for such fine work. This is charcoal produced iron, that from the Salisbury mines in western Connecticut being admirably adapted to these purposes. There is an establishment in Connecticut that melts, for the purposes of minute castings, about ten tons of soft charcoal iron a day, casting scissor and shear blanks, clock bells, clock keys, drawer keys, door keys, piano tuning keys, rings, harness buckles, ornamental buckles, horsemen's spurs, and a hundred other articles, not one of which will weigh twelve ounces, and many of which weigh less than an ounce. Some of these articles require in their finished state more than one hundred to the pound in weight. So minute are these castings, mainly moulded from plate patterns, that the used sand of the moulds must be sifted to discover all the results of the day's casting.

TOOTHING A NICKING SAW.

The nicking or cutting-off saw in the machine shop is a necessary tool for many purposes, but, unlike knurling tools, it is not to be found in assortment in the supply stores. The usual method of producing a saw is to chisel it out of a piece of sheet cast steel of the required thickness, or to forge it from a bar, drill the center for an arbor, file or turn the periphery, and after truing it, file the teeth.

A better way to form the teeth is to make and keep on hand one hob of eight threads to the inch or of six threads to the inch—hobs made like those for producing thread chasers. But for forming the saws the hobs should be cut to a single angle tooth, a tooth having an acute angle on one side—the thread being a right handed thread—the other angle being right angled to the axis of the hob. A good idea of the section of the tooth is got from that of the ordinary milling tool or the circular saw for wood.

With such a hob suspended between the centers of a lathe, a steel disk can be cut or toothed by a very simple method. The drilled and turned saw blank is mounted horizontally on a bar set in the ordinary tool post, the bar having a stud on which the blank is secured by means of a nut and washer, but so that it may revolve freely in a horizontal plane. Being advanced to the rotating hob, the merest touch will show if an entire revolution of the blank will bring out the teeth, even without overreaching, and any error can be rectified by turning down the blank slightly.

By means of ordinary lathe appliances a nicking saw can be cut with little trouble, ranging from three inches to one and a half inches diameter, much more rapidly and perfectly than can be done by hand filing. The slight "slash" of the screw-threaded hob will not affect the direct action of the saw, even if the hob should be of so coarse a grade as four threads to the inch.

THE BOTTLERS' EXHIBITION.

The second annual convention and international exhibition of the United States Bottlers' Protective Association was held in the American Institute building, this city, from December 11 to 14 inclusive. The exhibition comprised bottlers' supplies, machinery, appliances, materials, beverages, etc., the main building being filled with novel and interesting articles. There were several exhibits of carbonated beverage apparatus, showing each step in the process from the barrel of pure marble dust and the carboy of acid with its sipbon attachment, by which any surplus in the measure could be run back into the carboy, to the charged fountain and filled bottle.

Bottles of every kind used in the trade were shown fitted with stoppers adapted to every description of beverage; stoppers made of different materials and by which all or only a little of the contents of a bottle could be taken out without destroying the "head." One bottle washer consisted of a U-shaped spring, the arms of which were joined by a thick rubber band and which was secured to a spindle revolving at high speed. It was impossible to so quickly push a bottle on this device, that every portion of the interior would not be rubbed by the band. By changing the band the device could be adapted to bottles of different sizes and shapes. There were exhibited extracts, filters, siphons, bottling wire, corking machines, colorings, bottleware—indeed, every branch of the bottling trade was represented.

Instructive exhibits were made by the cork manufacturers. The best quality of cork comes from Spain, although the cork tree—a species of oak—grows in Portugal, Italy, Southern France, and Algiers. When the tree is about fifteen years old the first stripping, known as virgin cork, is taken off. This bark is thin, covered with irregular indentations, and is of no practical use. Ten years after this the tree may be again stripped, the bark having attained a thickness of from one to one and a half inches; and so on in periods of ten years, the quality said to improve with each operation. The bark is steamed or soaked in water, pressed, and slightly charred before fires, in order to close the pores and toughen it, and in this shape it is sent to the manufacturer. By circular knives the bark is cut into strips varying in width according to the length of the desired cork.

The corks are cut from the strip by a rapidly revolving cylindrical knife, the axis of the cork being parallel with the bark. The corks to be tapered are taken to a circular knife, revolving horizontally, against the edge of which they are held, one by one, by a machine which may be said to resemble a lathe. The cork is placed against a loosely journaled foot-piece, while against the other end is pressed a slowly revolving spindle. This device raises and presses the cork to the edge of the circular knife, the device being adjustable at any angle to obtain the desired taper.

NEED OF A MANUFACTURING REFORM.

There is one department of manufacturing production that lacks not so much good workmanship as proper material; that is, the department of manufacturing for domestic purposes. It would almost seem as though the producers think that anything is good enough for the household, so long as it makes a pretense at convenience and has some meretricious ornamentation.

A most attractive and convenient form of cooking utensils is now made of tough iron enameled inside and out. In most respects it is much superior to utensils of tin or those of cast iron; the tea pots and coffee urns being particularly useful. But the hinges break after a little use, the ornamental tops come off, showing that they were merely attached for a temporary purpose, and even the handle drops off, being merely soft soldered on.

In lamps for burning kerosene the vexation is fully as great, while the danger is more. The glass reservoirs for the oil are barely stuck into sheaths of the flimsiest sheet brass at the tops of the standards by means of plaster of Paris that soon loses all its cohesiveness by the slightest overflow of oil; and yet in nine times out of ten the lamp is moved when lighted by lifting by the glass reservoir. The thin brass tops are always getting out of shape; they hardly sustain the weight of chimney and shade. The rag wheels, or the toothed wheels which serve to raise and lower the wick, may turn on thin wire axes or refuse to turn at all. Sometimes these appliances are so insufficient that the lighted wick drops through the tube down into the oil.

If price would secure good products these annoyances and dangers would not be so vexatious, but the higher priced artistic and ornamental lamps are no better made, have no better material, are no more secure than the cheaper sorts.

This singling out of two common and necessary articles as evidences of lack of honest work and material is not intended to be a marked rebuke to these particular departments; this "skrimpiness" and "Cheap John" makeshift method runs through almost all the products of manufactures for household use, and a long list might be made of articles of everyday use which become useless almost before their usefulness is established, because the makers use glue instead of nails, nails instead of screws, soft solder instead of brazing, sheet tin instead of iron or steel, pewter instead of tin, and unskilled labor instead of honest work. There is room for improvement.

THE height and velocity of clouds have been determined in England by means of photography. Two cameras, placed about 600 feet apart, are provided with instantaneous shutters simultaneously released by electricity. The observer measures the angle of inclination of the cameras and the position of the cloud as photographed on the two plates, and from these data a trigonometric calculation gives the distance and height of a cloud with great accuracy.