

roll their own iron plates and manufacture everything pertaining to an iron vessel themselves. Many magnificent steamers have been built at this yard, the workmanship of which would bear comparison with that of the finest Clyde-built vessels. There are now on the ways a vessel of 3,000 tons intended for the Pacific Mail Steamship Company, and one of 1,500 tons for the Cromwell line. At the yard of Pusey and Jones, over sixty iron vessels for different lines have been built during the last seven years, and at present they have on the ways a 3,000 ton ship for the South American trade.

The business of the other builders is also in a flourishing condition, and there is every prospect of Wilmington becoming the great center, on our continent, of this branch of industry.

HOW PAPER COLLARS ARE MADE.

One hundred and fifty million paper collars, it has been estimated, are yearly used in the United States; and statistics show that even this immense number is steadily increasing as improvements in the manufacture multiply.

The collars are made in two varieties: of paper and cloth combined and of paper alone. The best materials are used in the manufacture of the paper. It is supplied in heavy white sheets, sixteen by thirty-six inches in dimensions, weighing 125 pounds to the ream. On being received in the manufactory, it is sent to the enameling room, where each sheet is covered with a thin layer of enamel and then placed on racks heated by steam pipes until thoroughly dry. This work is performed entirely by hand, and the enamel mixture applied with an ordinary brush.

After the sheets have become thoroughly dry, they are embossed to imitate cloth. To produce this effect, muslin is tightly stretched and pasted on plates of tin corresponding in size to the sheets of paper. Between pairs of plates thus prepared, the paper is laid, about fourteen sheets at a time being thus arranged, making a pile of alternate layers of paper and tin. The whole is then passed between heavy steel rollers, the pressure being sufficient to imprint the threads of the cloth on the paper, so that a perfect *fac simile* is thus obtained.

Each sheet is then polished by passing it over swiftly revolving brushes, when it is ready to be transformed into collars. The paper is next sent to the finishing loft, where, by means of movable dies made of steel, with edges sharpened so as to penetrate the material readily, the collars are cut out. A heap of sheets, about eighty in number, is arranged under a press, the die placed upon them, and the press set in motion. A single stroke cuts through the paper, and the collars are shaped. They are now perfectly flat, destitute of button holes, and, besides, must be molded before they are ready for packing.

At one end of the loft are large rolls of starched muslin, the use of which it is at first somewhat difficult to divine. A glance at the next process through which the collars pass soon affords an explanation, for the muslin is seen cut up into little elliptical bits called "patches" which are pasted on the extremities and middle of the collar. Their object is to give the button holes the necessary strength and to prevent them tearing out when soaked by perspiration. A very ingenious machine puts on these patches, cuts the button holes, impresses the imitation of stitches on the borders, folds the collar, and stamps its size on it, all in one motion.

The collars, as fast as they are finished by this machine, are bent or molded so as to fit the neck. The molding apparatus accomplishes its work with astonishing quickness, although it may be fairly considered as rivalled in rapidity of motion by the girls who pack the collars in the boxes. A bundle of a dozen is made up and twisted into its receptacle as if by magic, each girl packing some 20,000 collars per day. The last process is to label the boxes, place them in cases, and the goods are ready for the market.

The cloth lined collars are the more expensive of the two varieties. They are made of paper to which muslin, either white or colored, is firmly pasted, so that no embossing is necessary, and are cut out and finished in the same manner as above described. Cuffs and false shirt bosoms go through the same processes, dies being used of the required forms. This manufacture is largely carried on in this city.

AMERICAN INVENTIONS IN EUROPE.

Several American improvements of a valuable character are now attracting public attention in England and on the Continent. One of these is the Danks puddling furnace, by means whereof mechanism is successfully substituted for manual labor in the production of puddled iron. This is the invention of Samuel Danks, of Cincinnati, Ohio, and its introduction is acknowledged by the iron masters of England to have effected a revolution in the puddling business. It reduces the cost of making the iron at least five dollars per ton. Another improvement is the Henderson process of making iron and steel, the invention of James Henderson, of New York city. The object is to remove the phosphorus and other impurities from the pig iron, and convert it into fine wrought iron or steel at one operation without either mechanical or manual puddling. This is accomplished by melting the iron in connection with fluor spar, ilmenite, and manganese. Some very remarkable results have been obtained. At a trial at the Blockhairn ironworks, Glasgow, pig iron containing 1.14 per cent of phosphorus was melted, and in 50 minutes after fusion only .12 of phosphorus remained, and in the finished wrought iron, only .07.

Another invention is the pneumatic railway brake of George Westinghouse, Jr., of Pittsburgh, Pa., already in extensive use in this country, but now just being introduced abroad. In this improvement, the brakes are operated by

compressed air, supplied from a reservoir placed under the locomotive, a special pump being employed to effect the compression. The practical results obtained in England are considered remarkable by the railway authorities there.

THE SIGN BOARDS OF NEW YORK.

New York presents on her sign boards and in her streets a large series of odd combinations of letters, more *bizareries* in color, form, and design, and probably a greater number of ingenious advertising dodges, than any other city in the world. Among the many of these striking devices which sometimes ornament, often disfigure, the fronts of the buildings on the great thoroughfares, the sign emblematical of the business pursued, though one of the oldest, seems to be one of the most popular modes of arresting public attention, and its manufacture is made a specialty by several well known firms. Broadway is prolific in odd conceits in this class of sign. A depot for homœopathic preparations displays, on its front, a huge white pellet; colossal gilded pipes are suspended over the doors of vendors of meerschaums, and the most prominent of all is an immense gilt eagle which, holding a basket in its beak and perched on the edge of a roof, is visible the whole length of the street, serving to advertise a manufactory of willow ware.

We miss the impossible counterfeit of the noble red man, for so long the favorite symbol of the tobacconist. Fashion has banished him from the aristocratic marts of Broadway to the less pretentious shops on the avenues; but his place is filled by elegantly painted images representing goddesses of liberty, base ball players, gorgeously attired damsels, or perhaps simply by the upper half of a smiling individual who, placed in the window, seductively beckons us to enter. These effigies carved from wood exhibit much artistic skill both in coloring and in model. A large proportion of them are made across the river, in Brooklyn; their cost is from fifty to two hundred and fifty dollars each. A leading hat firm decorates the roof of its store with a wooden bear: importers of toys favor figures of Santa Claus, and a speculator in dollar jewelry, on the Bowery, displays a banner on which an admirable representation of a one dollar greenback is painted.

New and odd conceits in trade mark signs make their appearance almost daily, those of the umbrella manufacturers being especially ingenious. One of the most striking is a representation of a philosophic individual, calmly seated, holding over his head an umbrella on which a youth pours buckets of water, the latter being furnished him by a third party who is represented as frantically pumping. Another firm in the same business symbolizes its trade by the picture of a South American guanaco, and obtains a still better advertisement by philanthropically distributing white sun umbrellas, on which the name of the manufacturer is printed in large letters, among the stage drivers and cartmen. In many instances, signs are made to advertise a business and at the same time prove valuable as public conveniences. Handsome clocks, surmounting iron columns placed on the sidewalk, are found in many parts of the city, bearing the names of jewelers. A safe manufacturer places an enormous wind vane, on one end which his advertisement is inscribed, on the edge of his roof so that it can be readily seen from the street, and a maker of optical instruments takes advantage of the popular curiosity as to the temperature of the weather by exposing his sign attached to a large thermometer.

Queer conceits abound, the very oddity of which makes them noticeable. An entire building in Broadway is constructed of iron after a Moorish style of architecture, and is painted and stencilled in patterns of every hue in the rainbow. The tea stores in Vesey street color their fronts bright vermilion and green, and ornament their interiors with Chinese lanterns and frescoes depicting scenes in celestial life. Signs with the letters upside down are often used, and sometimes the characters are so intermixed as to require some puzzling to decipher their meaning. A window glass manufacturer arranges the letters of his sign thus "W G I L N A D S O S W." Those pests of Broadway, the peripatetic individuals who carry banners, have happily been abolished, but their places are taken by others, who, dressed in ridiculous costumes, endeavor to force circulars into the hands of passers. Helmbold the druggist, before his failure, placed on the roof of his building the mast of a ship, fully rigged with yards, gaff, boom, etc. Each yard arm was decorated with a flag, and a huge burgee with the name "Daunter" floated from the mast head. A warlike effect was given to the whole by showing the muzzles of two "quaker" cannon protruding from the cornice.

One of the most ingenious devices was that of a photographer on Broadway. An automatic stuffed monkey was represented as taking the likeness of a female of his own species. The figures were ludicrously dressed and, by means of clock-work, made to go through various motions in a very natural manner. The sitter poses herself, the operator inserts the plate in his miniature camera and turns away as if waiting; after a short pause, he removes the plate, bows to the lady, who turns her head, adjusts her dress, etc., and the same performance is repeated.

A printer in Center street displays an effigy of a Chinaman who, worked by machinery in the inside of the building, assiduously turns a wheel on which the sign is inscribed. The fence surrounding the new Post Office contains the advertisement of a western railway, which is embellished by the stuffed head of a huge buffalo, said to have been killed by Prince Alexis. Carts driven around the city, covered with posters and gaily painted transparencies are not so common as formerly; their advent when they are used is generally quite forcibly announced to every body far and near by the

continuous tolling of what is known as the "Tammany" bell. An enterprising individual recently caused considerable astonishment and not a little trepidation among the pedestrians on Broadway by leading a full grown lioness down the street. His advertisement was gaily painted on a cloth which was thrown over the animal's back.

The stereopticon and electric light have lately been employed for night advertising. By means of the former, pictures and business cards are alternately thrown on a large screen, the exhibition always attracting a crowd of spectators. The electric light is used to flash suddenly on the sign to which it is desired to draw attention. Very attractive signs for night use are those made from prisms or cut crystals and glass. The latter are imported from Prussia and set in frames of galvanized iron wire, made in the required shape. Inside the frame are placed revolving gaslights which produce, when seen from the exterior, a dazzling effect. A new way lately introduced of manufacturing these signs is to make the frame of cast iron and set in glass bulls' eyes of different colors. They cost from fifty to one thousand dollars, the price depending on the size. Cups of colored glass, each containing a gas jet and arranged in the form of letters, devices, etc., are also used for illuminated advertisements.

There are not many novelties of late invention in sign making. A heavy wire network on which are fastened large wooden letters is being introduced as a roof sign. Block letters made of sheet brass and nailed to the sign board have lately come into the market and present an effective appearance. For smaller placards, mirrors are very handsome. The design is traced on the back by removing portions of the amalgam, and made prominent by the glass being placed against gilt or colored paper. In banners, those made from network, with strips of canvas on which the sign is painted fastened upon them, have superseded the large pieces of canvas. The former are lighter and much more durable, as they are not apt to blow to pieces in a high wind.

DEATH OF JAMES GORDON BENNETT.

Among the prominent men recently deceased is James Gordon Bennett, founder and proprietor of the New York *Herald*, aged 75. So far as concerns the ethics of journalism, he was unscrupulous and irregular, zealously advocating the cause of truth and justice on one day, but perhaps the very next day assailing the same cause with unworthy vehemence. Editorially regarded, the *Herald*, under Mr. Bennett's régime, was notoriously unreliable; but as a vehicle of news it was the embodiment of enterprise, and in this respect it outranked all its competitors of the press. The New York *Herald* is one of the most widely circulated daily papers in the world, and as a property one of the most valuable. The establishment falls, by the bequest of its founder, to his only son, Mr. James Gordon Bennett, Jr. He is a young man of about 26 years, of considerable physical activity, chiefly famous as a sportsman, particularly in the yacht line. No king upon his throne ever possessed such power for good or evil as that now wielded by young Mr. Bennett in the New York *Herald*. That he may use his great inheritance honorably and wisely is the earnest wish of every person in this community.

QUICK MAILS.—The largely increased mails to be carried from Chicago to New York have induced the managers of railways to put on mail trains proper, each to consist of one locomotive and three mail cars, to be run through in twenty-four hours. Several cars are now building for this purpose, each fifty feet long and adapted for fast running. No stoppages are to be made except for coal and water, and it is intended that the distance (962 miles) shall be accomplished in the time stated, which would be running over forty miles an hour. Some such measures seem to be imperative, and will be attempted, at any rate, to relieve the Chicago and New York city post offices of an embarrassing glut of mail matter growing greater from month to month.

IMPROVEMENT IN FRACTIONAL DISTILLATION.—Linnemann has successfully applied to laboratory purposes the principles of a method largely used in the arts, in the construction of the so-called dephlegmators. This principle consists in partially condensing locally the vapor which rises from a boiling liquid, in such a manner that the vapors which subsequently rise shall pass through the condensed liquid, and thus in a certain measure be washed. The apparatus employed consists simply of a vertical tube, attached to the flask in which the liquid boils, and containing six or eight little caps of platinum wire gauze separated from each other by small intervals.

DR. JOULE, in some experiments lately made on the polarization, by frictional electricity, of platinum plates, has found that charge which they received was only diminished one half after an interval of an hour and a quarter. The plates were either immersed in water or were laid in alternate series, separated by wet silk. The amount of charge they took was measured by means of a delicate galvanometer. He has suggested that a condenser on this principle might be useful in researches on atmospheric electricity.

MILK OF DISEASED CATTLE.—Mr. Husson, in a paper upon the milk of animals diseased with the cattle plague, announces, as the result of one of his researches, that neither the flesh nor the milk of animals suffering from this cattle plague—contagious typhus—will convey the disease, although they may suffer greatly in their nutritive properties. The milk of diseased cows he found to have a more or less marked reddish yellow tinge, and a disagreeable flavor, although cats fed upon it seemed to suffer no inconvenience.