

## BRITISH PATENT LAW REFORM.

In the city of Manchester, a society called "The Manchester Patent Law Reform Association" has been in existence for some time and it numbers some of the most distinguished men in England, among its members. At one of its late meetings, the chairman, Mr. Wm. Fairbairn, presented the report of a committee, which had been appointed to draw up certain propositions for adoption as reforms of the present British patent laws. The first proposition submitted was for a system of examination (like that which prevails in America) of applications for patents. It was to the effect that the examination of applications be vested in a Board consisting of three persons—a mechanical engineer, a chemist and a barrister—with competent assistants, who should devote all their time to the business of examining and acting upon the cases of applicants for patents and who should receive liberal salaries. This proposition was adopted. Another for the re-examination of rejected applications was also carried, likewise one for the payment £50 at the end of the fifth year of a patent term, instead of £150, the present fee. Several other resolutions were adopted embodying as a whole a reform in the British patent law, which if carried out will make the English patent office nearly similar in its mode of operation to our own. One proposition for the trial of cases for infringement, deserves attention as being an improvement on our system. It is "that all cases of infringement shall be tried in the first instance in any of the ordinary law courts before a special jury of gentlemen conversant with the matter in dispute." Petitions to the Houses of Lords and Commons praying for the enactment of a bill founded on the various propositions agreed to were also adopted, and Lord Brougham and Mr. Bazley, M. P., requested to present them.

## OPERATIONS AT THE BROOKLYN NAVY YARD.

Great activity is exhibited at the Brooklyn Navy Yard. A force of more than three thousand men are constantly employed in it. A large number of workmen are engaged in preparing the different classes of ammunition needed by our vessels on the enemy's coast and rivers. The huge piles of dusky cannon balls which formerly lay year after year along the walks of the yard have generally given place to new shot, which are painted red and black, and lie in piles ready for shipment. These are generally larger in size than the old shot. Great numbers of spherical shells are also cast and prepared at this Navy Yard, and a large number of Dahlgren guns and Columbiads, ranging from eight to eleven inches in caliber have lately been received and are arranged in rows in the yard. A number of these Dahlgrens have bronze trunnions shrunk on and secured with double iron straps. A few large rifled Parrot guns and Ward steel guns have also been received ready to be forwarded to any point where they may be required. The immense resources of this yard do not allow of any diminution in the aggregate supply of war material, of which there is a vast quantity of almost every description adapted to the naval service. The new sloop of war *Adirondack* is now being built and several vessels are being repaired. The frigate *Roanoke* is in the dock, and is undergoing alterations which will soon fit her to receive a coat of mail. Her sides have been cut down to a point not far from the water line. At this point, it is stated, a bomb-proof deck will be built, and two or more turrets, like that on the *Monitor*, placed thereon. The immense hull of the vessel, which will be lightened as much as possible, is strong enough to bear a vast weight of iron, and to carry it with ease. Her timbers and fastenings are as sound, apparently, as when she was built. Immense naval and military stores are shipped weekly from this Navy Yard.

ORDERS have been given to the Minister of Marine to hasten the construction of the iron-cased floating batteries in the French dock-yards. The following floating batteries are to be launched this month: The *Peiho*, the *Saigon*, the *Palestro* and the *Peschiera*. These are to be armed with fourteen guns each.

THE *Royal Sovereign*, a British wooden three decker steam frigate, is being converted into a cupola war ship, with a powerful iron beak blow the water line, so that she may be used as a steam ram.

## CAST-IRON MOLDINGS.

A very interesting paper was lately read upon this subject by Mr. Oubridge, before the London Association of Foremen Engineers. He stated that those who conducted the processes of manufacturing iron castings, were little, if at all, indebted to any published works on science or art. They depended mostly on their own ingenuity and personal experience in conducting the work intrusted to them, as there were no general recognized rules laid down for their guidance. The different qualities of pig iron was an intricate subject to understand, because there was such diversity among them, and without a knowledge of their nature a molder could not manage a business. The density of one brand sometimes differs from another to the extent of 12 lbs. to the cubic foot, and as the cohesive strength is generally in proportion to the density of iron, a molder must know this to produce castings for different purposes. There is also great diversity in the crystallization of different pig irons. That made from Scotch black band ore has very large crystals and it possesses little cohesion, until it is melted several times, while that made from the red hematite ore is fine in the grain and is much stronger. The fusibility and fluidity of pig iron also differ greatly. The rich black band iron retains its fluidity much longer than the Staffordshire or Welsh cast iron. Some pig irons are distinguished for a fine firm grain, others by purity and freedom from dross, and others by the beautiful polish which is capable of being given to castings. With all these different traits and qualities of the brands of pig iron, the foreman of a foundry should be well acquainted. In some kinds of pig iron, impurities constantly rise to the surface, when it is in a fluid state. These should all be removed before the metal is poured into the mold. No laws have been laid down for practical molders in relation to the treatment of the different kinds of pig iron, consequently the practical founder is frequently obliged to resort to "the rule of thumb." Scientific men are almost entirely ignorant of the diversified qualities of pig iron. The mixture of various irons for producing castings suitable for different purposes, are only known empirically to practical molders and mechanics. There is a wide field open for scientific research in connection with pig iron. A plate of iron cast in open sand is one-third weaker than one cast covered and having a sufficient head of metal to give it uniformity of pressure. The principles which should guide the founder in supplying metal to molds to produce uniform castings are but little understood. Several years ago, when Mr. Oubridge was in Liverpool a number of large rolls for sugar mills were to be cast in the foundry with which he was connected. Different castings were made with repeated failures. They were unsound, and although several heads in pouring the metal were used and constant feeding into the molds practiced, half a dozen of rolls were cast and all condemned for the want of homogeneity. Being consulted by the head foreman of the establishment with regard to the cause of failure, Mr. Oubridge suggested that instead of using four heads, one above each arm of the roll, the mold should be made eighteen inches higher, and an annular head double the thickness of the roll be made. This plan was adopted and succeeded perfectly; not another failure occurred. This system he always applied to the castings of large cylinder covers, and all castings which demanded homogeneity and uniform crystallization of the metal.

## NEW-YORK RAILWAYS.

The annual Report of the State Engineer—Van R. Richmond—has lately been published, and contains some general interesting information. The length of single track, not including cities, is 3,984 miles; number of engines, 755; of first-class cars on all roads, 1,223; number of baggage and mail-express cars, 244; freight cars, 9,592. Miles run by passenger trains, 17,241,021, of which there was only 6,058,126 on country roads. Passengers carried 58,128,679; exclusive of cities but 8,684,189. Freight in tons carried, 5,460,409. Average speed of ordinary passenger trains, including stops, 20.26 miles per hour; average speed in motion, 24.89 miles; speed of express trains in motion, 31.87 miles per hour; includ-

ing stops, 27.50 miles. Earnings from passengers on all railroads, \$9,533,934, of which \$7,264,160 were on country roads. Total earnings of passengers and freight, \$23,535,469. Number of passengers killed, 12; injured, 34. Employes killed, 59; injured, 23; number of others killed (run over, &c.), 91; injured, 60. Total number killed, 162; injured, 117. The average cost per mile of single track was \$32,827.35; average number of miles traveled by each passenger, 38.91. Average number of passengers in each train, 55. Average cost per mile of single track for maintaining roadway, \$1,097.92; average cost per mile of single track for operating it, \$1,623.44; for repairs of machinery per mile of single track, \$658.76; average number of persons carried for one killed, 1,240,598. The number of passengers carried on city railroads last year was no less than 49,444,490—upon the other roads only 8,684,189.

These statistics afford gratifying evidence of the increasing security to life in our railway travel. Only twelve passengers out of fifty-eight millions carried lost their lives last year.

## CLOTHES WRINGERS.

For the information of New England people we would state that the address of N. A. Rhoads, manufacturer of clothes wringers, is Waterbury, Vt. Mr. Rhoads's improvement is rapidly finding its way into popular favor, of which it is justly deserving. It is one of the best devices of the kind that we know of. The pressing rollers are of rubber, and their squeezing power is increased at pleasure by simply moving a small lever which operates a cam shaft. All the parts are strong, durable and effective, and the machine will wring out every species of household fabric, from a bed quilt to a lace collar, with the greatest rapidity and success. The clothes wringer has become an important adjunct in domestic economy.

Speaking of clothes wringers reminds us of an amusing incident in connection with them that came to our knowledge not long ago, which illustrates the way in which the best inventions are sometimes brought into disfavor. A gentleman sent home a wringer with directions for the domestic to put it into use on the next washing day. "Well, Biddy, how do you like the wringer?" was the inquiry on his return, a few weeks after. "Arrah, indeed, sir, the machine is good for nothin at all," was the prompt reply; "the clothes are as wet as ever, and I can squeeze them bether wid me own hands." This opinion was corroborated by all the family. So the boss went down stairs and requested Biddy to show him how she used the machine, which she did, by taking great pains to insert the clothes *above the rollers*, and then pulling the articles through with one hand while she turned the crank with the other! Of course it needed but a moment to demonstrate to Biddy the superior convenience and advantage of placing the clothes *between the rollers*, and after that the wringer was extolled as the most wonderful boon that poor Biddy had ever enjoyed.

## The Census Returns of 1860 Worthless.

We have received from Charles L. Flint, Esq., Secretary of the State Board of Agriculture, of Massachusetts, a pamphlet of the agricultural statistics of the State. In some remarks at the close, it is conclusively shown that the statistics collected by the United States Census Marshals for the census of 1860 are wholly unreliable. The errors are monstrously absurd. For instance,

In the returns for the town of Haverhill not a single ton of hay is returned among the products of *forty farms*. In the returns of products for the town of Westfield, 4,000 pounds of rice are given; for Mendon, 273; for Stow, 90; for Rowley, 10 pounds. Believing these entries to be incorrect, the several persons so reported as rice producers, have been interrogated, and the result confirms previous belief. One who was returned as having raised 2,500 pounds of rice, declares the statement to be "a mistake," as he "never raised any rice." Another, reported to have raised 90 pounds, affirms it to be "a great mistake," as he "never raised any." A third, reported to have raised the modest amount of ten pounds, replies that it is "an entire mistake." And so of the others! It should, however, be stated, rather as a serious defect in the census blanks, than as a fault of the marshals, that there appears to be no appropriate schedules for the return of horses, cows, &c., owned by persons other than farmers, and consequently but few, or none, such are returned. Thus we find no horses returned by the marshals for Boston, while the assessors for the same year return 5,111.

Probably the traitors in Buchanan's cabinet had imperfect blanks prepared for the express purpose of making the census statistics worthless.