

AN ENGLISH ECONOMIST ON RAILROAD REFORM.

The conveyance of letters by post is one of the few industrial enterprises which can only attain its highest perfection by being placed under governmental control. The regularity and precision which are absolutely indispensable for the proper working of the postal system, together with safety and expedition in transmission and delivery of mail matter, and the faculty of realizing an immense revenue with a minimum and essentially uniform rate of tariff, are advantages which, on such a grand scale, could never be attained by individuals nor corporate bodies. Such success attending the working of the postal system, it is quite natural that the idea should suggest itself of putting the coadjutor of the post—the telegraph service—on the same basis. In Belgium, the system has always been under the control of government, one tariff, and that a very moderate one, being charged for the transmission of despatches throughout the kingdom. In Switzerland, likewise, the telegraph lines are the property of the state. A strong movement has recently been made in England to make the British lines government property, the experience gained in the two continental countries before referred to being urged as proof that under a general and more economical system, the lines can be and have been worked at rates greatly reduced below those charged when owned by private companies, and yet with a large profit to the government. The measure has of course met with determined opposition from the existing telegraphic companies, but what its fate has been, we are unable to say. A resolution looking to substantially the same end as the English movement was some time since introduced into Congress but we believe no action has ever been taken upon it.

An English economist has issued a pamphlet in which he proposes to make even the railroads of the kingdom government property, to be regulated and managed as is the postal service. We have on several occasions stated the purposes of an organization in this country for making the freight railway lines the property of the different States, but Mr. Brandon, the author of the plan under consideration, goes still further than either what Mr. Quincy of Massachusetts, or the American Cheap Freight League has proposed. In a pamphlet entitled "How to make Railways Remunerative to the Shareholders, and Beneficial to the Public" the writer seeks to show that the public have not yet obtained the full benefits to be derived from railway traveling, as well as that the shareholders might reap advantages in proportion to those conferred upon the public by the adoption of a better system. These desiderata, it appears to him can only be accomplished by the government taking up all the railways in the kingdom. He estimates that the average profits of the British railways are 4 2-5 per cent, and suggests that railway shares should be exchanged for government railway stock, bearing 4 2-5 per cent, guaranteed interest, the price at which to convert the shares being the average price for the past seven years. Government is to unite the whole of the railways under one general management, so that they should become a recognized branch of the public service available for the whole population.

Further: Mr. Brandon proposes to establish one uniform price on every road, carrying passengers one journey of any distance in one direction for the equivalent of twelve, twenty-five and fifty cents, for third, second, and first class passengers, respectively, estimating that at these rates six times the number of passengers would be carried, at small, if any additional expense. He calculates—with an exactness which is certainly surprising—that 755,879,586 passengers would travel annually with single journey tickets; of these one-seventh would be first-class, two-sevenths second class, and the remainder third class passengers, yielding an aggregate income of \$133,000,000. The fares for single journeys are to be paid by government stamps, which are to be issued like postage stamps and delivered up on the completion of the journey; a passenger not provided with a ticket to pay double fare. Mr. Brandon regards his scheme as the completion of the postal system, and refers to the advantages already derived from the letter, book, and sample post, and to be anticipated from the annexation of the telegraph as evidence of the benefits derivable from the development of his project.

Editorial Summary.

"BELLATOMY" is the name given to a curious practice lately introduced into Germany, whereby the efficiency of a leech in blood letting is greatly increased. This result is effected by making an incision in the side of the animal, which serves as an outlet, while, unconscious of the rupture, the leech continues vigorously sucking until the patient has parted with an ounce or even double that quantity of blood from a single application. The cutting is made preferably on the left side of the leech, and at the moment when the gormandizer has nearly filled himself to repletion. The operation must not be regarded as an act of cruelty, but quite the reverse, as serving a good turn for the animal in allowing him the means for prolonging his rich feasting almost indefinitely. After being removed from the patient, if carefully treated, the leech can be kept until the wound is healed, and in this way several incisions may be made in one animal.

METEOROLOGICAL.—Those who have lamented the supposed extraordinary amount of rain that has fallen this year, will be surprised to learn that for the first six months of 1868, the amount of rain and melted snow in this latitude was 4.75 inches less than last year, though being in excess of the average for thirty years past, of 3.03 inches. In the mere number of rainy days, however, this season has been remark-

able, statistics proving that considerably more than half the number of days during this period were rainy, the wind blowing meanwhile from some point in the east on 133 out of the first 172 days of the year.

ONE of the most interesting cases of chemical synthesis recently published is that in which Mr. W. H. Perkins has succeeded in producing artificially the odoriferous principle of new hay. Naturally, the delicious fragrance of freshly mown grass is due entirely to the presence of the species of graminæ known to botanists by the name *anthoxanthum odoratum*, but ordinarily called sweet-scented vernal grass. The same substance constitutes the flavoring principle which the Germans employ in making their favorite beverage, May wine.

It has been found by experiments that a stream of electricity derived from a powerful electro-magnetic machine, driven through a solution of brown unrefined sugar, will bleach it, electricity being thus made to perform the function of charcoal. It appears that one of Wilde's electro-magnetic machines, driven by a 15-horse power engine, has been set up for this object in a sugar refinery in Whitechapel.

EUROPEAN PATENTS are obtained through the SCIENTIFIC AMERICAN office in Great Britain, France, Belgium, Holland, Prussia, Russia, Saxony, Austria, Bavaria, Würtemberg, Italy, Spain, and in Provinces wherever patents are allowed. We invite careful attention to our facilities for procuring *Foreign Patents*. We have offices in London, Paris, Brussels, Berlin, through which we are able to prosecute claims with the utmost dispatch, and at prices less than are usually charged by other solicitors. Parties having applications to make will find it for their interest to consult with Munn & Co.

FISH CULTURE.—Seth Green is breeding fish in Western New York and at two or three points in New England. He is now at Holyoke, most actively engaged in propagating shad, and writes: "I am hatching about seven million shad every day." The Connecticut River, at this rate, will in two or three years, be thoroughly stocked with this superior fish. Mr. Green's example could be followed with great profit by others, who, with a little time and study, might acquire the whole art of fish breeding. There is no reason why the Hudson, Potomac, and numerous other rivers extending from the coast should not abound in shad.

THE NORTH GERMAN MERCANTILE NAVY.—The mercantile navy of the three Hanse-Towns consists of 795 ships of 204,589 tons burden; the Grand Duchy of Mecklenburg-Schwerin, 447 ships with 52,452 tons; the Grand Duchy of Oldenburg, 190 ships with 26,863 tons. The fleet of these five States comprises in all 1,432 ships with 287,904 tons. The complete mercantile navy of Prussia alone numbers 5,413 ships, with 321,987 tons. The united mercantile fleet of the North German Confederation consists of 5,845 ships with 609,891 tons.

THE PRODUCTION OF PHOSPHORUS by a direct process from phosphate of lime, is the invention of two French chemists. Apatite, bone, or any other natural phosphate of lime, is mixed with twice its weight of sand, both being powdered. To the mixture is added 25 per cent of the weight of phosphate of charcoal dust, the whole being heated in a retort to an orange-red heat. At this temperature phosphoric acid is set free, and being reduced by the charcoal, the phosphorus is collected in the ordinary manner.

THE ALBERT MEDAL, which was instituted to "reward distinguished merit in promoting arts, manufactures, or commerce," has this year been awarded by the Council of the Society of Arts to Joseph Whitworth, of Manchester.

Hydrophobia Cured by Salivation.

A new remedy for this most distressing of maladies, comes from Northern India, and is attested by the medical officer at the Hooshiarpur Charitable Dispensary. "The patient on admission was suffering from violent and frequent attacks. He was tied on to a chair, surrounded with blankets, leaving the head free, a large vessel of boiling water was placed under him, and a mixture of equal parts of mercury and sulphur well rubbed together were placed in a broken piece of chatty over a charcoal fire, and put alongside of the vessel of boiling water; 15 grains of calomel were given at once, and 5 grains repeated every hour, the mercurial vapor bath being kept up till all symptoms subsided. In about four hours the man was perfectly calm and free from bad symptoms; he was removed from the chair and placed on a bed. The after treatment was simply tonics, nourishing food, and gargles, etc., to remove salivation. On the 13th he was discharged cured."

The Loss of Power by the Crank.

The crank is simply a mechanical medium of transmitting motion, or rather of transmitting the direction of power. No loss of the power has ever been discovered by the use of this means, and no real advantage gained by the substitution of other means of changing rotary into rectilinear motion, or vice versa. Practically, the speculative objections against the crank with the experiments based on them have never produced any device superior. The continued battle carried on against the crank, as a means to the end in view, has always ended in the discomfiture of the aggressor; the best method would seem to be to produce a new device and prove its superiority to the crank. The discovery will be welcomed by every earnest and honest mechanic.

Modern Gunnery and What it can do.

Some interesting practice was carried on the other day at Shoeburyness with the twelve inch muzzle loading rifled gun of twenty-three tons, firing common shell of six hundred pound weight, with the ordinary charge of sixty pounds of powder. The gun is mounted on a wrought iron carriage and platform, placed on a turn table in rear of a wooden structure representing an iron fort, through the portholes or embrasures of which the gun is laid and fired. The object was to ascertain how quickly the gun could be loaded, aimed, and fired by an ordinary detachment of one officer, one non-commissioned officer, and seventeen gunners. The gun was carefully laid each round at a small target one thousand yards' distance, and five rounds were fired in seven minutes and thirty-nine seconds, or at an average of one minute and thirty seconds for each round. The practice was excellent. We leave our readers to imagine what would have been the effect produced on an enemy's ironclad had she been under the above fire with Palliser projectiles fired with battering charges. She would have them struck every time, and in less than eight minutes would have received from one gun alone the impact of 3000 lbs. of iron, representing a total "energy" of 24,300 foot tons.

A Great Tunnel.

The project has been revived in England of tunneling the channel to France. Evidence has been obtained that the soil over which the sea flows is white chalk, gray chalk, and green sand further below. This fact was ascertained by borings on the English and French coasts, the two points on each side of the channel being not more than twenty miles from each other. It is but reasonable to suppose that the same material will form the submarine soil from coast to coast. The chalk can be easily worked, and the expense is placed at \$50,000,000, gold, twice the cost of the Abyssinian war.

The project of bridging or tunneling this ugly channel is, to say the least, a very doubtful one, but extensive docks might be erected, and much larger and more comfortable steamers put on than the miserable, sea-sickness engendering tubs at present in use. With properly constructed vessels and docks, cars might be run on to boats and easily transported across the channel. The present system seems to us a needless cruelty.

THE peat speculation is unprofitable in Connecticut. The *Hartford Times* says: "Losses have occurred in this and Tolland counties to the extent of about \$150,000 in this speculation, and large sums in other parts of the State."

Recent American and Foreign Patents.

Under this heading we shall publish weekly notices of some of the more prominent home and foreign patents.

MECHANICAL MOVEMENT.—James See, Mitchell, Ind.—The object of this invention is to furnish a device by which the application of motive power to machinery may be so regulated, controlled, and directed, in conjunction with a set of weights, levers, and ratchets, that a great saving of power shall be effected thereby, enabling the operator, by any given amount of power at the main shaft, to obtain results at the point where the power is to be used, exceeding, by nearly one hundred per cent, the results of any other apparatus hitherto invented for a similar purpose.

PAPER RULING MACHINE.—Wm. S. Wilder, New York city.—This invention has for its object to furnish a simple, convenient, and accurate paper ruling machine for ruling bill heads, etc.

CULTIVATOR.—Major E. Hanover, David D. Bailey, and Fordyce M. Harwood, Lamolite, Ill.—This invention has for its object to furnish an improved cultivator, easily and quickly adjusted, and effective in operation.

NAIL EXTRACTOR.—J. B. Breathill, Arrow Rock, Mo.—This invention has for its object to furnish an improved nail extractor which shall be simple in construction, durable, and cheap.

MACHINE FOR SAWING STAVES.—Miller J. Hine, Equality, Ill.—This invention has for its object to furnish an improved machine for sawing staves, which shall be simple in construction, effective in operation, and convenient in use.

LATHING MACHINE.—O. C. Macklett, Saint Paul, Minn.—This invention has for its object to furnish an improved machine by the use of which laths may be attached to the scantlings and joists more rapidly and accurately than is possible when the lathing is done in the ordinary manner.

CHURN AND ICE CREAM FREEZER.—Charles Higley, Port Byron, N. Y.—This invention has for its object to furnish an improved machine so constructed and arranged that it may be used with equal facility as a churn and as an ice cream freezer, and which will do its work in either capacity more thoroughly and quickly than it can be done with the machines ordinarily used for these purposes.

HANDLE FOR SAD IRONS, ETC.—Stephen H. Cummings, Norway, Me.—This invention has for its object to furnish an improved handle for sad irons, tailors' goose, stove cover lifters, and other metal articles, which it is necessary to handle hot, and which shall be so constructed as to prevent the hand piece from becoming hot, and protect the hand from the heat radiated by the object lifted.

VARIABLE CUT-OFF FOR STEAM ENGINES.—James McPherson, Brooklyn N. Y.—This invention relates to a new variable cut-off for steam engines which is connected with the governor, so that it will be automatically adjusted as the pressure of the steam comes above or below a certain desired degree.

HOP PRESS.—Henry Taylor, Middletown, Wis.—This invention consists of a stout frame, composed of two vertical posts and two horizontal beams, which compose the sides, top, and bottom walls of the same, the posts being jointed to the bedplate or beam in a manner to allow them to be spread out after the bale has been formed, to facilitate the release of the same, and provided with removable side planks, a follower, and operating screws.

COW-MILKING MACHINE.—L. O. Colvin, New York city.—This invention consists of a simple, cheap, and effective apparatus for operating the milking device, so arranged that the latter may be readily applied to the udder of the cows, while standing in any position within the stall, wherein the machine is arranged, and which may operate the milking device in a manner to assimilate the action of a sucking calf, either when the cow gives down her milk freely, or when she refuses to give it freely, as is sometimes the case.

EXPANDING REAMER FOR PETROLEUM AND OTHER ARTESIAN WELLS.—A. J. Salisbury, San Buenaventura, Cal.—This invention relates to a method of expanding branches of a well reamer by a positive downward thrust of the superincumbent shafting by which the reamer is actuated in the operation of reaming, and consists of a toggle joint attached to and between the said branches at certain suitable distances from the points of the cutter and operated by the direct vertical thrust of the shafting to which the reamer