NOTES ON FOREIGN INVENTIONS.

Railroad Mirror Signals.—A locomotive has been placed on a railroad between the Bickershaw Collieries and Leigh, England, which has its weatherboard made of plate glass, forming a screen, while projecting over the frame of the engine are arranged large adjustable mirrors set at a proper angle. By means of these reflectors, the engineer has a view of the whole train behind him, so that in case of a casualty to any one of the cars, he can see it reflected in the mirror on his engine. Some trial trips have been made with this apparatus, and they are stated to have been very satisfactory. As such mirrors may be applied at no great expense to every locomotive, (if found to increase the safety of traveling in the least,) they should certainly be adopted on all railroads.

Feeding Boilers.—A patent has been issued to T. Burnett, H. T. Sorbuts and W. Lloyd, in England, for the following method of supplying feed water at a high temperature to steam boilers. The exhaust pipe connected with the cylinder of a steam-engine is conducted so as to extend below the aperture leading to the ordinary condenser, and terminates in a small vessel which is employed as a separate condenser. A portion of the ordinary injection water is thrown through a number of small jets into the exhaust-pipe, in order that it may come in contact with the exhaust steam immediately as it leaves the cylinder, and thus absorb a large portion of the heat before it enters the ordinary condenser. The water so injected, together with the water which has been condensed from the steam, passes at a high temperature into a separate small condenser, from which the boiler is supplied with the requisite quantity of feed water at this increased temperature; a small air-pump being employed to lift the heated water to the ordinary force pump by which it is forced into the boiler.

Clogs or Shoes with Wooden Soles.—In England such shoes have been worn from time immemorial by the peasantry of Lancashire, but hitherto the soles have all been made by hand, a method which is about to be superseded by machinery, invented by W. Brown, of Bolton-le-Moors, England. He cuts the clogs into the requisite form by cutters shaped for the purpose, and to which a rotary motion is given. The soles are formed out of blocks of willow wood, and not only the shape of the wooden soles, but the groove round the edge, to receive the upper is executed by the cutters at one continous operation. The cutters are stated to be supported on a swing-frame to give the proper curve to the sole, and from this we infer the principle of operation must be similar to that of Blanchard's gun-stock machine. Great numbers of such clogs are now manufactured for the negroes on the southern plantations.

Coating Metals.—A patent has been secured by E. Morewood, of Enfield, England, for an improved method of coating iron with zinc. The iron, after being first scoured bright to clear it of oxyd and grease, is admitted to a bath of molten zinc, by first passing it through a bath of sal-ammoniac, all at one continuous operation. The sheets or plates of iron (or wire to be coated) are run through the baths by rollers. They are passed through the molten zinc at about five inches below the surface, and an alloy composed of 75 per pent of lead and 25 of zinc may be made to adhere to the iron by this process. As the zinced iron leaves the bath of zinc, it is first passed through hot water maintained at the boiling point, then it is dipped into cooler water, after which it is dried and rubbed on the surface either with bran or sawdust.

Phosphates of Lime.—M. A. F. Mennons, chemist, of Paris, has taken out a patent for obtaining chemically pure and thoroughly soluble phosphates of lime, eminently adapted for agricultural purposes, by using ammonia to precipitate the phosphate from its solutions of hydrochloric acid, which form what are called "superphosphates." If the ammonia is not too expensive for this purpose, such a product must be far superior to the common phosphates of lime.

Burnishing Paper.—The usual method of glazing paper is by rolling pressure, the webs of paper being calendered between metal and paper rollers. A new method of polishing paper has been introduced by J. Evans, of Hertford, which consists in bringing the paper into contact with sets of polished rolls driven far more rapidly than the surface of the paper. The web of paper is supported during the time it is passing through the calendering rolls by hard polished rolls instead of resting, as heretofore upon rolls of wood and paper. This appears to be an extension of the calico-printers and bleachers' method of calendering cloth for the purpose of glazing it.

Submarine Cables.—Our countryman, D. E. Hughes, of this city, whose name has lately been so prominent before the public in connection with the telegraph, has secured a patent in England for constructing telegraph cables, the object of the improvement being to prevent the electric current escaping even when the usual non-conducting covering of gutta-percha is injured. The conducting wires are enclosed in a tube of gutta-percha, and this is filled with a semi-fluid non-conducting substance, so that if the gutta-percha tube is cut or broken, the semi-fluid will ooze out and fill up the fissure. The semi-fluid used is rosin dissolved in oil or india-rubber dissolved in naptha, or rosin soap, which hardens under sea water when exposed to its action.

Treating Straw for Paper.—In our last issue, we stated that a great quantity of paper, mostly composed of straw pulp, was now manufactured in our country for printing, but that it was not of a quality equal to rag paper. An improvement in treating straw for making a superior quality of paper has just been secured by Letters Patent to R. H. Collyer, London, England, and his process may be of some import. The straw is first soaked or boiled in water to render it soft, then it is subjected to a cutting action and also to a grinding machine. This latter operation seems to be the improved feature. The straw is rubbed between grinding surfaces until every knot is crushed and made into impalpable pulp. In this finely subdivided state, the pulp is boiled in a strong caustic alkali, which dissolves all the silex (hard specks). and it is then reduced to a fine condition. The next process is that of bleaching, which is done by steeping in solutions of chloride of lime in the usual way, the finishing steep being a weak *sour* of sulphuric acid, after which it is washed and beat up into the proper consistency to be laid into webs in the machine.

Feed Water for Boilers.—A patent has been obtained by D. K. Clark, the author of the famous work on railway engineering, for a very peculiar apparatus and arrangement for heating the feed-water of locomotives. It consists in heating the water by the introduction of it in one or more jets into confined channels, and the injection of one or more jets of steam from the exhaust into these passages, in immediate contact with the water, so so as to impinge upon the water, and project it through the passages. By so doing the steam mixes with the water, and is condensed, forming a partial vacuum to draw in the feed and also to heat it.

AMERICAN INVENTIONS IN ENGLAND.—The Bissell truck, an American improvement on the locomotive, is already adopted on the Eastern Counties Railway in England, as well as on many of our own lines. The common locomotive truck consists of a truck holding the four front wheels and turning on a pivot or king-bolt, like the fore-axletree of a wagon. Although such a truck turns round a curve more easily than if it were rigidly parallel to other shafts, and did not turn on its king-bolt, yet its action is hard, like that of a car whose wheels are nearer together on one side than on the other when moving on a straight track. With the Bissell improvement, the truck does not turn on its own center or pivot, but slides sidewise under the engines, being held by a radius-arm extending back under the engine, and fastened to a pin half way between the center of the truck and the forward driving-shaft. Thus all the axles of the engine are more nearly radial to whatever curve the train strikes, the wheels are less likely to run off, and move with less friction, shorter curves may be passed, and the flanges wear less. The chief improvement, however, is that one pair of wheels may be used instead of two pairs, which are necessary in the old truck. Another incidental and considerable advantage is, that with a single shaft, the bearing of the engine is thrown further forward, and the weight necessary to adhesion is thrown further back upon the driving-wheels.— *New York Times.*

A SUCCESSFUL WHALER.—The *Daniel Webster*, a New Bedford (Mass.) whaler has lately returned after a short voyage of one year and five months, from the North Pacific seas, with a cargo of 1,400 bls. of common whale oil, 50 bls. of sperm, and 17,000 lbs. of whalebone.

BURNING OILS.

MESSRS. EDITORS:—On page 270, present volume of the SCIENTIFIC AMERICAN, there is an article headed "More about Coal-oils and Coal," in which a table is given as the result of a photometrical examination of the light-giving qualities and cost of various burning-fluids, by Edward N. Kent, Esq., chemist of your city. I have read your paper for many years, and I know it is not your intention to mislead your subscribers by false statements, yet the statement quoted is calculated to mislead those who are not acquainted with the burning properties and cost of the different oils named in the table. If the cost of oils as given in the table are correct, then your market list of prices, showing that oils can be bought in New York at about half the cost will mislead people as regards the price of oils in your city. Messrs. Austens announce the price of their oils at $1, per gallon, *wholesale*, and then give a table to show how much cheaper it is to burn kerosene than it is to burn any other oil. The list of oils in the table is headed with kerosene, at $1 per gallon (the wholesale price), and then all the other oils are put at about double their value, and by this means kerosene is figured to be the cheapest, and affording a light that will cost about three-fourths less than any other burning oil. We send oil of our own manufacture (lard oil) to your city, and we purchase from your manufacturers, camphene, sperm and whale oil; and we know that these articles could be bought a little lower than your quoted rates. But let us see the difference in prices, as stated in the table on page 270, and the price given as the market value of the oils on page 275:—

Table, page 270.			New York Markets, page 275.		
Camphene ...	$0.63	per gal.	Camphene ...	$0.47 *a*	$0.49
Whale oil ...	1.00	"	Whale oil	58 *a*	60
Lard oil	1.25	"	Lard oil	90 *a*	95
Sperm oil	2.25	"	Sperm oil	1.35 *a*	1.40
Burning-fluid	0.87	"	Burning-fluid	54 *a*	56

The above shows for itself and needs no comment. From what we know of coal-oils we believe that with a good camphene lamp and good solar lamp (the kind named in the table), properly trimmed, we can produce as good a light with camphene, sperm, whale and lard oil as with kerosene. **R. S.**

Louisville, Ky., Dec. 3, 1859.

A LIGHTHOUSE WANTED AT THE FRENCH KEYS.—The Planas, or French Keys, where the *North Star* got on shore, are two keys of the Mariguana passage, on the route to Aspinwall, and 19 miles from the west end of Mariguana, one of the most northern of the Bahama Islands. This is the passage used by sailing vessels outward bound, and by steamers on their passage to and from Aspinwall. The roll of the Atlantic upon those Keys is so fearfully heavy that the strongest ship would be knocked to pieces in a few hours. The New York Chamber of Commerce, at its last meeting, agreed to memorialize the President of the United States to apply to the British government (to which the island and adjacent keys belong) to erect a lighthouse there. The amount of property yearly passing these Keys is estimated at $150,000,000.

THE GREAT BALLOON VOYAGE.—The country may now safely draw breath! The great suspense is now over in regard to Professor Lowe making the daring attempt to cross the Atlantic to Europe, this season, in his monster balloon. The soaring aeronaut has removed his huge gas-bag, caloric-engine, lime-stove, and all the paraphernalia for his intended aerial trip from the old Crystal Palace Park. According to common parlance, "his card is played out." "The weather was unpropitious," it is said, and of course the Atlantic balloon voyage has been postponed till a more convenient opportunity is presented. Another gas-bubble burst!

WIRE AND HOOPS.—At the wire works of H. S. Washburn, in Worcester, Mass., some iron wire is made which is as fine as hair. Of No. 62 wire, which is the finest, 13 miles will only weigh about seven ounces, About 20,000 yards of steel crinoline is now manufactured daily. It is sold, when covered, at wholesale, at about 50 cents a pound, and about three-quarters of a pound is required for each hooped skirt. It is calculated that about 5,000,000 lbs of crinoline have been used up in hoops, this present year, by various makers.