

## Correspondence.

## The First Steam Engine in America.

To the Editor of the Scientific American:

In your issue of June 16, page 371, you publish an extract from the diary of Manasseh Cutler, LL.D., of Ipswich, Mass., giving a description of what you state was "probably the first practical stationary steam engine used in the United States." Knowing your reputation for accuracy, I beg to call your attention to the accompanying document on "Josiah Hornblower and the First Steam Engine in America," published by the New Jersey Historical Society, and also to the inclosed copy of a letter from Mr. Justice Bradley, of the Supreme Court of the United States, which was attached to the relic described, when on exhibition at the Centennial Exposition in 1876. From these authentic and well proved statements there can be no doubt that Mr. Hornblower's engine was the earliest ever operated in this country, antedating the one described by Mr. Cutler by 34 years. The description of the engine in the document by Wm. Nelson—published by the N. J. Historical Society, and which I send by this mail—is so comprehensive and complete that it is worthy of a review and consideration by your valuable paper.

I might add that the relic referred to in Mr. Justice Bradley's letter is now the property of the N. J. Historical Society, having been donated by Mr. Meeker's son, Stephen J. Meeker. CHARLES BRADLEY.

Newark, N. J., June 20, 1888.

WASHINGTON, September 20, 1875.

David M. Meeker, Esq.

DEAR SIR: The steam engine of which you possess a relic was, as you suppose, the first ever erected on this continent. It was imported from England in the year 1753, by Col. John Schuyler, for the purpose of pumping water from his copper mine, opposite Belleville, near Newark, N. J. The mine was rich in ore, but had been worked as deep as hand and horse power could clear it of water. Col. Schuyler having heard of the success with which steam engines (then called fire engines) were used in the mines of Cornwall, determined to have one in his mine. He accordingly requested his London correspondent to procure an engine and to send out with it an engineer capable of putting it up and operating it. This was done in the year named, and Josiah Hornblower, a young man then in his 25th year, was sent out to superintend it. The voyage was a long and perilous one, and Mr. Hornblower expected to return as soon as the engine was in successful operation. But the proprietor induced him to remain, and in the course of a couple of years he married Miss Kingsland, whose father owned a large plantation adjoining that of Col. Schuyler. The late Chief Justice Hornblower was the youngest of a large family of children which resulted from this marriage. Mr. Hornblower's father, whose name was Joseph, had been engaged in the business of constructing engines in Cornwall from their first introduction in the mines there about 1740, and had been an engineer and engine builder from the first use of steam engines in the arts, about 1720.

The engines constructed by him and his son were the kind known as Newcomen engines or Cornish engines. That brought to America by Josiah was of this description. Watt had not then invented his separate condenser nor the use of high pressure; but it is generally conceded that, for pumping purposes, the Cornish engine has still no superior. After 1760 the Schuyler mine was worked for several years by Mr. Hornblower himself. The approach of the war in 1775 caused the operations to cease. Work was resumed, however, in 1792, and was carried on for several years by successive parties. It finally ceased altogether early in this century, and the old engine was broken up and the materials disposed of. The boiler, a large copper cylinder standing upright, 8 or 10 feet high, and as much in diameter, with a flat bottom and a dome-shaped top, was carried to Philadelphia. The relic in your possession was a portion of the cylinder, and was purchased by some person in Newark. In 1864 I met an old man named John Van Emburgh, then 100 years old, who had worked on the engine when it was in operation, in 1792. He described it very minutely and, I doubt not, accurately. It is from his description that I happen to know the kind of engine it was, although from the date of its construction and the use to which it was put, there could have been but little doubt on the subject.

What changes have been wrought in 122 years! What mighty power has been created on this continent in that time by the multiplication and improvement of the steam engines! We may well look upon this relic with a sort of superstitious veneration, looking forward as well as backward, and wonder what another century will bring forth!

Respectfully your obedient servant,  
JOSEPH P. BRADLEY.

PARADISE, by Tintoretto, is the largest painting in the world. It is 84 feet wide, 33½ feet high, and is now in the Doge's Palace, Venice.

## The Inequalities of Men.

M. Lapouge, of Montpellier, has recently delivered before the Faculty of Natural Sciences in that town a series of lectures on inequalities among men, in the course of which he said that the political dogma of equality rests on hypotheses which are utterly false. He distinguished four social types among mankind:

1. The initiators, who show mankind the way into the region of the unknown, and who go in front. Restless and daring, with an intelligence which is at least equal to the average, men of this type do not travel readily along beaten tracks. New ideas are the breath of life to them. They spend their lives in new creations, they are often wrecked, but the true genius represents the most perfect form of this type. 2. Men of spirit, of intelligence, who, possessing no creative power themselves, yet carry out and perfect the ideas and discoveries of the first type, to which they are really the complement. 3. Men who, with much or little intelligence, can work only with others, who mistrust every new idea not accepted by all the others, but who seize it with avidity when their neighbors adopt it. If intelligent, these men are docile, but they dislike every change in routine, and they represent the dullness of the mass in the face of every reform. 4. Men of this type are not fit to attain even the smallest step in culture.

Evidently every man cannot be classed under one or other of these divisions. In human societies clear lines of demarcation do not exist, but for general purposes the distinction is sufficiently evident. The superiority of a race or nation depends on the greater or smaller number of men of the first two classes. The race which is richest in the first type is the blond dolichocephalic, and this has been the case even when the people among whom they lived were not of this kind. In Egypt, Chaldea, Assyria, Persia, India, and even in China men of this type ruled. In the Greek and Roman world it was the same, and it is so still. In our own day the rank of a nation corresponds with the strength of the blond dolichocephalic element. The Gallic and Frank elements which made France great were of this type, and it plays the same part in England, Germany, and America. Near these come the Semitic and Mediterranean races, who had reached a high grade of civilization when the blond dolichocephalic peoples were still savages. The remainder of mankind must be reckoned the passive races. The brachycephalic races of Europe, the Celto-Slavs, rarely produce men of the first intellectual type. In the social changes of recent years brachycephalic men, who form the lower classes, have been elevated and brought forward, and herein, the lecturer thought, lies the great danger of the future deterioration of the French nation.

## Exotic Flax.

Consul Williams, of Rouen, says that M. J. De Turck, of Lille, who is a manager of spinning mills, has brought to light a textile plant of Chinese origin, which has some analogy with ramie. He claims to have discovered a process for degumming this textile, which comes already decorticated, and to produce from it threads of great strength and beauty. He has termed the textile *lin exotique*. It is claimed for this material that in its native country its cost is from 1½ cents to 2 cents a pound, and from 2½ to 3 cents a pound laid down at Marseilles, whereas flax costs, according to quality, from 10d. to 1s. 9d. per kilogramme. The exotic flax, without assorting, is fit for the coarsest fabrics or the finest, the latter only requiring the usual more careful and complicated preparation. The finest lace and the strongest cord can be made from it, as well as an infinite variety of intermediate fabrics, such as table cloths, napkins, carpets, plush, wearing apparel, etc. It is spun without combing, thereby saving 40 per cent of waste incident to flax combing. The material can be worked with the ordinary flax machinery. The textile can be mixed with flax, silk, wool, and cotton. Its strength is very great, and a sewing thread can be spun which requires no twisting. The refuse is utilized and can be worked in the same manner as cotton, which it closely resembles. If desired, the long fiber can be broken up by an ordinary crusher and reduced to the usual length of cotton fiber.

Consul Williams adds that the various fabrics made from this plant, which can be seen at Lille, appear to indicate beauty, strength, and general utility. The plant utilized by M. De Turck in his invention is the dolichos of Tonquin (the dolichos catjang of Cochin China). This is cultivated everywhere throughout Tonquin, and bears also the name of *dau*. The plant produces the dolique, or Tonquin bean, and next to rice is the most important crop of the country. It is cultivated on thousands of acres of land bordering on the sea, by the side of the rice swamps of Hung-hoa, and the banks of all the rivers. The seed is sown in February and March in the north, and a little later in the south. When inundations are feared, the dolique is planted alone, or with other seeds to form clusters. In the latter case Indian corn or castor beans are planted, as, in addition to the shade which they

afford, they produce a valuable crop. This crop is suitable to lands which are too elevated or too porous for rice. It is also cultivated as an alternate crop with rice, to prevent the exhaustion produced by two successive rice crops on the same land. It is cultivated also to rid the land of weeds. It usually ripens about the first of May, or a month earlier than the rice crop. At the time of harvesting the dolique, the country is overrun with women and children gathering the ripe pods in small baskets. The men in long files are seen wending their way to the villages, with long bamboo sticks upon their shoulders, on the ends of which the baskets are balanced. As there is no rest for the land in Tonquin, the stalks are buried with the plow. Occasionally a few are saved for fuel, bedding for the buffaloes, or for manure; but the quantity thus used is small.

## Building a Home.

Presuming that a location has been selected, with a special view of arrangement of cesspools, wells, cisterns, and outhouses, which should flow down and away from the foundation of the house, and which should at no time flow toward you from neighboring dwellings, the greatest thing then to consider is to preserve sanitary conditions. It seems somewhat superfluous to warn one against keeping decayed vegetables around the cellar, but there are thousands who, through sheer neglect, invite weekly and daily all germs of infectious disease through this most common of household evils. In the cellar, above all places, plenty of fresh air should be admitted. There is hardly a housekeeper, no matter how vigorously the reader may resent this imputation, who is entirely free from the charge of shiftlessness. Wherever refuse bits of food are left to mould, a plate left unwashed, a wash cloth uncleansed, and even where fresh milk, meat, or other foods are left uncovered in living rooms or bed rooms, there disease will propagate, not instantly, understand me, in a virulent, venomous form, but insidiously the impurities arising from the slowly decomposing matter will leave their effect upon all inhaling the air of the apartment impregnated by the rising gases.

Many houses are now built to rent or sell, and constructed in the most flimsy manner. They are built to rent or sell, and the mere advertisement that a house is furnished with the most improved sanitary appliances should not be considered as a sufficient guarantee. The cellar should be visited. If its walls are cracked, damp, or colored with mould, if water stands upon its floor, and if light and ventilation are not provided for, seek some other habitation. Of course newly constructed walls are always damp until seasoned by time. A great amount of water is used in the mortar and plastering, and much of this must evaporate before the building is fit for occupancy. Neither should a house freshly painted with lead paints be occupied until the paint is well dried. The living rooms should be placed on the sunny, airy side of the house, and the bed rooms examined with reference to their means of ventilation.—*Philadelphia Home*.

## Roaring in Horses.

Mr. F. Raymond, F.R.C.V.S., of the Royal Horse Infirmary, Woolwich, has announced that successful experiments have been made in the surgical treatment of horses for the grave defect in respiration known as "roaring"—a defect which appears to be on the increase, and which often renders valuable horses almost, if not quite, valueless. The operation has been devised by Dr. Fleming, C.B., principal veterinary surgeon of the army, who for some years has made a special study of the morbid conditions which give rise to the impediment in breathing that causes such distress and noise. It consists of an operation on the larynx for the removal of the obstruction. Under his direction Mr. Raymond has recently operated upon two army horses which were to have been cast for "roaring," and in one case complete, and in the other almost complete, success seemed to have been attained. A great advantage of Fleming's method is that the animal suffers no pain, being chloroformed; nor does it experience any immediate subsequent inconvenience in eating, drinking, or breathing. The horses operated upon were watered and fed in the usual way as soon as they recovered from the narcotic; so that even if the operation chanced to be unsuccessful, the animal is no worse than before. The scar which remains is very small and not noticeable. Mr. Raymond predicts that Fleming's method of laryngotomy will take a position among the most useful in veterinary surgery.

OFFICIAL trials of a new form of log have recently been made on board some of the French torpedo boats. The log is made of bronze of cylindrical-conical form, and weighs about 5½ lb. It is provided with a hollow tube running down its center, which is connected by a canvas-covered India-rubber tube to a pressure gauge on board. When the ship is under way the flow of the water past the log establishes a partial vacuum in the tube, and causes the pointer of the pressure gauge to move over its dial, which is graduated to give the speed of the vessel from 4 up to 25 knots.