The Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY
At No. 37 Park Row (Park Building), New York.

O. D. MUNN, S. H. WALES, A. E. BEACH

TERMS—Three Dollars per annum—One Dollar in advance, for four months
Single copies of the paper are on sale at the office of publication, and at all periodical stores in the United States and Canada.
Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the Brit sh Agents to receive subscriptions for the SCIENTIFIC AMERICAN.
☞ See Prospectus on last page. No travelingagents employed.

VOL. VII. NO. 23.....[NEW SERIES].....*Eighteenth Year.*

NEW YORK, SATURDAY, DECEMBER 6, 1862.

SEVENTEEN THOUSAND PATENTS SECURED THROUGH OUR AGENCY.

The publishers of this paper have been engaged in procuring patents for the past seventeen years, during which time they have acted as Attorneys for more than SEVENTEEN THOUSAND patentees. Nearly all the patents taken by American citizens in FOREIGN countries are procured through the agency of this office.

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SUPPLY AND DEMAND.

For every article of value in the world the demand always exceeds the supply. In other words, every kind of property is wanted by a great many people who are not able to get it. For instance, houses form one kind of property, and what hosts of people there are in every community who would like to own a house but who never do! The same is true of horses, of silks, of broadcloths, and, in short, of every valuable commodity. If we take in the whole human race we shall find that the demand exceeds the supply as truly for the meanest and most common articles as it does for brown stone houses. The great mass of the agricultural peasantry of Europe obtain an insufficient supply of food, and there are whole races among the Asiatic islands who are destitute of even the cheapest kind of clothing. Even in the most prosperous of these United States, the writer of this has seen anable-bodied and middle-aged man walking erect in a crowd of his fellow Indians, but with manifest mortification at his destitution, as naked as when he was born.

The reason why people do not all have fine houses and horses, and all of the other articles which contribute to the comfort and convenience of man, is not because they do not want them, but because they a re not able to get them.

If a man should establish a calico manufactory in Ceylon or Borneo, he would find in the savage inhabitants of those islands an eager desire for his colored fabrics, and if he was willing to receive shells gathered from the sea-shore, he might obtain some little value for his goods. There would be a demand for all of his calicoes, but at a very low price. On the other hand, if a manufacturer offers his wares in a civilized community he will find an equal demand, and he will be able to obtain very much larger values in exchange.

If a man produces an excess of food or clothing or any other valuable commodity, above the quantity required to satisfy his wants, he will find in every community a demand for this surplus, but the amount of values which he can obtain in exchange depends upon the amount of such values produced by the community.

If the supposed calico manufacturer should offer his goods to the natives of Ceylon for one shell a yard, he would probably sell all that he could manufacture, but if he should hold them at twenty cents a yard, he might not find a dozen natives in the whole island who could purchase a single yard. The amount of goods which he would sell would depend upon the price at which they were held, and this applies to civilized as well as to savage communities.

A hundred years ago the sale of cotton fabrics was very small because the fabrics were difficult to procure and the price was high, but with the introduction of the cotton gin, spinning jenny and power loom, the price of cotton cloth was reduced several fold, and the sales multiplied several hundred-fold. Generally variations in the price of an article affect the sale in a very much larger ratio than the change in the price, as it influences the choice of people in making their purchases. At the present time we hear a great deal about the small demand for cotton cloth, the result manifestly of the great advance in price.

As every man desires to exchange the surplus of his own productions after using sufficient for his own needs, for other articles of value, as a general rule he finally fixes the price at such a point that the exchange is effected. This point, as we have seen, depends upon the relative quantity of his own article and that of all other articles produced by the community. It is the latter which determines the *exchangeable* demand.

The price, thus fixed by the relation between the supply offered for sale and the exchangeable demand, secures the most desirable distribution of every commodity. When cotton was very abundant, both cotton cloth and paper were used freely for a multitude of purposes, but as the quantity grows more limited it is desirable that it should be saved for the more important purposes; that the publication of trashy literature, for instance, should cease, in order that the SCIENTIFIC AMERICAN may continue to be printed. And this is certainly and easily effected, without any disputes or arbitrary ordinances, by the advancing price. It affords an impressive proof of the admirable working of the natural laws of trade, which are similar in their character to all of the laws of the wise and beneficent Ruler of the universe.

MISMANAGEMENT OF STEAM FIRE-ENGINES.

Our attention has been called to an abuse which has grown up in regard to the management of our steam fire-engines that calls for correction. We refer to the unnecessary delay in getting them ready for service again whenever they need to be repaired.

No one can deny the advantages the steam engines possess over those worked by hand; nor is there any reason why their cost of maintenance should be proportionately greater if they are properly managed. A steamer throws more water than a hand engine even with pumps of a smaller caliber, for the reason that its action is continuous, while that of the latter is spasmodic, or at any rate, depends for its efficiency upon the will and endurance of the fireman. Those who have seen these men subduing confiagrations know how heartily and energetically they enter upon their heroic work.

Steam fire-engines carry high pressures, and have boilers which generate vapor rapidly. In order to do this, the fire surfaces must be large and the water spaces comparatively small; consequently great care and attention are requisite in their management. Engines and pumps of this class are also necessarily light so as to run easily; but if these unavoidable features are an objection, there is certainly no excuse for want of superiority in engineering skill.

For want of this talent some of our steam fire-engines are for long periods of the year inactive. We know of certain engines which have not only been to the machine shops for repairs several times in the year, but have also remained there untouched and unattended to, while large and important commercial portions of the city were left at the mercy of the old hand engines. We might name some instances where engineers have been absent for weeks from the city, and left their machines covered with dust, regardless of the public welfare. How far these men are controlled by higher authority we do not know, but we assert that a little personal knowledge of their construction, two good files and a vice bench, would have finished repairs on some engines, for the want of which the steamers were laid up in the "hospital."

It is not rational to suppose any man can run a steam fire-engine and keep it in order simply because he is a good fireman. The only resemblance that the new agent has to the old machine in quelling confiagrations is that it throws more water, if that be any salient point of similarity. Consequently, those who conduct the former must have an accurate technical knowledge of their business, and be trained to it; or at all events, these qualifications should be in demand, and while we have before mentioned that incapable men held these responsible places, we know also of steam fire-engines which are run by practical engineers, whose repairs have been very small in proportion to those made upon engines not so conducted.

CAST IRON FOR PIERS AND DOCKS.

Inquiries have lately been made of us respecting the durability of cast iron in sea water, with the purpose in view of using it in the construction of piers and docks if it possesses sufficient durability to warrant its application to such objects. The docks of the city of New York are formed of cradles of logs, filled in with loose stones and dirt. Foreign skippers, when they first arrive, are struck with surprise at beholding such a vast shipping port and such a wealthy city provided with such defective docks. Their timbers decay so rapidly by the action of the salt-water borer—*teredo navalis*—that several docks may constantly be seen sinking beneath the water, and as many others undergoing reconstruction. The piers of timber bridges exposed to salt water are subject to like evils. From the very moment they are erected they begin to decay and become dangerous. The very extensive and almost exclusive use of timber in the docks and piers on our navigable rivers is due to the former great abundance and low cost of wood. Until within a few years it was found in abundance adjacent to all our seaports, and it was the cheapest and most convenient material that could be employed. But its increasing scarcity and cost has directed attention to the employment of a more durable substitute. Stone, when formed into solid walls of masonry, possesses the desired durability; but as it has to be quarried, then cut into the desired sizes and forms with hammer and chisel, its cost is enormous. Some more accommodating material has been sought, and cast iron has been fixed upon, as it can be cast in any form and of any size. But a question has arisen regarding its durability in sea water, as it is well known that wrought iron rusts and decays almost as fast as timber when exposed to saline influences. The new iron bridge at Harlem, near this city, is being built on cast-iron hollow columns, but as these are filled with concrete, they will stand erect even though the iron should rust away in a few years by the action of the salt water. It is certainly very desirable to know how long cast iron will endure in salt water, for upon such information important issues may depend. Happily such information has quite recently been given to the public through the columns of the London *Civil Engineers' and Architects' Journal*, by E. B. Webb, C. E., and we will give the substance of his article on this question.

Cast iron in sea water is liable to deterioration by absorption of oxygen, and some qualities of it soon become very soft on the surface. R. Mallet exposed unprotected cast iron freely to the weather, in Dublin, and it corroded nearly as fast as other specimens placed in clear sea water. When cast iron is exposed alternately to sea water and air, oxidation goes on more rapidly than when it is entirely covered with sea water; as moluscs, in the latter case, soon cover the entire surface, and these afford protection against the absorption of oxygen. There are several examples of cast iron being immersed in sea water for a number of years, without the least signs of injury. Three pairs of dock gates have been in use at the dockyard at Sheerness since 1821. Their heel posts, miter posts and ribs are of cast iron, and they are sheeted from top to bottom with water-tight cast-iron plates, and they are still in perfect condition. No portion of the cast iron has ever been replaced in consequence of the deterioration of the metal, and no plate has given way, although exposed to a head of 26 feet of water at spring tides. These three gates of cast iron have resisted the action of sea water uninjured for more than forty years, and a fourth pair of a similar character, in the same place, have been in use for thirty-five years. This is important data relating to the question.