tion of some living creatures, it might have been expected that, seeing the rapidity of their generations succeeding each other, short-lived as they are, we should find some recorded instances of such mutation. But the animals which old Egypt worshipped and those of which we read in old Egypt's fables were such as we now meet. Allowing, however, the lapse of hundreds of millions of years, antecedent to all geological dates, for the change from the simplest to the most complete living form, it is scarcely credible that the modification of a vegetating structure has produced in animals such an organ as the eye, much less the brain.

THE ENGINES OF THE "PARISIAN."

In our last issue we illustrated, as an example of one of the latest types of English marine engines, the powerful and compact engines built by, R. Napier and Sons, Glasgow, for the steamship Parisian—taken from the *Engineer*. This vessel is 450 feet long and 46 feet wide. and has 10,000 tons displacement.

The engines are vertical compounds, of the "tandem" type; that is, with the cylinders in line with the keel. In the previous illustration only the rear of the engines was shown. The accompanying engraving represents the front, and shows the valve and pump gear.

There are three cylinders, one high pressure and two low pressure, which are 60 inches and 85 inches respectively, with 5 feet stroke of piston. The crank shaft is of steel, 20 inches diameter; the crank pins are 21 inches diameter, by the same length. Steam of 75 pounds pressure is used.

The construction and arrangement of the engines is so well shown in the engraving, that we need add but little by way of explanation. The piston valves are worked by a link motion, which is peculiar in some details, especially the rock shaft and levers which connect the link motion with the valve stems.

These engines are handled for reversing or going ahead by a single steam cylinder, which is located behind the central main cylinder, connecting directly by a rod with the reverse shaft, the arm of which is shown in the engraving of the main engines, instead of by a separate engine.

These engines were run at 85 revolutions per minute, at which speed they indicated 6,020 horse power. This very high piston speed shows to what perfection modern workmanship has attained when it is possible for even so short a time.

THE AMERICAN WORKINGMEN.

Dr. Lyon Playfair, one of the most prominent of English men of science, and a member of Parliament, who lately returned to his native country from a tour in the United States, has published some of the results of his observation of men and things in this country, which convey some very instructive and suggestive statements bearing upon the industrial future of the United States. Coming as they do from a representative Englishman, of large views, thoroughly competent by reason of his intimate familiarity with the industries of his own country, and favored with every facility for obtaining accurate information, Mr. Playfair's opinions are of special interest.

Mr. Playfair publishes in a recent number of *Macmillan's Magazine*, entitled "Industries of the United States in Relation to the Tariff," in which we find some material for future consideration, and some comments on the position of the workingman in the manufacturing States, which last specially interests us here. We shall give, therefore, in the following a brief summary of the author's impression on this subject.

Mr. Playfair states that the true American mechanic, by descent, education and training, is excellently adapted to his work. His chief centre is in New England, though he is rapidly spreading everywhere. The original settlers in New England were men of strong will, and above the average of the Old Country in education and enterprise. Their early love for education is shown in the fact that soon after their settlement, they established Harvard College. These men landed on a rough, inhospitable coast, covered with wood, and they had few tools with which to conquer nature. They were obliged to be men of many resources. In possession perhaps of a single tool, they turned it to many purposes, and if it did not suit, they altered it. Thus reliance, inventiveness and industrial application developed together.

The soil of the New England States is the poorest for agricultural purposes, while the climate is not sufficiently changeable for a large variety of crops. The rocky and poor soil upon which the early settlers landed, forced the increasing population into manufactures and commerce, so that they acquired habits of industry and thrift. As they gradually extended westwards and southwards, better climate, land and raw material opened up new sources of wealth, and the qualities acquired by the first colonists enabled their descendants to take advantage of improved conditions.

The New Englanders never forgot that their superior education had been of powerful assistance to them as early settlers, and they kept up knowledge among their descendants. It is a rule among Americans that the schoolhouse must precede the factory, and that capital applied to industry without knowledge is worthless.

Even the Puritan sense of religion, Mr. Playfair believes, has had great effect on manufactures. The commandment, "Thou shalt not steal," is carried out in manufactures. When cotton goods are sold, the material is wholly cotton, and is not weighted with China clay or sulphate of baryta. The 600,000 muskets sent out to Turkey during the war, were made to shoot and not to sell.

American goods, he affirms, are dear, but they are true and good. The example of New England spreads over the Union, and has produced an honest and efficient workman everywhere. The high price of labor gave a great stimulus to the invention of labor-saving machinery, while the patent laws wisely encouraged inventions.

Thus, the true American mechanic is generally superior to, though not dearer, than the mechanics who enter by immigration. He is too dear for inferior work. But even in the case of imported labor, American industry has a great advantage over other countries. The emigrant arrives in the full power of production, while the country which sent him forth had to pay for his childhood, during the years in which he possessed no productive value.—*Manufacturer and Builder*.

A WESTERN writer tells the story, which no other would be likely to do with equal felicity, of a tree recently brought from Australia to Nevada, "which has been in the habit, at night, of going to roost like the chickens. The leaves fold together, and the ends of the tender twigs coil themselves up like the tail of a well conditioned pig. After one of the twigs have been stroked or handled the leaves move uneasily and are in a sort of mild commotion for a minute or more. Indignant at having been transplanted the other day, it had hardly been placed in its new quarters before the leaves began to stand up like the hair of an angry cat, and soon the whole plant was in a quiver. It gave out a most pungent odor, which filled the house, and was so sickening that it was found necessary to upon the doors and windows. It was fully an hour before the plant calmed and folded its leaves in peace. It would probably not have given up the fight then had it not been that its time for going to roost had arrived. The whole household now stand in awe of that plant."

SALYCICLIC ACID AS A DYSINFECTANT for cattle care is said to be far preferable to carbolic acid, as it is quite as energetic, and leaves no unpleasant smell behind. It is employed largely abroad by veterinary surgeons as a curative agent for many diseases to which animals are subject, and is found useful in checking the spread of contagion among them. Its most important use, however, is for the preservation of food. During the prevalence of hot weather, meat, fish, etc., can be preserved by its use for several days.