THE POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

[Reported expressly for the Scientific American.]

The usual weekly meeting was held on Thursday evening, November 8th—John Johnson, Esq., presiding.

MISCELLANEOUS BUSINESS.

Economy of the Caloric Engine.—Mr. Babcock gave an elaborate calculation of the working of the air engine, based on the specific heat of air and the use of the regenerator or economizer, concluding that the practical result attainable is a horse power per hour from .48 pounds of coal. He stated that the utmost capacity of the Cornish engine is 1.48 pounds of coal per horse power per hour; the common duty of the best, 1.98 pounds per horse power per hour; and the average duty, 2.64 pounds per horse power per hour; the best marine engines, 4.4 pounds per horse power per hour. A properly constructed air engine should, therefore, run for 25 per cent of the fuel used in the best Cornish engines or 11 per cent of that used in the best marine engines.

The remarks of Mr. Babcock led to a discussion, in which the value of the regenerator was brought in question, and statements were made in reference to the working of the Cornish, marine and other engines which varied somewhat from the figures given by Mr. Babcock.

The Cylinder Press.—Mr. Bruce, of Long Island, read a paper *apropos* of a recent statement in the New York *World*, to the effect that the invention of the cylinder press was made by Mr. Hoe, of this city. Mr. Bruce claims that he anticipated Mr. Hoe in his cracker machine, which was first made in 1826, and patented in 1832. In the cracker machine were similar combinations and motions to those in Hoe's presses; letter types and various devices were set on a cylinder by which the sheet of dough, as it passed through the machine, was printed.

Mr. Babcock—The first printing press made in America was a cylinder press. Mr. Hoe's patent claims only peculiar methods of holding the type.

Mr. Fisher—In 1832, in London, I saw types set on a cylinder for printing.

A Stranger—The first cylinder press was made in the last century. This machine printed both sides of the paper in one operation.

Mr. Bruce—I was aware of it; but I supposed, from the fact that it was not used that it was impracticable.

The Arts and Sciences at the West.—Lieut. Governor Noble, of Wisconsin, was invited by the chairman to address the meeting. Mr. Noble said:—I have come to the meeting out of sympathy for the purposes for which the society is established. The subjects which are discussed here are such as I take pleasure in studying. Wisconsin is so new a State that our material and business affairs require all our attention. At Madison (our capital), however, we have a historical society which has a collection of books and American relics of which we are proud, and meetings something like this have been projected. But it will be a long time before we can have the facilities of the citizens of New York, and we must still look to the east for light. Wisconsin is remarkable for her mineral wealth, and I should take pleasure in giving you an account of what we are doing with it, but I will not trust myself, without some preparation, to give you accurate statements, especially as I may have another opportunity.

On motion of Mr. Fisher, Mr. Noble was presented to the Standing Committee for honorary membership.

The regular subject—"Preservation of Wood Exposed to the Weather"—was here introduced.

DISCUSSION.

Mr. Bruce—This subject was recently discussed by the Farmers' Club, and it seemed to be concluded there that it was an excellent plan to preserve wood for fence posts by first immersing them in sulphuric acid.

Mr. Dibben—My experience opposes such a recommendation. I once had the fortune to occupy premises which had been vacated by a soda water manufacturer. Sulphuric acid had been plentifully spilled on the floor and sprinkled on the plastering. Wherever the acid touched the floor the wood was rotten, and where the acid had leaked through to the room below, the celling came down. Acid is sometimes used to stain wood, but it always impairs the strength.

Mr. Veeder—On the railroad between Pittsburgh and Cleveland is a coal oil factory, which produces an oil which has not been found fit for any of the ordinary uses of coal oil. It has a very pungent smell, and contains a very large per cent of creosote. From the locality of the works and the nature of the oil, I believe it may be found profitable to establish there a creosoting depot, provided there is so much virtue in creosote as is claimed. These oil works at present are able to turn out 200 gallons of oil per day, but the material is abundant enough to yield many times that quantity for a long time. This oil can now be bought for five cents per gallon. I have experimented much on wood for fence posts, and have adopted the plan of soaking them for a considerable time in water, and afterward well seasoning before use. It is well known that the lumber now received from the West is not so durable as that of fifteen or twenty years ago. This fact is accounted for from the methods of transportation; formerly the lumber was rafted on the rivers and canals to the city; now it comes in boats or by railroads.

Mr. Koch—The explanation of the effect of water is very simple. The harm to wood comes from the presence of sap, and by soaking the wood in water, the sap is dissolved out.

Mr. Seely—Mr. Koch's remark that the decay of wood is dependent on the presence of the sap is correct. The part of the wood which is useful (the woody fiber), is as unchangeable as wool or cotton; and, in fact, is chemically the same as cotton. If wood be fired from Lyman's steam gun, the fibers are detached from each other; and if they be washed, they can hardly be distinguished from cotton. The plans of preserving wood, therefore, imply treatment of the sap. The sap is a solution in water of matters similar in their nature to the white of an egg, and when the sap is spontaneously decomposed, it smells bad, and acts as a ferment on the woody fiber, precisely as the white of an egg will. Now, as suggested, the sap may be dissolved out; but this plan is not systematically carried out anywhere—it involves great difficulties. The plans most recommended are such as change the nature of the sap and leave it in the wood. They propose to coagulate the albuminous substances of the sap. For this purpose we have the choice among many substances. Ten or fifteen years ago, the methods known as "Kyanizing" and "Payenizing" were much approved, but they did not come into use by reason of the expense of chemicals and the difficulties in the way of getting them into the wood. But lately we have a cheap material, easy to work with, and more effective than anything else. I allude, of course, to creosote. The word means "preserver of flesh," and is suggestive of the fact that whatever will preserve meat will preserve wood also. There is no surer way of preserving meat than by smoking; and in this process it is the creosote alone which effects the object. Wood may be preserved by smoking, and the explanation is precisely the same as in the case of meat; the albuminous matter is coagulated. Creosoting is the process which must take the place of all others for preserving railroad timber and rude woodwork. The supply of creosote from coal tar and coal oil works is sufficient for all demand, and, in the state fit for use, will not cost more than eight or ten cents per gallon. The crude creosote is peculiarly fitted for use on wood from its very impurities. The oils from coal have the property of penetrating readily where water solutions go with difficulty, and the tarry matter driesinto a varnish on the surface, which keeps out the air. Its use, too, is easy. The wood needs only to be well dried and soaked in the liquid.

W. H. Johnson—The Reading Railroad Company have for some time adopted the process of smoking their railroad ties. The wood is piled on trucks, and rolled into the smoking chamber. I have had considerable practical experience in creosoting timber. The wood is first thoroughly dried, and, while hot, is immersed in the tank of creosote. A soaking of eight or ten days is quite sufficient for railroad ties. I have abundance of certificates and recommendations of this process. In Europe, as well as here, it is considered to be the only practicable plan. The selling price of the crude creosote is ten cents per gallon; this article is the last portion of the distillation from coal tar.

Mr. Garbanati—The timber our forefathers used seems to have had less need of artificial means of preparation than the timber of our own times. Two or three hundred years ago they built houses which required to be pulled down when they were in the way. Now, with all our science and progress, our houses tumble down of their own accord. There is something to be studied about the time of cutting timber and seasoning it.

Mr. Hough—Nature has fixed the time of cutting in the winter season, when the sap is dried up and exhausted in the process of conversion into fiber.

Mr. Dibben—The ends of timber always give way soonest, a fact that may easily he verified by inspecting any old wooden bridge. The joints collect the water from the rains, and the fibrous wood sucks it in. Coagulating the albuminous matter is not sufficient; it does not make the wood impervious to moisture. Fence posts in sandy soils, now wet, now dry, never last long. A neighbor of mine, a few years ago, tarred some of his fence posts, leaving others in the ordinary condition, and he was soon so well satisfied with the effect that he has replaced all the unprotected and rotten posts with others thoroughly creosoted. Creosote is effective, but has a most villanous smell. If any one will deodorize it he will do us a great service.

Professor Hedrick—If you take away the odor, you have no creosote. The odor is its inherent property.

Mr. Seely—The crude creosote is not so offensive as gas tar. The sulphur compounds and most volatile products are got rid of in the distillations. To some people creosote is not at all offensive. It is only proposed to use it for outside and very coarse work.

The Chairman—How much creosote is needed per cubic foot of wood?

W. H. Johnson—About eight pounds.

Mr. Koch—A cubic foot of pine weighs thirty six pounds.

Mr. Garvey—The methods of preserving wood may be summed up as follows: 1st. Sealing up the pores by varnishes or paint. 2d. Disposing of the sap by soaking in water, heat, or chemical agents. 3d. Filling up the pores of the wood with some inorganic substance which will exclude the air and moisture.

Dr. Van der Weyde—Wood for pianos and some other musical instruments is seasoned by exposing it for six weeks, in a chamber heated to about 150°.

Lieut. Governor Noble—I have seen a method of thoroughly seasoning 1 and 2-inch boards in 24 hours—a cheap process, and objectionable only from danger of fire. A kiln is built with double walls, filled in with spent tan or saw dust, and in one corner is the furnace, with pipes traversing the space, so as to give considerable surface. Steam is let into this chamber, and you have the lumber surrounded with superheated steam and air at the ordinary pressure. This apparatus was found to be quite serviceable, so far as speedily seasoning the timber, but several of the kilns took fire when great precautions had been used to prevent such accidents.

Same subject to be continued next week.

GIVE THE PRICES.

MESSRS. EDITORS:—On page 245 of the present volume of the SCIENTIFIC AMERICAN, I see an engraving of a combination auger. Can you inform me if said auger will, under ordinary circumstances, perform all that is there claimed for it, and could you inform me of the price? The reason of this inquiry is, I have written to Mr. Hathaway, according to the directions in your paper, and have received no answer. I should like inventors generally to affix the price of their articles, as I think it would do them no material injury in the sale of their wares. An answer in your "Notes and Queries" will much oblige a subscriber. D. E. S.

Oswego City, November 3, 1860.

WATER GAS TROUBLES.—A quarrel has been in progress for some time past between Henry C. Carey, Marmaduke Moore and A. Hart, of the Water Gas Works, and Professor Cresson, Engineer of the Philadelphia Gas Works. The controversy has brought out a pamphlet of 67 pages on the part of the Water Gas folks, in which the Professor is handled in language not particularly complimentary. This is a personal matter, however, and we notice by the Philadelphia papers that it is to be ventilated through the courts. Make a legal ring, and let us see a fair fight and no foul play.