THE WORLD'S COLUMBIAN EXPOSITION—EXHIBIT OF OTIS C. WHITE, WORCESTER, MASS.

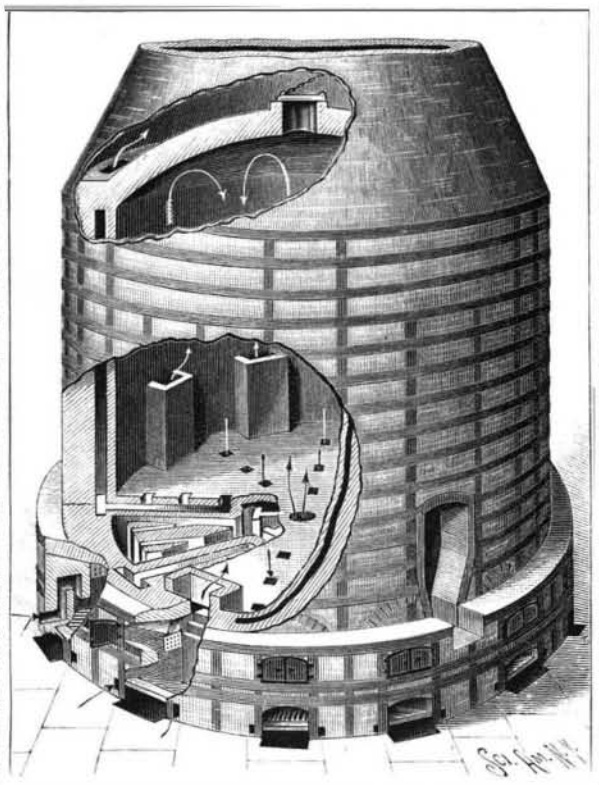
There are few if any single exhibits at the World's Columbian Exposition that seek recognition in more departments than that of adjustable extension movement in ball and socket and cone joints made by Otis C. White & Company, Worcester, Mass. The accompanying illustration shows this exhibit, which occupies a commanding position in the gallery in the Manufactures and Liberal Arts building. Although situated in this building, this exhibit comes in for consideration and award in the departments of machinery and electricity as well as liberal arts and manufactures. The various joints invented by Mr. White can be so combined as to be perfectly adapted to almost any line of work where joints are used, from the delicate adjustments required in scientific work to such coarser uses as the holding of the heaviest vises at an angle. A great variety of applications is included in the exhibit: forms used by surgeons, microscopists, biologists and photographers, as well as by artisans of every sort. The joints have as their bases a divided ball and socket joint, which is most ingenious and novel, and has of course been carefully protected by patents in various countries. A most valuable feature is that either a firm unyielding grip can be arranged for, or more or less elasticity can be introduced and controlled, so as to allow motion under any desired amount of pressure. This elastic quality has made feasible the novel series of adjustable holders for electric lights, which have attracted the attention of practical men to the exhibit. The illustration shows in the doorway one form of these holders, which has a ball and socket joint at the base, a sliding swivel joint at the elbows, and a wrist joint just back of the lamp. The swivel joint allows both rotation and extension to full length of each arm; and while all these adjustments can be easily made by the hand, the position is afterward retained, without any attention to screws or fastenings of any sort. The lamp can be moved, therefore, to any point within the radius of the arms, and there it will steadily remain, as long as itis wanted. This invention for the first time makes it possible to carry the incandescent lamp exactly to the work. A further and most important merit of these joints will appear on close scrutiny. The parts are all so devised that they can be made in quantities easily and cheaply, and can be put together by ordinary skill, so that the complete holder can be sold at a price which is surprisingly low.

Up to the present time the owners have been so busy in perfecting the joints and the processes of manufacture that no effort has been made to introduce the holders; but they have been sought by manufacturers, and are now in daily use in many large shops and factories. As soon as the inevitable corporation is completed, there will be little delay in supplying the largest and most varied demand.

THE H. K. Porter & Company, of Pittsburg, Pa., builders of light locomotives, have received an award for all of the locomotives shown by them at the World's Fair, including both the "Logger," exhibited in connection with the Forestry department, and the other four motors and locomotives exhibited in the Transportation building. These interesting exhibits were fully described in the SCIENTIFIC AMERICAN of October 7.

LAWTON'S IMPROVED POTTERY KILN.

The economical use of fuel in the larger class of furnaces, such as those used for glass or pottery, is one of the most important problems of the day. In the cut we illustrate the Lawton pottery kiln, in which a partially regenerative or recuperative effect is obtained, with accompanying economy of fuel. The kiln is of the cupola shape, with furnaces distributed around its base which are of improved form. The air for the final combustion of the smoke and gaseous products passes through flues on each side of the furnaces and enters the fire chamber highly heated. This insures economy of fuel and also perfect combustion, little or no smoke being produced even with bituminous coal. The products of combustion from the furnaces are distributed by flues beneath the floor of the kiln. One portion goes to a central orifice, recognizable in the cut by arrows issuing from it, and another portion to a number of flues rising within the kiln and lying against its inner wall and opening into its interior. The kiln has a dome-shaped roof. Against this the currents of the gaseous products of combustion strike and are deflected toward the floor. The kiln is surrounded by an annular chamber connected to the interior by a number of flues under the floor leading to holes or apertures. In the cut these holes are shown of square shape. The deflected gases pass out through the apertures and flues leading from them and fill the annular space as they escape to the chimney. Thus the thin wall which serves as lining to the kiln is kept hot by what would otherwise be the waste heat of the furnace.



LAWTON'S IMPROVED POTTERY KILN.

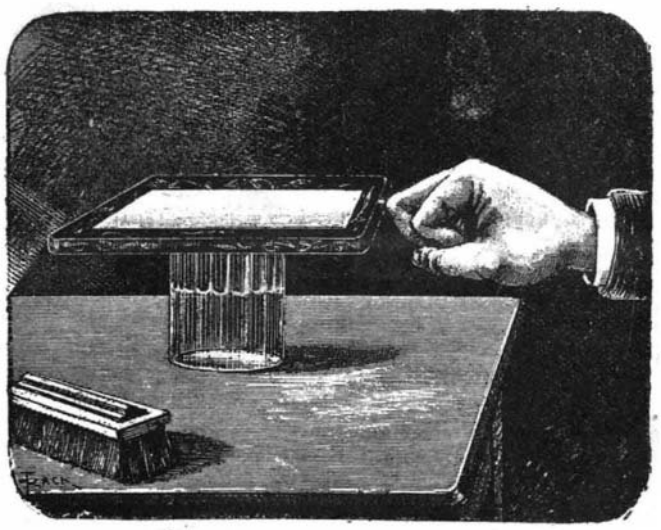
In the center of the inner dome one or more crown holes are provided, which are opened when the kiln is being burned off. This facilitates cooling. A short movable pipe may also be placed over the central floor aperture to accelerate the starting of the fire and to regulate the inner currents. In use the chamber is filled with pottery and the fire started as usual. Owing to the heating of the air supply, the furnace is filled with so pure an atmosphere that the most delicate ware is unimpaired in color. The construction favors even distribution of heat also, and attains its results by a comparatively simple construction requiring no deep excavation. The air, which is gradually heated and introduced through the ports in arch and ends of the furnace, provides a very perfect combustion, and by means of this construction the dangerous gases which often do so much mischief are destroyed, and also the smoke, even when bituminous coal is used.

Full particulars may be obtained from the inventor, Mr. Lewis Lawton, Trenton, N. J.

A SIMPLE ELECTRICAL MACHINE.

That yellow amber, when rubbed, acquires the property of attracting light objects was known as long as forty centuries ago. This first experiment in electricity was destined for a splendid future, but a distant one, since it is from yesterday only that date the truly serious applications of this science.

We shall now endeavor to show how the fundamental experiments of electricity may be performed with as reduced a material as possible. A sheet of paper will suffice us in the first place for a few interesting experiments. Heat a piece of ordinary paper in front of a brisk fire or over a lamp chimney until it begins to redden. Afterward rub it smartly with the hand or, better, with a brush, and it will then be capable of attracting small, light objects, such as fragments of thin paper and the web of feathers. If the sheet of paper be brought near a wall, table or any stationary object whatever it will be strongly attracted. Finally,



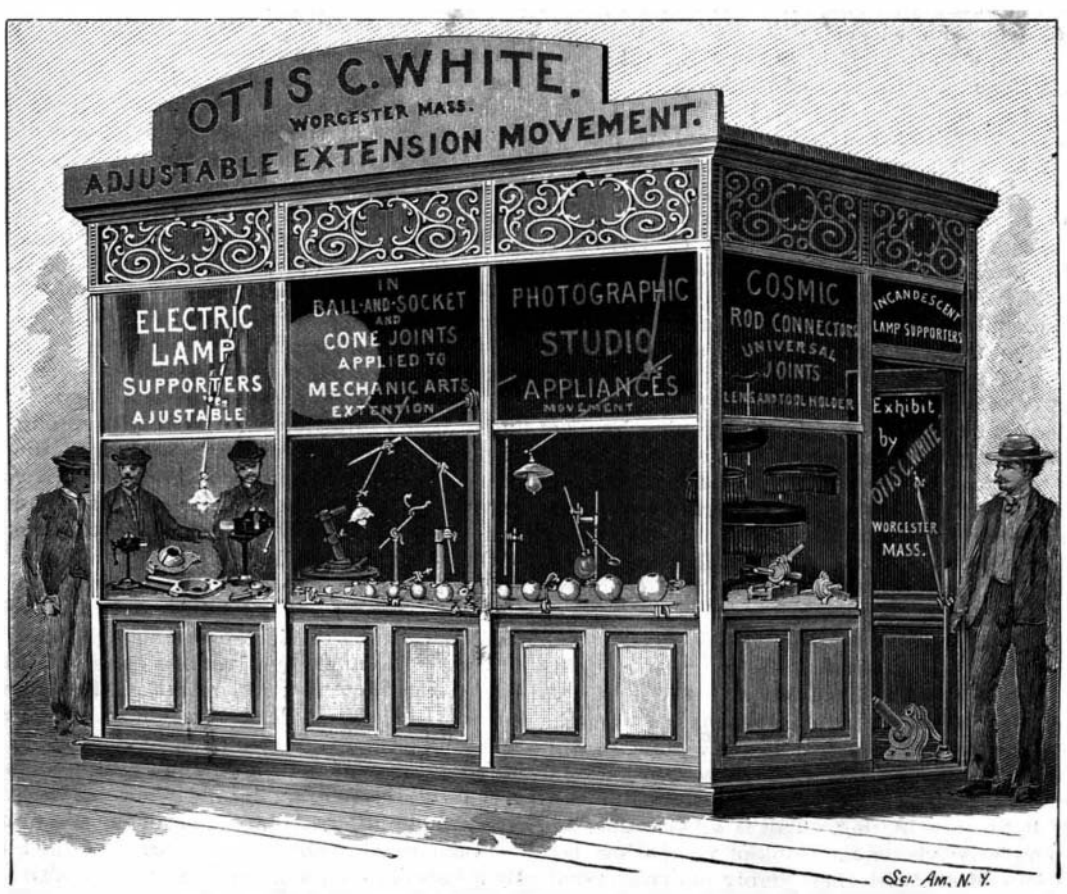
A SIMPLE ELECTRICAL MACHINE.

if one places it above his head his hair will be attracted, while at the same time he will experience a sensation comparable to a slight tickling.

But more remarkable results still are reached upon improving the apparatus. Take a glass, expose it to the fire so that it shall be perfectly dry, and place it upside down upon a table. Afterward take a tray, perfectly dry, and place it upon the glass in such a way that it shall preserve its equilibrium. Finally, take a sheet of paper slightly smaller than the tray, heat it and rub it rapidly with a brush and it will become quickly electrified. Then place it upon the tray.

An electrical machine will thus have been constructed without any expense. If the finger be brought near the tray, a spark will appear. This spark will be so much the brighter and the series of sparks will be so much the longer in proportion as the glass and tray are drier.

If, while the sparks are being drawn from the tray, the room in which the experiment is performed be darkened, these sparkswill appear extremely brilliant.
—*Science Illustré.*



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Remedy for Color Blindness.

According to the *Med. Record*, Dr. A. E. Wright states it to be a fact that total color blindness is very rare; also, that yellow-blue color blindness is very rare. The common form is the green-red blindness. It so happens that in the establishment of signals, green and red lights form the most commonly used colors, hence, from three to five per cent of men capable of doing work as pilots or engineers are kept out of such employments, often with results that are almost cruel. Most color-blind men can readily distinguish yellows and blues, and the doctor proposes that the red lights should have a distinctly yellowish tinge and the green lights a distinctly bluish tinge. In this way the difference between signals could be readily made out by almost all the color blind.