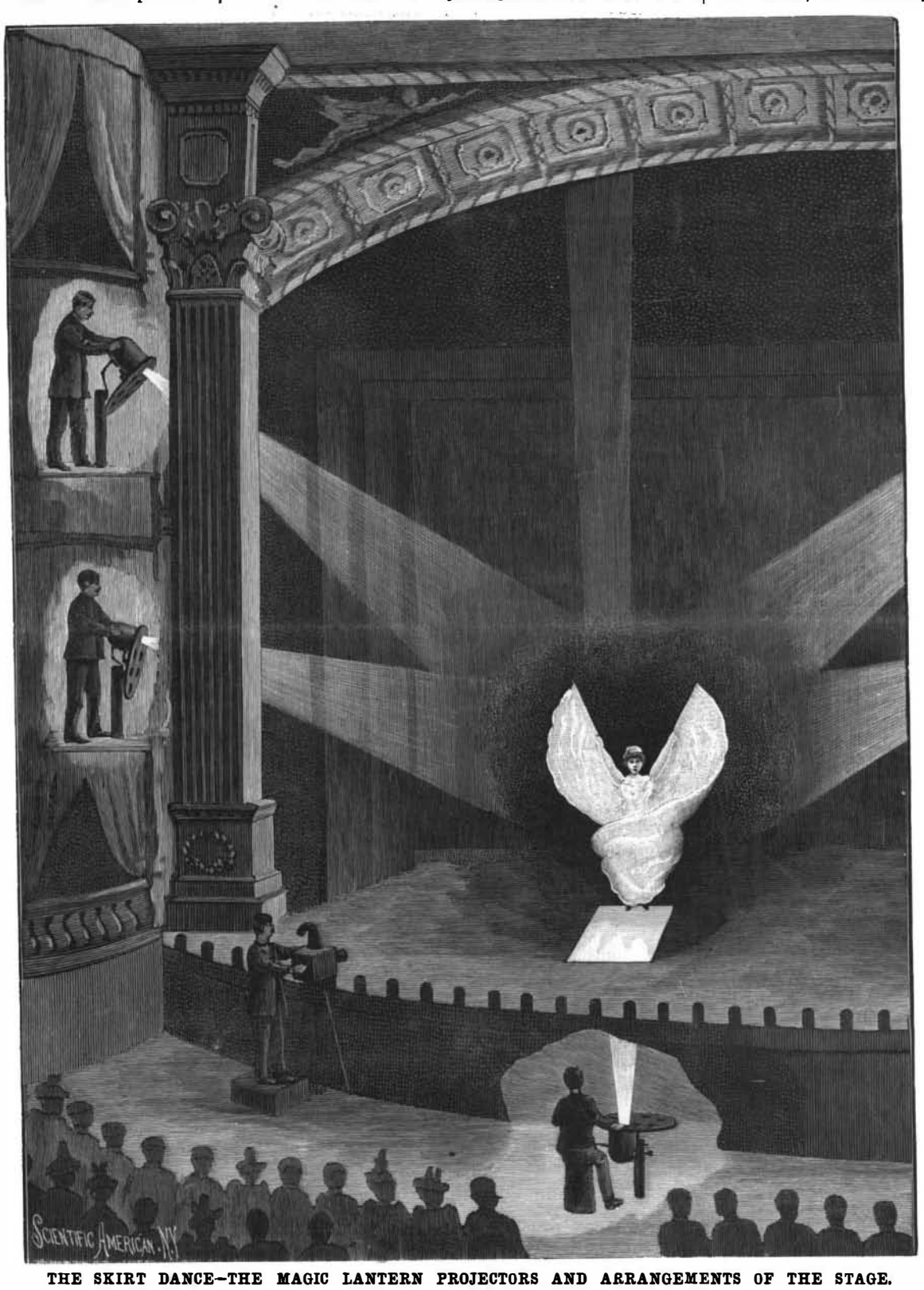
THE SKIRT DANCE.

The famous skirt dance may be defined as peculiar in the sense that it is not a dance as generally understood in stage parlance. The performer standing on the stage and dressed in voluminous attire, requiring, it is said, over a hundred yards of material, by slow motions comprising more arm movements than foot movements causes the light drapery to wave about in most graceful curves. The variety of shape and contour that can be produced by a skilled performer is endless. To add to the effect wands are used to extend the reach in the direction of the lines of the arms, and the greater control thus obtainable adds immensely to the effect. This dance was made famous by Miss Loie Fuller, whose reputation is now world wide. During the past season refinements and improvements introduced in it have made of it a new thing.

Our illustration is designed to show the methods adopted to produce the wonderfully beautiful effects which have characterized the dance. The performance is executed in a darkened theater. A number of projectors are distributed, four in the wings and one below the stage, so as to be adapted for flooding the figure of the danseuse with light. A pane of heavy plate glass set in the floor of the stage permits the projector beneath it to produce its effects. Each projector has mounted in front of it a disk about three feet in diameter, perforated near its periphery with a number of apertures. Colored gelatine is fastened over most of these apertures, a different color being used for each opening, except where one may be left for white light. The operators at the projectors follow the movements of the performer, and can produce an almost infinitely extended range of effects by varying the colors thrown by each projector.

The theater being pitch dark, the figure can be brought slowly into view and can be made to slowly disappear by manipulation of the projectors. She can appear in any color or combination of colors and can die away in similar manner. It is needless to say that it is a composite performance, in the sense that the dancer fills only a part of the functions; skilled operators are absolurely essential at the projectors.

One of the prettiest effects is produced by a magic lantern operated from the front of the stage and shown in the cut on the left hand. The operator projects upon the drapery different figures and designs, using regular lantern slides, making the flowing, misty drapery act as the screen for his projections. It is obvious that he must give great attention to his focusing.



THE SKIRT DANCE—THE MAGIC LANTERN PROJECTORS AND ARRANGEMENTS OF THE STAGE.

The skirt dance has won the attention of artists, and some very beautiful statues have been based upon its cloudlike variations of form. The slight idealization required in representing the soft forms of waving drapery in the solid material of the sculptor's art has given most graceful and characteristic effects.

One of the most startling effects is the flame dance. The filmy veil is pure white, but as the dancer approaches the opening in the stage floor the veil turns to a fiery red and the flames wave to and fro as if they were being blown by the wind. Shadows are then thrown onto the veil which produce and exact reproduction of heavy black smoke, which suddenly changes to an ardent flame again, as if the fire had broken out anew

THE Chemiker Zeitung states that according to Max Hagen the smoke of wood fires is not in the slightest degree injurious to vegetation.

Foundations of Heavy Buildings.

Several modes by which heavy buildings, such as those built in New York City, fail are described by Mr. Charles Sooysmith, M. Am. Soc. C.E., in a paper read before that society. The upper material of New York is mud, silt and sand of varying degrees of fineness and gravel. The hard stratum below, if not rock, is what is known as "hardpan," which contains stones of various sizes, is made up of silt, clay and gravel, and is firm and compact like rock in hardness and can only be dug out by pick and chisel. This hardpan is unyielding and can be trusted under the heaviest building. The Manhattan Life Insurance building, built on fifteen cassions proportioned to carry a pressure of 10·8 tons per square foot, is built on this material and has not yielded. It is said to be able to bear, by means of a concrete base, 150 pounds per square inch or 10·8 tons per square foot.

Mr. Sooysmith observes that buildings of the ordinary height seldom put upon the earth greater weight than three or four tons per square foot; their walls were spread over the surface by the means of footings and concrete. With the greater increase of the height of building, these methods became quite inadequate. One of the great dangers or risks from overloading the soil is lateral flow, and this has to be prevented by various means. When the foundations are not carried to the substratum of rock or "hardpan," it is necessary to discover what vent, if any, may be given for the underlying material by excavation or drainage near. The danger of the material squeezing out under the pressure, as in the case of buildings resting on sand, is very obvious, and the author alludes to the serious danger or disastrous settlement of heavy buildings, which may take place at any time, by excavations near them, even such as putting in foundations of buildings and in pumping operations, especially if accompanied by jarring, vibration or by hoisting. Under such conditions the material under the heavy building is likely to squeeze out toward the excavations. Pumping water near a heavy building from a well has sometimes caused settlement, owing to this tendency of the soil to escape.

Settlement of buildings is frequent in the vicinity of rivers, where there is often a movement of the entire mass of soft material going on, and an instance is given of one building which has been wrecked by the subsidence of the piers, the entire mass of the subjacent material or silt having slipped toward the river. Driving piles is one of the best preventives, especially where they are wholly submerged. The New York building law allows a load of twenty tons per pile. The author refers to the mistake of taking the aggregate bearing capacity of pile foundation to be the sum of the safe loads on the individual piles. In some cases the piles only displace the material and transfer the load direct to the stratum beneath them, which may be of a yielding kind.

The author also speaks of the risk of lowering the water level by pumping and so exposing the piles, which then soon decay; also of the raft method of foundation, which is employed largely in New York, in which steel beams are used to spread the bearing to a sufficient depth.

Reference is also made to the use of steel caissons sunk by the pneumatic process, employed by the architects of the Manhattan Life building, Messrs. Kimball and Thompson, and to the foundation of the new Johnston building by means of open wrought iron cylinders sunk by the water jet process. The pneumatic process, says the Building News, is one of the safest methods for deep excavation, and the author appears to favor it.

Electric Lighting by Artesian Wells.

One of the novel electrical developments of the West has been the operation of electric lighting plants by means of artesian wells. The latest of these is at Chamberlain, S. D., situated on what is known as the artesian well basin, embracing over 20,000 square miles in the central portion of that State. Throughout that region one can bore into the earth at almost any spot, and at a depth of about 2,000 feet obtain a constant flow of water to the surface, averaging about 1,000 gallons per minute. These underground waters may be regarded as a new resource, and in Brule County, where Chamberlain is situated, there are now over thirty such wells, yielding 70,000,000 gallons every twenty-four hours. At Chamberlain the well is 8 inches in diameter and 675 feet deep, and the water rushes up through sections of iron pipe, which penetrate through the strata of granite to the underlying body of water. The pressure is so great that if reduced to a 2½ inch stream by a nozzle, the water shoots up to a height of 262 feet. In the Chamberlain plant, the volume of water is reduced to a stream about 3 inches in diameter, which impinges on the buckets arranged radially on the rim of a well known type of Western wheel. This wheel is mounted on a shaft which carries a large driving pulley, and the pulley belts to a five hundred incandescent light alternating current machine. The power is more than sufficient to run the plant at its full capacity, and the five hundred lights are all in use. The regulation is simple, and is dependent upon raising or lowering the water nozzle at the wheel, and the power is thrown off entirely by swiveling the nozzle, so that the water discharges altogether under the wheel buckets, and runs out through the waste pipe. There is no reason why every one of the wells should not thus be made to yield its power for electric light and motor service as well as for irrigation.—New York Evening Post.

A Pasteur Institute has been established at Athens.