Mr. Albert S. Barker, of Philadelphia, has recently succeeded in taking two very fair photograph negatives of outside objects while illuminated by no other light than that of a single lightning-flash. These photographic views were taken at 7 P.M. on Thursday, Oct. 29, 1885, near Philadelphia. The night was excessively dark, the wind strong, and the rain heavy. The camera was placed in an open window, with the slide drawn. The lightning-flash came in less than one minute, when the slide was returned. The plate-holder was then reversed, and suitably placed for a second exposure. The plate was one of the highly sensitive gelatine films. Mr. Barker rated the actinic effect of the light as equal to that obtained from an exposure of about \( \frac{1}{60} \) part of a second in bright sunlight. In these photographs the foliage shows unmistakable evidence of having moved perceptibly during the period of exposure; thus showing that the flash was by no means instantaneous, as has been supposed.—Franklin Institute Journal.

Prof. Hermann's apparatus for determining the values of various lubricants for machinery, consists of a perfectly cylindrical shaft supported on two journals carried by a branched support, which so turns on a hinge that the shaft can be adjusted at an angle of five to ten degrees to the horizon. The upper end of the shaft is rotated, by means of a handle. To use the apparatus, a bent piece of the same metal as that to which the lubricant is to be applied is placed astride of the shaft and suitably weighted, and the number of turns of the handle, requisite to cause it to slide along the shaft with various lubricants, are noted. The greater the distance traveled for a given number of revolutions, the more efficient the lubricant.—Manufacturers' Gazette.

A German method to prevent the incrustation of boilers is thus described: The feed-water is forced through one of the usual feed contrivances into the steam dome, in which it is mixed by a jet of steam entering concentrically, in order that it may, during the mixing, be cast violently against the cover of the dome. The effect of this movement is that all the water receives the full temperature of the surrounding steam. By this sudden heating, air and carbonic acid are withdrawn from the water, and not only the carbonate of lime, but the sulphate of lime and magnesium are extracted, and the precipitate occasioned is periodically removed.

At the Grimesthorpe Steel Works of Cammell & Co. (limited), the process of casting a 50-ton hollow ingot, 25 feet long, for the "core" of a 66-ton breech-loading gun for Her Majesty's Government, took place a few days ago. The steel was supplied from two open-hearth furnaces, each having a capacity of 30 tons, and flowed down a conduit into a monster ladle, through which it poured into the mould, the latter being 25 feet deep. The casting was most successful. This casting is said to be one of the heaviest ingots ever made for this purpose up to the present time.—Ironmonger.

A saw without teeth, that will cut in two a steel rail in two minutes, is in operation in the Central Hudson shops at Greenbush, N. Y. The saw is run by a 90-horse-power engine, and is 38 inches in diameter and 3-8 of an inch thick. It is made of steel, and runs at a very high speed. It is kept cool by running water, and one saw will last to cut 3,000 rails. The end of the rail is left very smooth, and the chips which are removed fly from the saw with such force that they form a solid piece of steel nearly as firm as the rail itself.

The largest steel rifle ever made in this country has just been finished at the Washington Navy Yard. It is of 8-inch bore, 30 feet long, and throws a ball, weighing 250 pounds, with 175 pounds of powder.

The number of boiler explosions which occurred in the United States during the year 1885, is, according to the report of the Hartford Steam Boiler Inspection and Insurance Company, 155. Of these, only one occurred in a textile manufactory, while one fifth of the whole number were explosions in saw-mills.

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