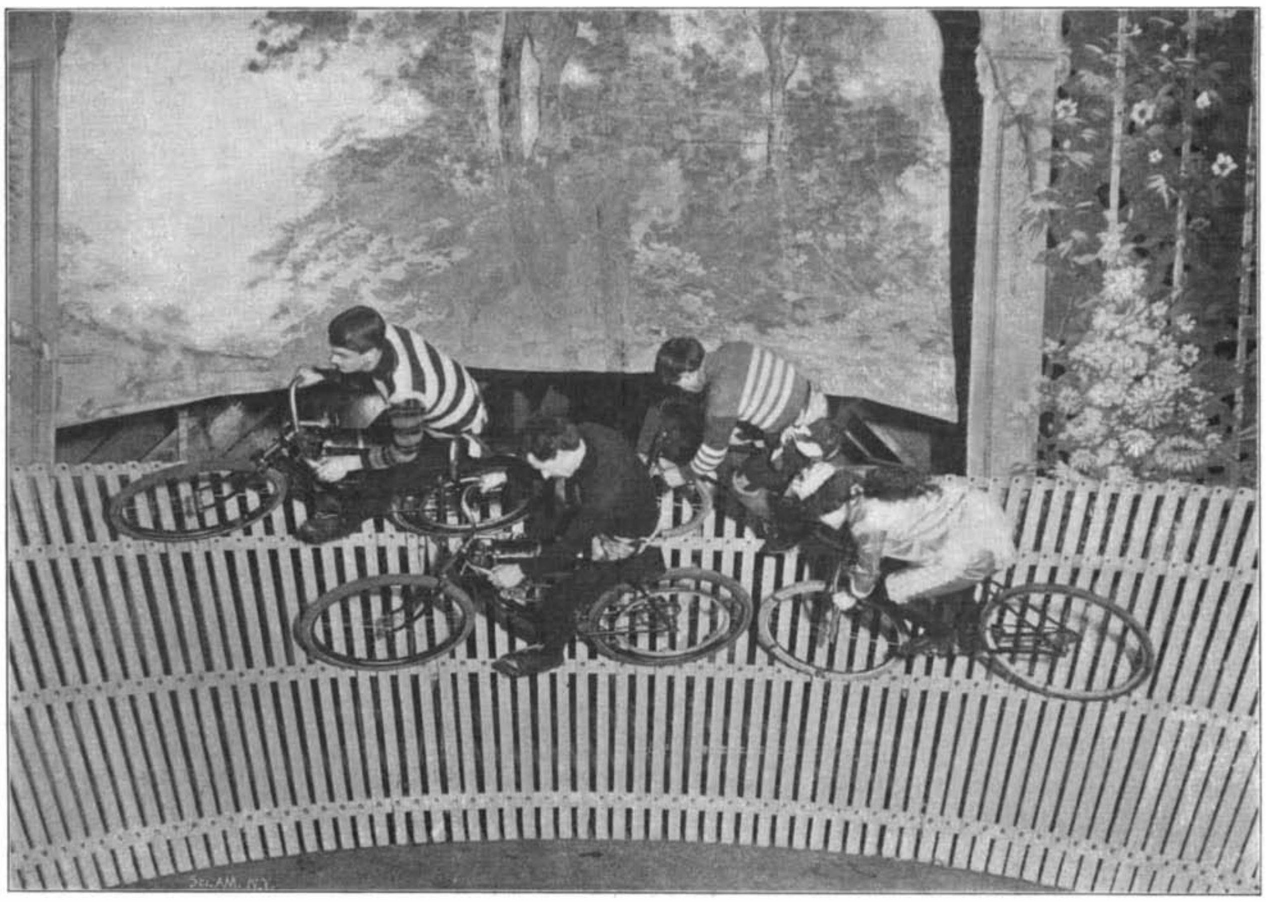
MOTOR-PACED RACE ON A CYCLE WHIRL.

Encouraged by the success which attended the presentation of the first cycle whirl, in which cyclists competed with each other on a circular track small enough to be placed on an ordinary theater stage, it occurred to one of the leading exponents of bicycle racing that a cycle whirl constructed for motor-paced racing would be equally popular. Of course this involved a much higher rate of speed, greater strains on the structure, and a considerably greater risk. The circular track of the first cycle whirl had a pitch of somewhere in the neighborhood of 45 degrees; but with the higher speeds necessary with motor cycles it was necessary to raise the pitch from 45 degrees to 60 degrees, and the new track, which looks for all the world, as will be noticed from the engraving, like a circular fence, was built with the slats inclined only 30 degrees from the vertical.



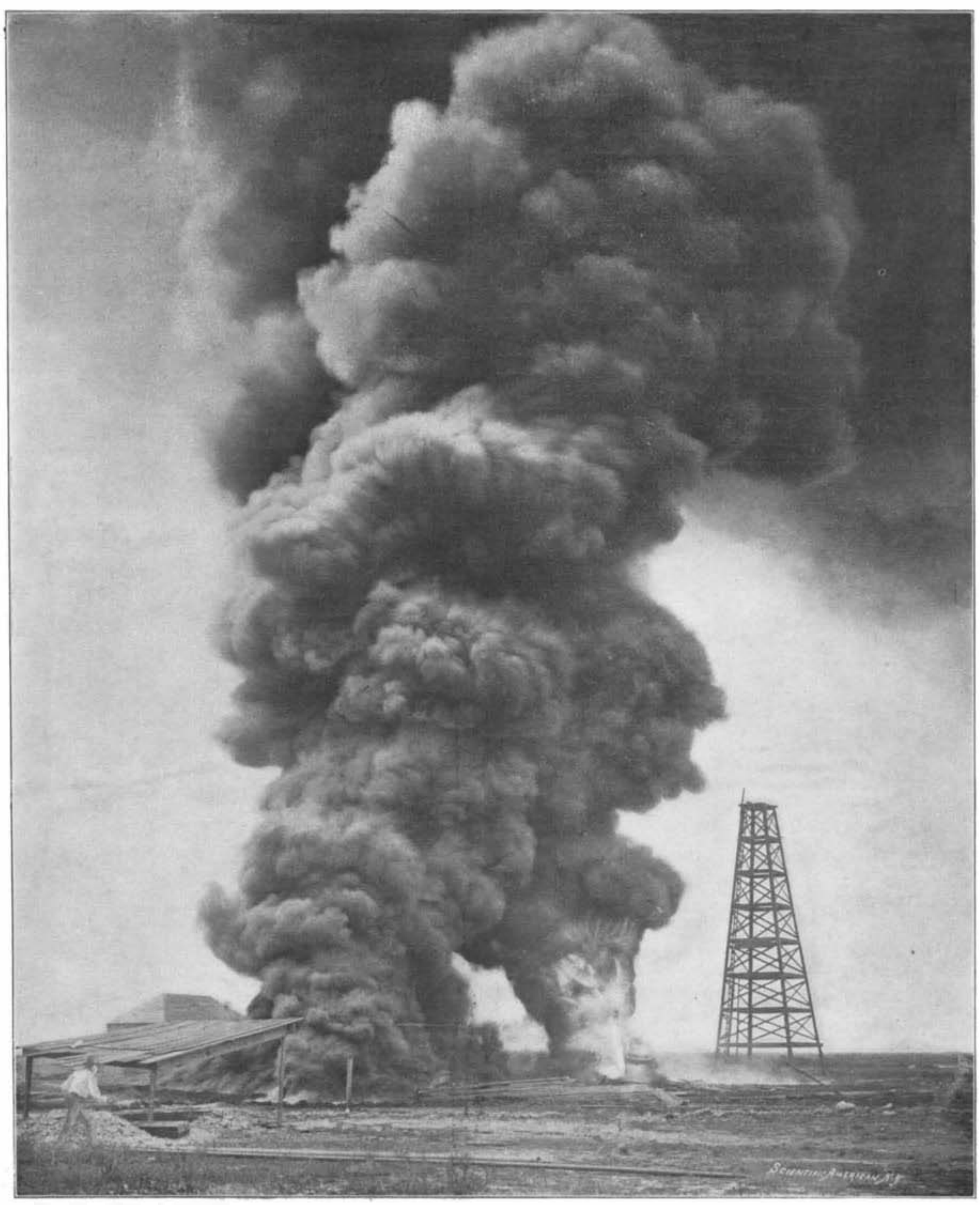
MOTOR-PACED RACE ON A CYCLE WHIRL.

Inclination of track only 30 degrees from the vertical.

In determining the proper pitch of one of these whirls, the elements to be taken into account are the speed, the curvature and the resulting centrifugal force. When the motors with the racing contestants are speeding at a rate of from twenty to thirty miles an hour around a track, the centrifugal force tending to throw the weight to the outside of the circle has to be counteracted by inclining the rider and his wheel at such an angle to the inside of the circle that the pull of gravity downward shall, as closely as possible, equilibriate the pull of centrifugal force to the outside of the circle. The resultant of the equilibrium will be a force acting normally to the surface of the track. Theoretically it would be possible to run a wheel at seventy-five or a hundred miles an hour around a track of the size shown in our illustration. Of course, the track in this case would have to be almost perpendicular, and the wheels would have to be built up of exceptional strength; for it will be readily understood that the resultant of gravity and centrifugal force acting normally to the track through the wheels, would exert a pressure on the track much greater than that which is due to the weight of the rider and his wheel when he is traveling on level ground. In the so-called race which is herewith illustrated, the woman rider invariably won the event. All that she had to do in passing her opponent was to run down to the lower edge of the track, where, of course, she was covering much less distance in each lap than her opponent who was riding on a circle of larger diameter. Great care had to be taken in the selection of the material and in the construction of the track. It was strongly braced with iron and securely bolted at every intersection of the slats with the circular frame. Judging from the speed that was accomplished, the track must have presented less friction than one would suspect. The effect produced when the four riders were moving at full speed was most interesting. They appeared at times to be standing out almost horizontally from the slats; and the whole exhibition was an excellent object lesson in practical mechanics.

BURNING OIL GUSHER IN LOUISIANA.

There is all the difference in the world between the burning of an oil tank, an incident which is familiar the world over, by reason of the many photographic reproductions of such a sight and the stupendous conflagrations shown in our accompanying illustration of a burning oil gusher. The rapidity of the combustion of a burning oil tank is limited by reason of the fact that combustion can take place only on the surface of the oil, and even then it is governed by the amount of oxygen that can rush in from the surrounding atmosphere to feed the fire. It is a slow process that takes many hours to complete. In the case of a burning oil gusher, however, the oil has been thrown into the air to a height of a hundred feet or more and at the rate of from 50,000 to 150,000 gallons per day. As it rises the resistance of the atmosphere causes the oil to break into a far-spreading spray, and this subdivision enables the oxygen of the air to mingle with the burning mass and produce the enormous conflagration shown in our engraving. This gusher was struck by lightning on July 15 and ignited. The fire burned with extraordinary fierceness for seven days and nights. It was only extinguished after streams of steam and water from no less than a dozen boilers, which had been gathered at the well, were concentrated on the fire.



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BURNING OIL GUSHER, JENNINGS, LA.

Struck by lightning July 15; extinguished July 22 by streams of steam and water from a dozen boilers.

Prof. Bohuslav Brauner contributes to a recent number of the Journal of the Russian Physical and Chemical Society a paper on the position of the rare earths in Mendeléeff's periodic system of elements. After mentioning his experimental and theoretical work concerning the elements lanthanum, cerium, praseodymium, neodymium, thorium, etc., the author discusses the position of these elements in the periodic system, and the four different ways in which it may be attempted to place them in it. With Mr. Steele, of Melbourne, he comes to the conclusion that this group of elements represents a sort of node in the periodic system, between cerium and an unknown element which has the atomic weight of 180. This interperiodic group is a continuation of the eighth series, which ends with the platinum elements; gold appears in such case as the first member of the ninth series, and not of the eleventh. In the twelfth series the first members are, probably, radium, thorium and uranium. This addition seems, in Mendeléeff's opinion, to deserve serious attention.