

THE YOUNG TAPIR IN THE ZOOLOGICAL GARDEN AT COLOGNE.

On Sunday morning, August 6, of last year, a tapir was born in the Zoological Garden at Cologne, and when I had time to examine it in its stall, I found it a most beautiful little animal. There was not that lack of proportion between its body and legs which is always so noticeable in the young of the deer and the antelope, its form resembling very closely that of the grown animals, although the colors of its coat were very different from theirs. Instead of the thin bristle-like covering of the old ones, through which the skin shows, it had a thick, velvety, shining black fur, from which the yellowish-white stripes and spots stood out beautifully. Along its spine ran a row of spots, and parallel with these, on the sides of the body, were many long stripes, one below the other, which terminated on the haunches in short oblique lines. Between these lines were more spots, which were so close together on the belly and on the legs, near the pretty little hoofs, that these parts of the body looked really speckled.

His prettily colored coat made the young tapir look very different from his parents, with their uniform, dark color, but on the other hand gave him so strong a resemblance to the young of the wild hog—which has

disappeared. As nearly as I could tell, the change was caused by the light hair of the spots dropping out and dark hair taking its place. According to Renggar, the light marks will entirely disappear in the third year. I trust that we shall be able to test his assertion with our young tapir, and his well-rounded body and gay movements at twilight seem to give foundation for my hopes.—*Illustrirte Zeitung*.

The "Great American Desert."

There is no more astounding proof of the growth of this republic, says the *Journal of Commerce*, than the fact that middle-aged men now living have seen the confines of this supposed desert shrink almost to nothingness. The desert has thus marvelously contracted, simply because it is not what we should call a desert, save in comparatively a few spots. The old theories about its sterility have all turned out wrong. It was supposed that, because for the most part treeless, it had no rainfall. Or, if a certain small quantity of rain was granted to it, then it was assumed that this was insufficient for farming purposes. Therefore, at its best estate, the "Great American Desert" could serve only as pasture ground for cattle and sheep, as originally it had served for millions of buffaloes.

roots it feeds. The improved conditions which Western people suppose to have been brought about by increased rainfall are merely due to the better conservation of the rain they get.

General Greely, the chief signal officer, has ably discussed this subject in a paper lately read before the Washington Philosophical Society. He declares that no part of the West can now positively be declared rainless. The area in which the rainfall has been popularly supposed to be less than fifteen inches has been reduced by a million of square miles since the census map of 1880 was prepared. Investigating the so-called "arid region," he discovers that the actual rainfall there is not less than sixteen inches, and in one locality thirty-seven. In refutation of the old notion that wheat could not be grown with less than twenty inches of rainfall, he cites statistics from Dakota showing that the grain was abundantly raised in the counties where the fall was between thirteen and fifteen inches only. These important results have been obtained from observations conducted at only one hundred stations in twelve States and Territories. As the number of posts is increased, our information on the subject will become more extensive and accurate. We doubt not that every year will assist in dispelling the illusion that any



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the same marking on a light ground—as to furnish the careful observer with matter for thought, specially as science does not confirm the suggestion of a very close relationship between the tapir and the swine. The latest arrangement places them in two very different classes of mammals. In explanation of this apparent contradiction it should be said here that the present members of the two orders, which are distinguished by the formation of the feet, are only the remnants of the numerous groups of ungulate animals which existed in the earlier ages, and are uninterruptedly connected by the species which have died out. The habits of the tapir in the care of her young are the same as those of the sow, the young tapir sucking just as the little pig does, while the mother lies on her side. Our artist has given us a very natural representation of the young tapir with his parents.

Our young tapir thrives under the care of his strong, well-fed mother, and at a remarkably early age he gave proof of his independence. Before he was a week old he began to eat with the old ones, adopting their quiet, thoughtful manner—to the delight of the public—when tasting the bran or slowly chewing a little clover hay, as if trying it. As he grew there was a perceptible change in his appearance. In the fourth week his coat began to thin out, so that the skin showed through it here and there, and as the background became lighter the spots became quite indistinct, and then entirely

Experience has proved this theory of a treeless waste and a rainless area to be all a mistake. There is a melancholy want of trees on the Western plains, but their absence does not entail a perpetual drought anywhere. And small though the annual precipitation of rain may be in some places, the pioneer has yet to find the spot (barring alkali lands and pure sand patches) where the heavens deny him water for the raising of grain and vegetables.

A writer in *Science* has set himself to answer the question, "Is the rainfall increasing upon the plains?" After a careful inspection of all the available data, he is of the opinion that there has been no increase of rainfall on the plains since they began to be settled up by farmers. They have planted many trees, it is true, but not enough to satisfy the theory which associates forests with moisture. The truth is, as the writer shows, that the prevalent ideas about the amount of rainfall necessary for farming operations were erroneous. As the pioneers have tested the capabilities of the soil in their western march, they have discovered that a rainfall of twenty inches a year is not the indispensable minimum. They can get along with ten, and it remains to be seen if even less will not answer. They have found that, however slight the rainfall may be, it can be greatly encouraged by cultivation. When the plains are plowed and harrowed, the rain sinks into the ground, and its evaporation is prevented by the crops whose

considerable tract of the ancient hypothetical desert is unavailable to the farmer.

Experiment on Sonorous Conductivity.

A number of rods of the size of a common lead pencil are prepared from rubber, cork, gutta percha, wood, glass, and steel, and, in order to facilitate the experiment, are united in threes by means of rubber bands, fragments of tubing of the same substance being interposed between them. To perform the experiment, place one end of the rods on a resonant box, and, holding them with one hand, touch their free ends in succession with the handle of a vibrating tuning fork. The sound is not audible when the rubber rod is touched, but becomes louder and louder when the entire series of rods is passed successively in review. By this method, the laws of sonorous conductivity are easily demonstrated, and it is shown that the intensity of sound remains constant, if we substitute one rod for another of the same substance, but of which the length and section vary in the same ratio. On varying the length only, we change the intensity, as we do also when we vary the section and leave the length constant. This method may be employed also for demonstrating the difference in conductivity of wood parallel with and perpendicular to the fibers, and even for determining the numeric ratio of these two conductivities.—*Jour. Russian Physico-Chem. Soc.*

The New Railway Line from Eagle Pass to the City of Mexico.

The officials of the International Railway announce that the road was opened Thursday, March 1, for through passenger and freight business between the United States and this republic. It will be known as the "Sunset Route" to Mexico. This road was built by C. P. Huntington and associates, and is practically a branch of the great Southern Pacific system. It leaves the main line of the Southern Pacific at Eagle Pass, Texas, 168 miles west of San Antonio, and crosses the Rio Grande River to Piedras Negras, Mexico, from which point it traverses an interesting country, rich in minerals and agriculture, passing through the large coal deposits acquired by Mr. Huntington some years ago, and then on to Torreon, where connection is made with the Central. A contract has recently been made between the Central and International companies for an interchange of traffic, which permits the running of through cars between Piedras Negras and all points on the Mexican Central Railway, including the city of Mexico.

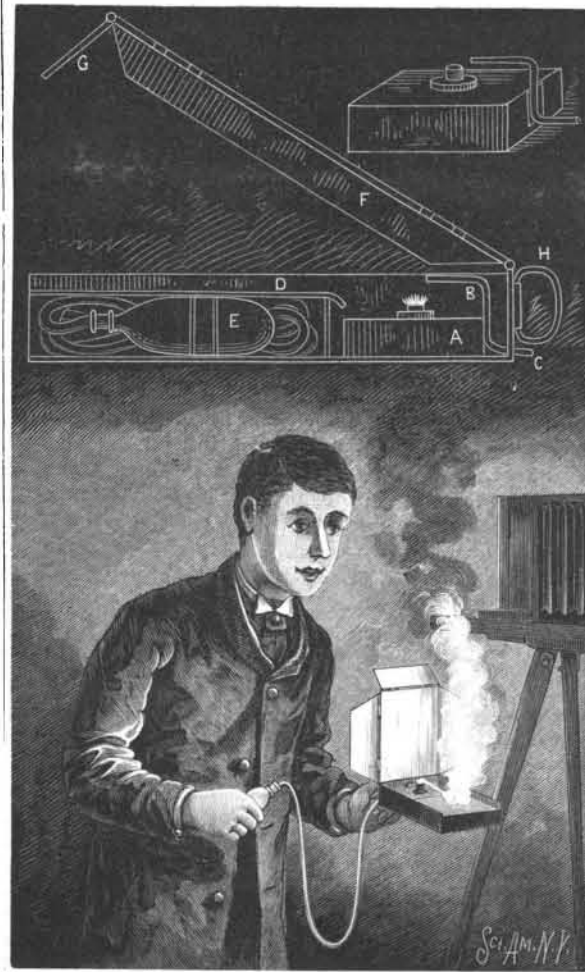
The new line is finely equipped, and has received a number of Pullman buffet sleepers, which are not surpassed for elegance on any road in America. These sleepers will run through between the city of Mexico and New Orleans, making but one change of cars to the city of Washington, St. Louis, Chicago, and other important cities. The completion of this road is hailed with pleasure here, as it reduces the distance to New Orleans, New York, and the Atlantic coast cities of the United States by 553 miles, and to St. Louis, Chicago, and cities in the Middle States about 400 miles, and shortens the time 24 hours. The freight and passenger rates have been greatly reduced, and it is expected that prompt freight service will be afforded without unnecessary delays.—*Mexican Financier.*

MAGNESIUM FLASH LAMPS.

Since the introduction of the magnesium powder flashlight for photographic purposes, numerous devices have been invented for easily igniting the powder. We illustrate some of the latest forms.

The engraving herewith shows a lamp constructed to operate on the blow-through principle. A small tin box about six inches long, four inches wide by two inches deep, forms the foundation of the lamp. The box is provided with a cover, hinged at the back, having side wings, F, hinged to it, which fold under the cover when it is closed. It also has an end wing, G, which covers the end of the box. When opened and placed in a vertical position, the cover with the side wings turned out acts as a reflector of the light, and also as a protector, preventing the powder from flying back and burning the hand.

In the front part of the box is a horizontal sheet of metal, D, forming a platform on which the powder is placed. Directly behind it is an alcohol lamp, A, made quite flat, and low enough to allow the flame to project about an inch above the platform. Rising from



PNEUMATIC BLOW-THROUGH LAMP.

the bottom of the box, and projecting through the back, is a metal tube, B, tapered at its upper end like the jet for a lime light. It rises to a level with the igniting platform, and projects over the wick of the alcohol lamp. To the rear end of the tube, at C, is attached a rubber tube and a pneumatic bulb. A folding wire handle, H, is secured to the back of the box.

After placing the magnesium powder compound on the center of the igniting platform opposite the flame

of alcohol, it is at once ignited by pressing the pneumatic bulb, since the horizontal stream of air emitted from the jet carries with it a certain portion of the alcohol flame. The moment the latter plays on the powder, a brilliant flash is produced.

The lamp may be held in the hand as shown or it may be placed on a stand or table, quite a distance from the operator.

The space under the igniting platform may be used for storing the bulb, E, rubber pipe, and powder when not in use, so that the whole when folded up will be compact enough to be carried in one's pocket. The general idea of this lamp is similar to one devised by Mr. Thos. McCollin, of Philadelphia, and lately exhibited before the Society of Amateur Photographers, of this city.

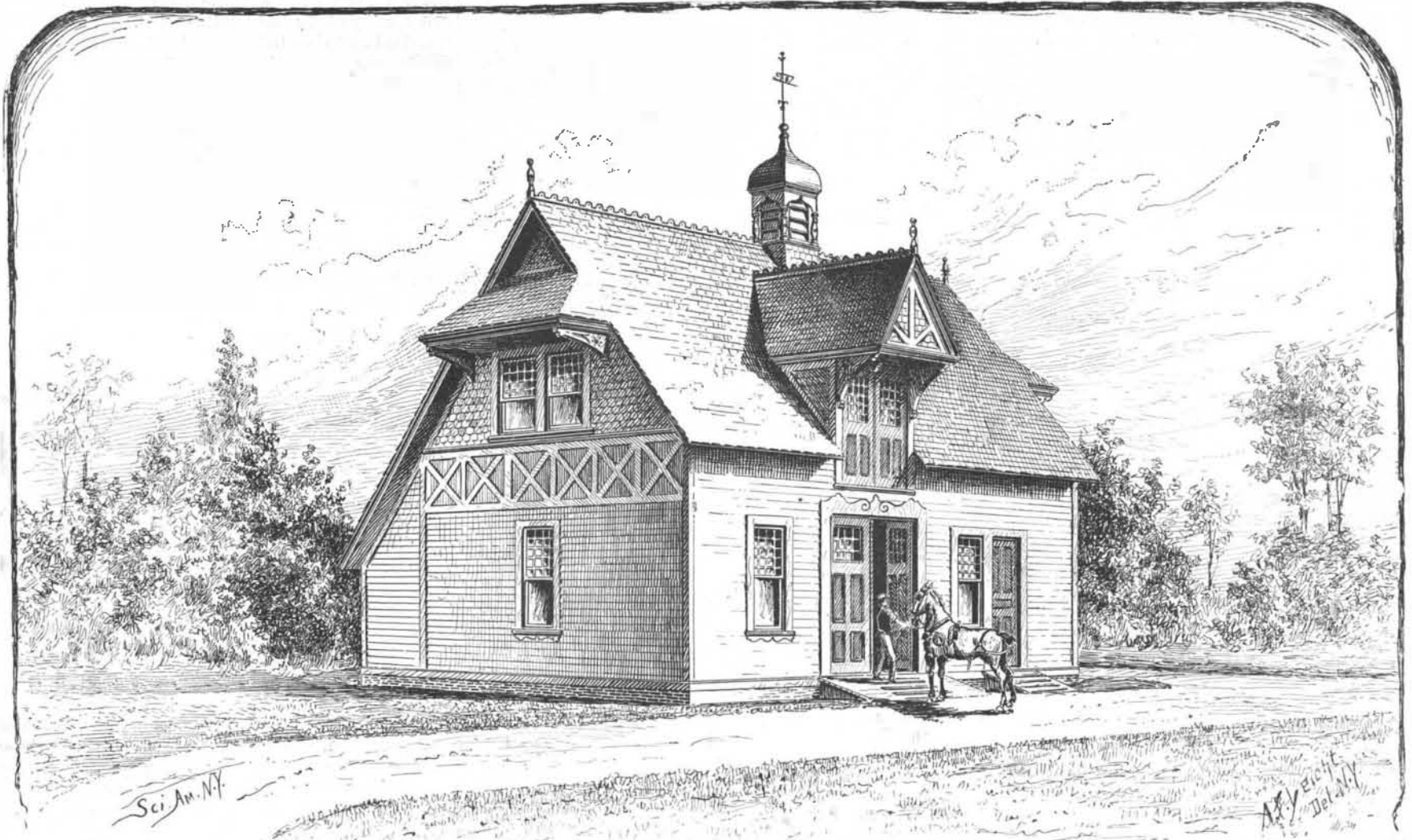
Fig. 1 represents a box similar to the one previously described, but the lamp is operated on a different principle. D is some loose cotton wicking, from four to six inches long, spread lengthwise on the igniting platform. E is a bottle of alcohol stored for convenience, together with the rubber bulb and tubing, when not in use, under the igniting platform.

The cotton, D, is saturated with a little alcohol. A is a vertical tube or cylinder, having a funnel-shaped top, and plugged with a cork. C is a tube rising from the bottom of A, and projecting over the igniting platform.

The tube, B, enters the rear of the box at the bottom, and connects with the top of tube, A. To operate the lamp, the rubber tube and bulb is attached at B, the cork removed from A, and into the latter is put the charge of plain magnesium powder. The cork is next tightly replaced. The wicking, D, is ignited with a match.

Compressing the pneumatic bulb will now force the powder in A through the tube, C, into the long alcohol flame and ignite it, producing as a result a brilliant flame. By means of a suitable reservoir, the cylinder, A, can be easily automatically refilled with magnesium powder, so that the latter can be successively forced into the flame at each pulsation of the bulb. The design shown is intended to supply a simple and easy means for igniting the powder. The box has a folding cover, and can be made of small dimensions.

Fig. 2 represents a plan for igniting small charges of magnesium powder with a Bunsen gas burner. The supply of gas enters through the tube, D. Located centrally within the burner, A, is a metal tube, B, which extends outward and is connected by tubing, C, to the bulb. Just below the top of the burner, at the end of tube, B, is fixed a metal funnel-shaped cup, E. The magnesium powder, on a small circular piece of paper, is set into the cup, E. The burner is then lighted, and pressure on the air bulb forces the paper



MR. BERGEN'S STABLE AT BABYLON, L. I.*

* In our last issue we presented a design of a handsome, inexpensive dwelling house, which had been erected at Worcester, Mass. As a companion to the dwelling house, we reproduce from the ARCHITECT AND BUILDERS EDITION of the SCIENTIFIC AMERICAN the elevation of a very pretty stable, which was designed by Mr. W. H. Beers, architect, of

this city, for Mr. Jacob M. Bergen, who had one built after the plan at Babylon, L. I., in 1886. The December number of the SCIENTIFIC AMERICAN ARCHITECT AND BUILDER of that year contains the plan of the first and second stories of the stable, which are well arranged for the comfort of the horses, the housing of the carriages, and convenience of the coach-

man. A full specification accompanies the drawings, giving full details of the construction, from the foundation to the ventilated cupola on the top of the building. Copies may be had at the office of this paper, and of most of the news agents. Price, 25 cents.