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NEW YORK, SATURDAY, MAY 21, 1904.

The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

REAR COLLISIONS ON CITY RAPID TRANSIT SYSTEMS.

The recent rear collisions on the elevated railroads of New York and Brooklyn are a forcible illustration of the increased risks, which are inseparable from the higher speed of travel and the greater frequency of trains resulting from the introduction of electric traction. Most of the collisions of the past twelve months have occurred on the Brooklyn lines, where the operation is notoriously careless. On the Manhattan elevated lines, considering their far heavier traffic, there has been a remarkable and most commendable freedom from accident—remarkable, because we doubt if there is any railroad system in the world, where trains, with a running speed between stations that rises at times to 30 miles an hour, are run under a headway so close, that in the rush hours there will be sometimes not over a car's length between two trains at the stations. The trains are not merely faster, but heavier; and were it not for the wonderful efficiency of the Westinghouse air brake, which was installed at the same time that the elevated railroads were electrically equipped, rear collisions would be a frequent occurrence. Tribute also is due to the motormen, most of whom are engineers carried over from the days of steam service; for it is evident that under a service so swift and crowded, a few moments' hesitation or neglect would precipitate a disaster.

The recent accident at Fifty-ninth Street, on the Third Avenue line, resulted in the telescoping of two cars, and the death of the motorman. That a score of people were not killed and wounded is due to the fortunate circumstance that the collision occurred at an hour when traffic was light. The immediate cause of the collision is a mystery; for it seems that after the accident the controller and the air brakes were found to be in good order. An eyewitness claims that just before the collision occurred, he saw the engineer of the second train gesticulating wildly, as if to warn people in the train ahead; but why he did not apply his brakes or turn off his controller is a question that is puzzling the authorities. In spite of the remarkable immunity from accident of the electrically-operated elevated lines, we are of the opinion that the trains should be operated by some system of block signals of an automatic character, which, while it would allow two trains to be between the same two stations at the same time, would still automatically serve to shut off the current and apply the brakes should the trains approach within less than say three train lengths of each other. To introduce a block signal system in which the blocks occupy the full length between stations, would be to cripple the capacity of the line, and indeed blocks of this length would not be necessary. At the speed at which the local trains are operated, it would be sufficient to divide the space between the nearer stations into two blocks, and that between the more distant stations into three blocks. To render the system fully effective, there should be a trip provided at the danger signal, to automatically apply the Westinghouse brake, should a train run past the signal. It is gratifying to know that the Subway trains are to be operated strictly on the block signal system; and the experience obtained by the company after a few months' operation of the Subway should render it a simple matter for them to install an automatic block signal adapted to the conditions that obtain on the elevated roads.

ECONOMY OF NARROW-GAGE RAILROADS.

We have recently received from a correspondent in the West Indies a letter asking for advice regarding the proposed construction of a branch railway to extend through a somewhat hilly country into a region of plantations, the particular point upon which information was sought being the old question of the broad versus the narrow gage railroad. It seems that our correspondent was desirous of having a narrow-gage road constructed, being under the impression that a great economy would be realized thereby over a road of the standard gage of four feet eight and a half inches. The engineers, who had reported in favor of a standard gage road, stated that the cost would be but little greater, and that with a road of standard gage, it would be possible to have an interchange of cars with the main line, and freight could be shipped through from the plantations to the docks without any intermediate handling. This and other advantages were supposed to more than outweigh the very slight reduction in cost obtained by building the road of narrow gage. Our correspondent could not understand that the narrow gage could cost so little less per mile than standard gage, as to render the saving entirely wiped out by the many limitations and disadvantages of the system.

Now, the railroad engineers of the United States have had considerable experience, especially in Colorado, with narrow-gage roads, which have been tested for both freight and passenger, slow and high speed service, with the result that after a certain number of years of operation, it has been established that the cost of construction and the cost of operation are so slightly increased for a standard gage road, as to render it good policy, where there is any prospect of a reasonable amount of traffic, to build on the standard gage system. As regards construction, the mere saving of eighteen inches of width throughout the whole length of the line cannot be taken by a rough-and-ready method of calculation as insuring that the road can be built for one-third less cost. As compared with the standard-gage road, the cost of location will be the same; the amount of contractor's plant which must be transported to the scene of the work will be about the same; there will be the same number of rails to the mile; the same number of rail joints, bolts, and spikes; and the same number of ties, although the latter, it is true, will be some eighteen inches shorter; there will be the same amount of equipment in the way of switches, signals, telegraph lines, etc., and the section gangs for the maintenance of the line must be approximately of the same strength. It may be taken for granted that, except under very special conditions, it will be found advisable to build to standard gage.

On the other hand, there is undoubtedly a great field open for the construction of light railways that are not intended to handle traffic of the amount, or at the speed, aimed at in the narrow-gage railroad; and we believe that as soon as some well-thought-out system of single-rail track and equipment is placed upon the market, and given practical demonstration under normal working conditions, we shall see a great development of this form of railway.

RESULTS OF THE GERMAN ANTARCTIC EXPEDITION.

An interesting lecture was recently delivered before the Royal Geographical Society of Great Britain by Dr. von Drygalski, of the German Antarctic Exploration, narrating some of the most important results achieved by that expedition.

The German South Polar Expedition was absent altogether twenty-eight months, of which fourteen months were passed in the South Polar ice, ten months with operations in the South Atlantic and South Indian oceans, and four months with work and residence in the islands of the Indian and Atlantic oceans and at the Cape. The vessel "Gauss," although not a fast sailer, had proved a remarkably strong and seaworthy ship, her lines being well suited to the conditions of polar work.

Dr. von Drygalski explained the researches of the expedition in the vicinity of Kerguelen and Heard, on both of which the glacier development was discovered to be considerable. In the former region they stayed a month. A branch station was here established, for the purpose of carrying out terrestrial, magnetic, and meteorological observations while they remained in the Antarctic waters. After leaving these places, the great unknown lay before them, and they had to seek out the right course, which, in the almost complete lack of previous experiences, was practically a question of pure luck. He chose the Kerguelen route, for south of that part, between 60 deg. and 100 deg. east of Greenwich, there lay before them an Antarctic region, where hitherto no serious advance had been attempted, and where were consequently concealed many debatable problems. They found a seaboard trending east and west just a little south of the Antarctic Circle, and consequently forming a bar to further progress southward. For a portion of the unknown space between Knox Land and Kemp's Land —a stretch of over six hundred miles—a land connection was definitely established.

Pushing southward, they came in view of land never before beheld, never before set foot on. All was ice-clad. The coast itself was a high vertical wall of ice, too steep to be approached, in whatever direction they turned their eyes. A landing on this icy barrier was out of the question, and the explorers accordingly resumed such operations as, in the absence of ice-free tracts, might lead to some conclusions regarding the substratum of the ice-cap—that was, the character of the land itself.

The expedition now followed the coast westward in the direction of Kemp's Land, in order to see in what way was filled in the unknown gap between Knox and Kemp's lands. The ship soon became icebound, and remained fast for the rest of the twelvemonth. On the hummocks surrounding them, however, the expedition was able to carry out even the most delicate observations without disturbances of the level. Frequent storms and gales raged, the ship feeling the shocks, and constantly heaving over under the fearful strain. Numerous expeditions on sleighs were made from this central point, which occupied altogether five months. Records were taken of the phenomena of motion presented by the inland ice; stones were collected, lichens and mosses were also found; the nesting places discovered of one of the two species of stormy petrel in the Austral glacial sea. Many interesting facts were brought to light, amply rewarding the great expenditure of five months' time and efforts.

Suddenly, in January, 1903, the icebergs which had closely encompassed the "Gauss" began to drift northward, and on February 8 the ship was liberated by the ice suddenly breaking.

The results of the expedition, Dr. Drygalski pointed out, could not be comprehensively surveyed until the whole material and copious collections, all of which had been brought in good condition, were classified and made accessible. It might, however, be already affirmed that the "Gauss" expedition achieved everything in the region assigned to it that it was possible to accomplish in the time available. It had discovered a new land, and thereby cleared up an old contested question regarding the nature and extent of the Antarctic continent for over ten degrees of longitude, certainly for about half of the debated region between Knox and Kemp's Lands, and perhaps for the whole. At least for the actual determination of the westerly tract, observations were now at hand by which light might be shed on the specified question. An important factor was the steep fall of the land down to a deep sea discovered by the explorers; important also was the structure of the land, which consists of old crystalline rocks; lastly, it was important to find that this margin of the continent was occupied by a volcanic formation, whose lavas contain molten gneisses, which had been forced up with them from the bedrock. The inland ice covering the continent presented a picture of our former Ice Age, and was undoubtedly the vastest glacial area now existing.

THE CATALPA TREE.

How a forest of extremely valuable timber may be grown in a score of years, and made a source of profit within six to eight years, will be demonstrated in an interesting exhibit at the World's Fair.

This exhibit will be made under the auspices of the International Society of Arboriculture. John P. Brown, secretary and treasurer of the association, has consulted with the chiefs of departments at the World's Fair and has made all arrangements.

That particular variety of the catalpa tree known as Speciosa will be the basis for this exhibit, and the great value and adaptability of this wood will be shown in all forms. The catalpa is indigenous to the Wabash bottom lands in Illinois and Indiana, but may be grown in any section of the United States. The tree is known nearly everywhere, but its great value is just beginning to be understood. Nearly every boy knows the tree because of the long and slender seed pod, which when dried burns much like tobacco, and is often known as the "lady cigars."

It is the worth of the timber, and its marvelously quick growth, that is destined to solve the problem of future railroad building, and furnish a supply of lumber for all purposes.

In the World's Fair exhibit a section of railroad will be built showing the adaptability of catalpa timber for ties. Old ties, that have been in use for thirty-two years, and not yet showing any signs of decay, will be shown. When it is shown that the average life of an oak tie is seven years, the catalpa's value on this line is demonstrated. There will be telegraph and telephone poles that have been in use as long, and fence posts will be exhibited that can be proven to have been in use for one hundred years.

Not alone for these purposes is the wood of the catalpa valuable. A prominent Dayton, O., car-building plant will exhibit a section of a palace car, all of the timbers of which, inside and out, are of catalpa wood. The timber possesses all of the requirements for such work, being strong and susceptible to a fine finish. After it has been placed in the finish of a palace car, it is often mistaken for oak, chestnut, or cherry. Furniture factories will also exhibit fine chairs, desks, and other furniture made from this wood.

The Arboriculture Society's exhibit will not stop with showing the varied uses to which the lumber from the catalpa tree may be put, but it will show how the catalpa forests may be grown anywhere within a very