17, the advance on Dongola by desert and river commenced, and on Sept. 24 the town was captured, and the object of the expedition achieved.

Prior to the return of the main body of the expedition the railroad formation was pushed forward some distance beyond Kosheh, and it is said that it has since been completed to Abu Fatmeh, a point on the Nile at the beginning of a long stretch of easily navigable river which extends past Dongola to Merowe. The current report here, however, is that this will not be the route of the next advance. Korosko, it is said, is to be made the base of this year's expedition, and the objective of course is Abu Hamed, the distance to which place from Korosco across the desert is, as already stated, at least 400 miles shorter than if the long loop of the Nile be followed *via* Dongola; and if gunboats can be launched at Abu Hamed, they will have little difficulty in reaching and capturing Berber. But the route from Korosco to Abu Hamed is over a terrible desert, relieved only by a single watering-place about midway—Murat Wells.*

A high authority of the War Office has expressed to me a strong opinion that the route from Korosco to Abu Hamed is inferior for railroad purposes to that from Suakin to Berber (245 miles). Probably, after all, the first advance will be made by the line already constructed; for, even if the desert line be carried to Murat Wells, it would seem to be impossible to push it further while the country beyond, including Abu Hamed, remains in the hands of the enemy. Similarly, the construction of a Suakin-Berber line is impracticable until Berber is captured.

C. H. GRINLING.

LONDON, April 21, 1897.

Many years ago the present editor of the *Railroad Gazette*, then an officer of the Egyptian Army, made a careful reconnaissance of the route between Suakin and Berber with a view to marching troops across that desert. When he reached Berber and made up his report he felt bound to add a short special report on this route as the proper line for a railroad into the Soudan. He said "a line of 400 kilometers, which places the produce of the Soudan at once in a seaport, which realizes Mr. Fowler's idea of the advantages to result from connecting the Soudan Railway with the Red Sea and which brings Berber within six days of Cairo—such a line needs no advocate. . . . From my hasty examination of the line, it seems so obvious a position and so easy a route that the more I think of it, the more diffidence I feel in presenting my opinion of it, thinking that some great and apparent objection must have escaped my notice." From barometric altitudes it was believed that the mountains could be crossed with a maximum grade of 2 per cent. and it was probable that considerably better grades could be found by a little exploration to the south. Otherwise there is no physical difficulty in this route; most of it, in fact, lies across hard gravel plains, where little work would need to be done. By this route the heart of the Soudan is within 240 miles of deep water, by rail. By the Nile route the distance from Berber to Alexandria is about 1,300 miles and Mr. Fowler's plan involved several trans-shipments of freight. It is obvious that few commodities could stand the cost of transportation under such circumstances and that the commerce of the Soudan could not be seriously developed by the Nile route project. So far as the writer knows, the suggestion of the Suakin-Berber Railroad was original with him, but whether or not he was the first to propose it makes little difference. If his suggestion had been acted upon the Soudan would never have been lost to Egypt, all the terrible bloodshed and expenditure of money which have been involved in the effort to reconquer the Soudan would have been saved, and in all probability General Gordon would still be alive. There was, however, a reason for not building that railroad which probably outweighed at Cairo all other reasons united. The Khedive was not allowed by Turkey to keep a navy, and therefore he would not think of allowing the key to the Soudan to be in a port down the Red Sea. For purely strategic reasons he chose to develop the Nile route.

Chicago Track Elevation.

In the *Railroad Gazette*, July 26, 1895, was given a description of the work of elevating the tracks on the Galena Division of the Chicago & Northwestern Railway, beginning at a point 2,045 ft. west of West Fortieth street and extending 1,080 ft. east of Sacramento avenue. We now give a plan and profile of the work to be done this year by the Chicago & Northwestern Railway and the Pittsburgh, Cincinnati, Chicago & St. Louis Railway jointly in elevating the tracks running south in Rockwell street from the Galena Division.

Fig. 1 shows the arrangement of the tracks at either end of the portion to be elevated. There are in Rockwell street two main tracks of the Pittsburgh, Cincinnati, Chicago & St. Louis and three freight tracks of the Chicago & Northwestern, beside numerous spur tracks to manufactories along the lines. These tracks form the connection of the Chicago & Northwestern with the Union Stock Yards and various freight-houses, elevators and yards situated between Fourteenth and Sixteenth streets. The crossing of the Chicago & Northern Pacific between Fillmore street and West Twelfth street makes the work at the south end more complicated.

On Jan. 18 the Chicago City Council passed an ordinance, which has been accepted by the three railroad companies concerned, for the elevation of the tracks, starting at the west line of California avenue on the Chicago & Northwestern, and at a corresponding point on the Pittsburgh, Cincinnati, Chicago & St. Louis: the new grade rises on a .38 per cent. slope, for a distance of 2,000 ft. to a point about 250 ft. north of the north line of Lake street: thence level for 900 ft. to a point 50 ft. south of the south line of Washington Boulevard; from this point there is a .14 per cent. descending grade for 3,650 ft. becoming level at a point 100 ft. south of the south line of Flournoy street; the level stretch extends to the south side of Taylor street, a distance of 1,200 ft.; thence on a descending grade of .407 per cent. for 980 ft. to the south side of Twelfth street, from which point the grade is .70 per cent. for 1,100 ft., meeting the old grade at the north line of Ogden avenue, at which point there is now a viaduct over the tracks. The total length of the portion to be elevated is 9,830 ft. Fig. 2 is a profile showing both the present and proposed grades and the location of the streets where subways will be built.

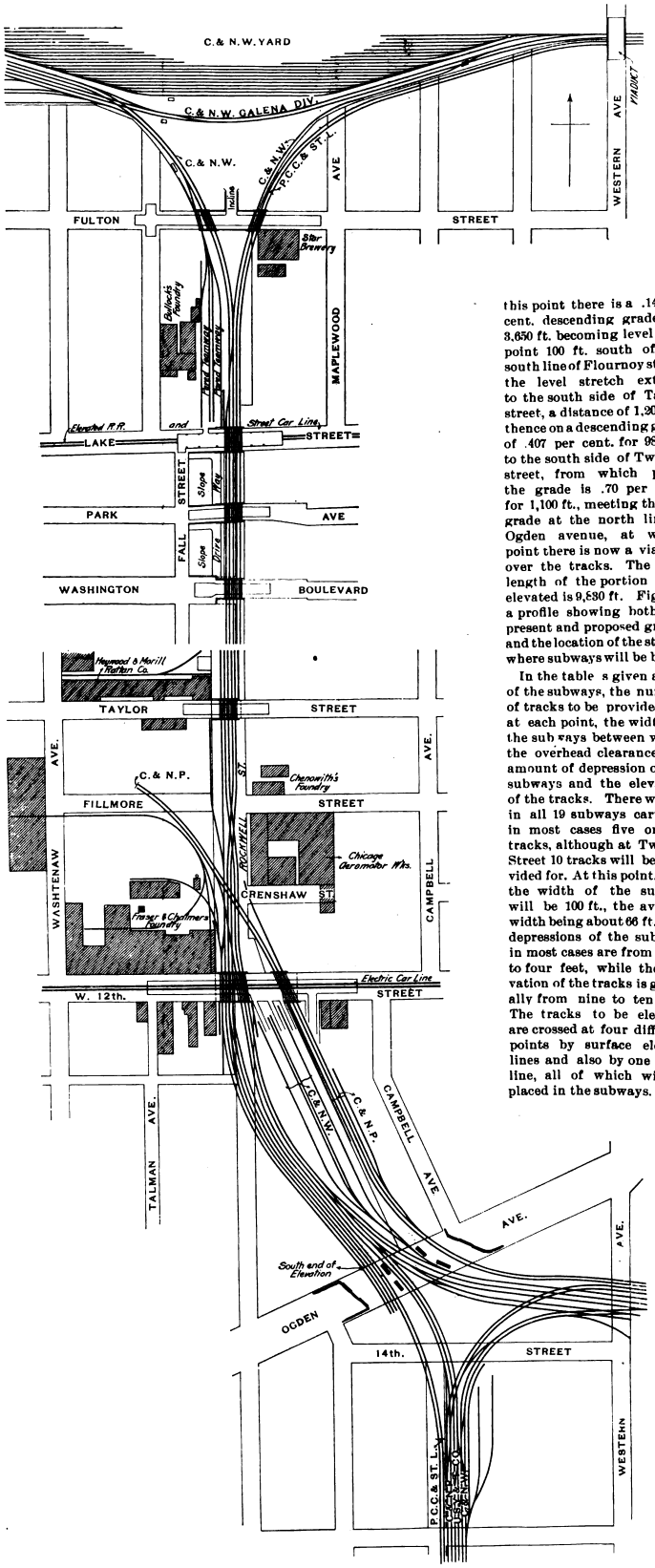

Fig. 1 — Chicago Track Elevation—Arrangement of Tracks at Either End of Portion to be Elevated.

In the table is given a list of the subways, the number of tracks to be provided for at each point, the width of the subways between walls, the overhead clearance, the amount of depression of the subways and the elevation of the tracks. There will be in all 19 subways carrying in most cases five or six tracks, although at Twelfth Street 10 tracks will be provided for. At this point, also, the width of the subway will be 100 ft., the average width being about 66 ft. The depressions of the subways in most cases are from three to four feet, while the elevation of the tracks is generally from nine to ten feet. The tracks to be elevated are crossed at four different points by surface electric lines and also by one cable line, all of which will be placed in the subways. The Lake Street Elevated Railroad and the Metropolitan West Side Elevated Railroad are required by the ordinance to raise their tracks to a height of not less than 20

* Abu Hamed (or as we prefer Aboo Hammed) was taken a few days ago. The advance was by the Nile and not by the Korosko desert, as any well-informed man knew it must be. An army could not be marched across the Korosko desert except at terrible cost in time, money and life.

ft. above the level of the tops of the rails of the steam roads when brought up to the new grade.

Fig. 3 is a plan of the subway for Washington Boulevard, which is similar to those used at most points, while Fig. 4 shows the subway at West Twelfth street, which differs from the others in the greater number of

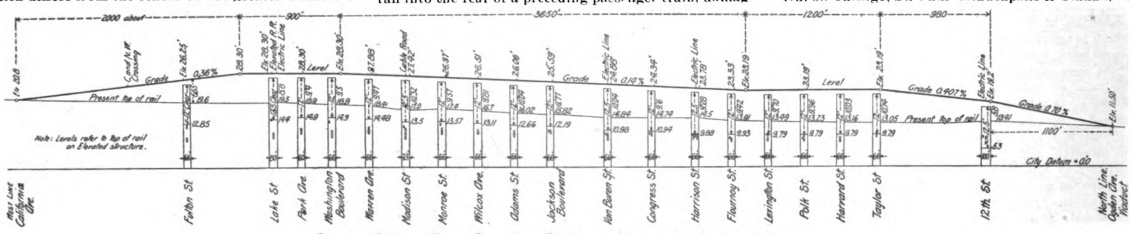

Fig. 2.—Chicago Track Elevation—Profile of Present and Proposed Grades.

tracks to be carried and, on account of the greater width between walls, posts are used to support the girders, being placed at the edge of the sidewalk. The girders are continuous between abutments.

The only elevation which will be done by the Chicago & Northern Pacific Railroad at this time is that necessary to bring its present tracks up to the new grade at Twelfth street and at the crossing of the Chicago & Northwestern and Pittsburgh, Cincinnati, Chicago & St. Louis. From these points its tracks will descend on about a .7 per cent. grade to meet the existing roadbed.

The work will be done jointly by the Pittsburgh, Cincinnati, Chicago & St. Louis and Chicago & Northwestern and will be in charge of Mr. Louis H. Evans, Engineer of Track Elevation of the latter road. The

TABLE.

Name of street.	No. of tracks.	Width of subway between walls. Ft.	Clearance. Ft.	Depression of subway. Ft.	Elevation of tracks. Ft.
Fulton street	6	66	12	6.75	6.65
*‡Lake street	5	80	12.5	5.1	8.8
Park avenue	5	60	12	4.0	9.4
Washington Boulevard	5	66	12	3.9	9.5
Warren avenue	5	66	12	3.93	9 47
†Madison street	6	73	12.5	3.6	10.32
Monroe street	5	66	12	3.83	9 57
Wilcox avenue	5	66	12	3 59	9.81
Adams street	6	66	12	3.36	10 04
Jackson Boulevard	6	66	12	3 63	9.77
*Van Buren street	5	66	12.5	3.86	10.04
**Congress street	5	66	12	3.80	9.6
*Harrison street	5	66	12.5	4.62	9.28
Flournoy street	5	66	12	3.98	9.42
Lexington street	5	66	12	3.70	9.70
Polk street	6	66	12	3.44	9.96
Harvard street	6	66	12	3 37	10.03
Taylor street	5	66	12	3.26	10.14
*Twelfth street	10	100	12.5	8.1	5.8

*Electric surface road crosses here.
†Cable surface road crosses here.
‡Lake Street Elevated road crosses here.
**Metropolitan West Side Elevated Railroad crosses between Van Buren and Congress streets.

same methods will be used as were employed in elevating the Galena and Milwaukee divisions, described in the *Railroad Gazette*, July 26, 1895, and Aug. 7 and 14, 1896. The materials for filling and for use in building the subways will be the same as was used heretofore on this class of work.

The ordinance requires that the entire work shall be completed by Dec. 31, 1898, but contains also the usual

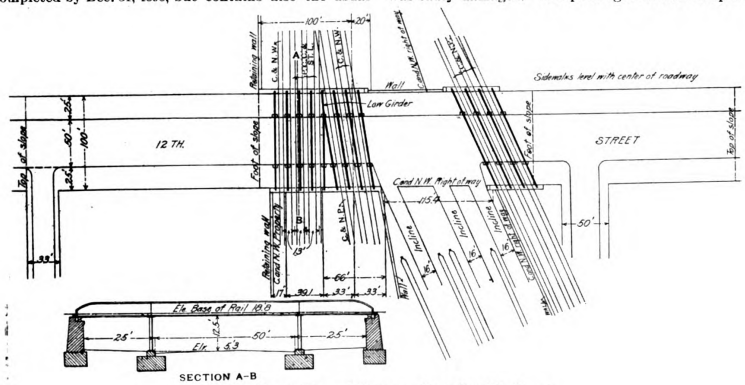

Fig. 4.—Street Plan of Subway—West Twelfth Street.

clause providing for delays due to strikes or interruptions beyond the control of the railroad companies. The work was begun March 29 at Lake street, and we are informed that it will go forward as rapidly as possible.

For the drawings and information regarding this work we are indebted to Mr. Louis H. Evans.

Train Accidents in the United States in June.

COLLISIONS.

REAR.

3d, on Manhattan Elevated, Second avenue line, at Eighty-sixth street, New York City, a passenger train ran into the rear of a preceding passenger train, damaging the engine and one car. The second train was approaching the station at uncontrollable speed.

18th, on Oregon Short Line, near Oasis, Utah, a mixed train descending a grade broke in two, and the rear portion afterward ran into the forward one, doing considerable damage. A passenger in the sleeping car was injured.

18th, night, on Chicago, Burlington & Quincy, near Creston, Ia., a passenger train ran into two freight cars which had been blown out of a siding upon the main track, wrecking the freight car. The engineman was killed and the fireman injured.

23d, on West Jersey & Seashore, near Woodbury, N. J., a freight train ran into the rear of a preceding passenger train, which had been stopped on account of a broken eccentric strap on the locomotive. The rear car of the passenger train, a combined passenger and baggage car, was badly damaged and set on fire by the locomotive; the fire was extinguished by the Woodbury Fire Company. No passengers were in the rear car. Seven passengers in other cars were slightly injured. The train stopped at the outgoing end of a block section, and it appears that the freight train was wrongfully admitted to the section by the signalman at the entering end, without authority from the man at the outgoing end.

26th, on Baltimore & Ohio, near Draketown, Pa., a freight train ran into the rear of a preceding freight which had just started from a tank.

A third freight soon afterward ran into the rear of the second one. One engineman was injured.

29th, on Philadelphia, Wilmington & Baltimore, near Perryman, Md., a freight train broke in two and the rear portion afterward ran into the forward one, and eight cars were damaged. The conductor and one brakeman were injured.

30th, 1 a. m., on Chicago & Northwestern, at West Chicago, Ill., the fourth section of a passenger train which had been stopped to take water was ran into at the rear by the fifth section, and the car next to the last was badly damaged. Two passengers and a tramp were killed and 20 passengers and one employee were injured. The engineman of the fifth section did not properly control the speed of his train.

And 11 others on 8 roads, involving 2 passenger and 14 freight and other trains.

BUTTING.

1st, on Mobile & Ohio, near Trenton, Tenn., butting collision of freight trains, wrecking both engines and 12 cars. A man in charge of fruit riding in one of the cars was killed. It is said that the southbound train acted contrary to an order which it had received. One of the trains had been flagged and nearly stopped by a farmer living near the track who saw the impending danger.

7th, on Chicago, St. Paul, Minneapolis & Omaha, near Hudson, Wis., butting collision between a freight train which was running west (on the eastbound track) and a work train, with the workmen's car foremost, which was running east, making a very bad wreck. Four employees in the car were killed and their bodies, with the car, were burned up. The fireman of the work train and one other employee were killed and two employees were injured. The conductor and engineman of the work train had a special order to use the westbound track, going to and from dinner, but on their return took the eastbound track. They cannot explain their blunder.

10th, 5 a. m., on Illinois Central, at Bradford, Tenn., butting collision of freight trains, making a bad wreck. Five trainmen were injured, 2 of them fatally.

12th, on New York, New Haven & Hartford, near Middletown, Conn., butting collision between a regular and a special passenger train, slightly damaging both engines. Eight passengers and 2 trainmen were injured.

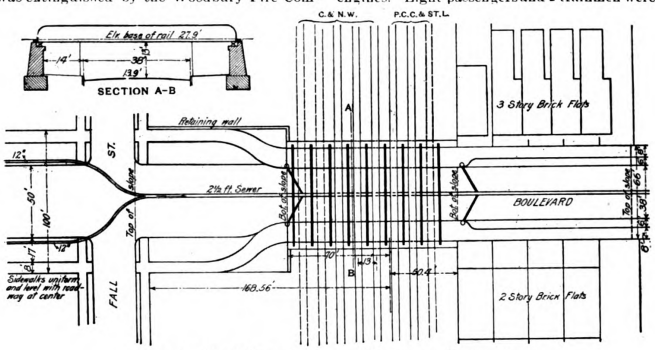

Fig. 3.—Street Plan of Subway—Washington Boulevard.

The regular train disregarded a telegraphic meeting order.

17th, on Union Pacific, at Tie Siding, Wyo., collision between a freight train and an empty engine; 1 engineman injured. It is said that the train dispatcher had made a change in meeting points and had notified only one of the enginemen.

21st, on International & Great Northern, near Conroe, Tex., butting collision between a southbound passenger train and a northbound freight train, wrecking both engines, six freight cars and the first two cars of the passenger train. Three white tramps riding on the freight train and three colored tramps riding on the trucks of the passenger train were killed. Two enginemen and two firemen were injured by jumping off and two other trainmen were injured.

22d, near Madden, Tex., butting collision between an eastbound Texas & Pacific passenger train and a westbound Southern Pacific freight, wrecking both engines, 11 freight cars and 2 baggage cars. It appears that the engineman of the passenger train mistook an extra freight, standing on a side track, bearing white signals, for the second section of a regular freight, and it was this second section that he collided with a mile east of the siding. The engineman of the freight train was killed and the mail clerk was injured.

26th, 7 a. m., on Cleveland, Akron & Columbus, near Millersburg, O., butting collision between a freight train and an excursion train, wrecking both engines and a baggage car. In the baggage car there were about 20 passengers, 10 of whom were injured, one of them fatally. It appears that the passenger train was running as the second section of a regular train that had passed about 10 hours before. The freight conductor examined the register at Millersburg; he found against the record of the regular train "green signals," the entry having been originally made "no signals" and these words crossed out. So long a time having elapsed since the passage of the first section, the conductor assumed that some unauthorized person had tampered with the record and went on as though he had a clear right to the road. He had gone but a very short distance before he met the passenger train, traveling at the rate of 30 miles an hour.

27th, on Prospect Park & Coney Island road, at Van Siclen Station, Brooklyn, N. Y., a passenger train ran over a misplaced switch and into the head of another passenger train, doing slight damage. A passenger who jumped out of one of the cars through a window was badly injured.

29th, 8 p. m., on Vandalia Line, near Vandalia, Ill., butting collision between westbound passenger train No. 11 eastbound passenger train No. 6. A baggageman and one mail clerk were killed and a fireman and one mail clerk were injured.

And 3 others on 3 roads, involving 6 freight trains.

CROSSING AND MISCELLANEOUS.

10th, on Lehigh Valley, near Geneva, N. Y., a pushing engine backed into the rear end of a standing freight train, wrecking the caboose and killing the fireman.