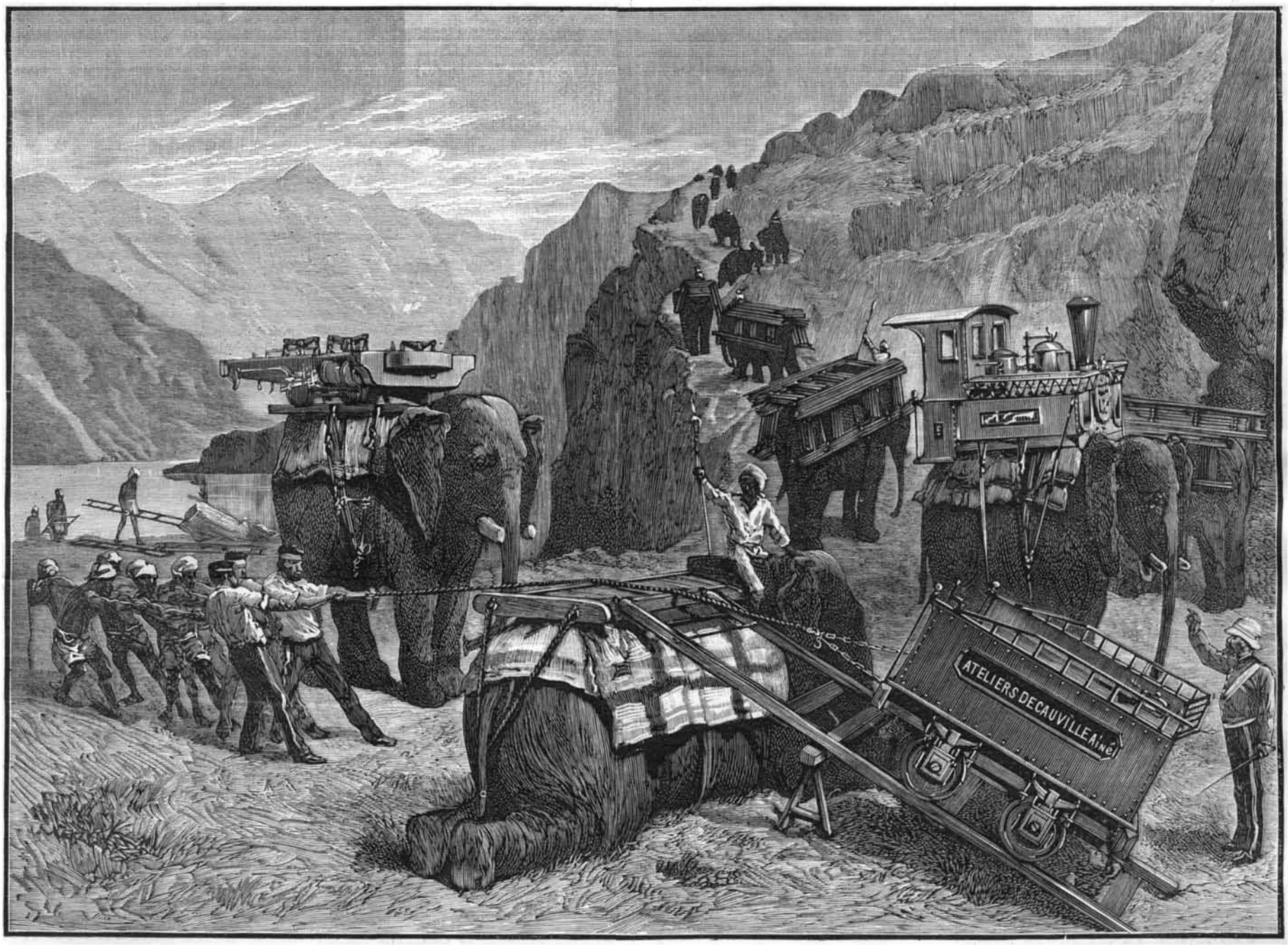
AN ENGLISH MILITARY RAILWAY.

The English army has succeeded in establishing a portable railway on several points of the Bolan Pass. This railroad is of the Decauville system, formed in sections of small steel rails, which can be put down or taken up very quickly. This ingenious railway—which has been used considerably for work on the Panama Canal and for the transportation of sugar cane in Australia and Java—has become the indispensable means of transport in all wars. It is at present being used in Tonquin and Madagascar by the French army, and is also being used on the Red Sea by the Italian army. When the Russian government commenced the war in Turkestan, in 1882, it bought one hundred versts, or about 66 miles, of the Decauville railroad, which Gen. Skobeleff used with great success for the transportation of potable water and for all the provisions for his army. This railroad was taken up as the army marched forward, and when the Russians advanced, recently, in Afghanistan, the little railway appeared at the advance posts, and was described to the English army by the officers who watched the operations of the Afghans. An order for a similar apparatus was given by the English government to M. Decauville, directions being given that the road should be of the same type as that furnished to the Russians. The object of this was, probably, that any sections of road which might be captured from the Russians during the war could be used by the English. In this last order there was one problem which was very difficult to solve: all the material had to be carried by elephants, and they wanted a locomotive. M. Decauville had the locomotive made in two parts, the larger of which weighed only 3,978 pounds, the greatest weight that an elephant can carry.

This episode of the Anglo-Russian conflict, illustrated in the annexed cut, is a great conquest for our national industry, for the works of M. Decauville are at Petit-Bourg, that is, in France, and only an hour from Paris. They cover about 20 acres on the bank of the Seine, and adjoin the P. L. M. The great hall is 525 feet long by 525 feet deep. The material is brought in at both ends (at one end the rails and steel for the road, and at the other end the sheet metal and iron for the cars), and the manufactured products are taken out at the middle, loaded in the cars of the P. L. M Co. In July, 1884, the works of Petit-Bourg attained their greatest development, with a thousand workmen, and 350 machines, which do the work of 3,000 men. Among others, there are four painting machines, which do the work of 60 painters. Three thousand cars and 93 miles of road are produced each month.

The rapid development of the Decauville works made it necessary to build a village for the accommodation of the workmen, or rather a little city, we should say, for there is even a theater here. The comfortable houses, surrounded by gardens, are rented to the workmen for 6, 8, 10, or 12 francs a month, a deduction being made in proportion to the number of children or the number of years that a tenant remains, so that after a certain time the tenant ceases to pay rent. If he becomes disabled by old age, the treasury of the society for mutual assistance pays him a small annuity. The bakery furnishes bread at a price below cost. The savings bank of the establishment pays interest to workmen who wish to save. The Committee of Rewards gives prizes to those who invent improvements in the machinery.

There is much more to be said about this philanthropic undertaking, but we hope to return to the subject at some future time.—*L'Illustration.*



ENGLISH MILITARY RAILWAY BUILDING IN INDIA.

The First Railroad in America.

In the course of a paper read before the Franklin Institute, bearing the title "Transportation Facilities of the Past and Present," Mr. Barnet Le Van corrects the commonly received statement that the Granite Railroad, built at Quincy, Mass., in 1827, by Gridley Bryant, for transporting stone for the Bunker Hill Monument from the granite quarries of Quincy, was the first railroad built in the United States. On this point he presents interesting testimony to prove that, far from being the first, the Granite Railroad was really only the fourth in order of precedence in the United States. We quote from that portion of the paper relating to the subject as follows:

"Railroads were also first introduced in Pennsylvania. In September, 1809, the first experimental track the United States was laid out by John Thomson (the father of John Edgar Thomson, who was afterward the President of the Pennsylvania Railroad Co.), Civil Engineer of Delaware County, Pa., and constructed under his direction by Somerville, a Scotch millwright, for Thomas Leiper, of Philadelphia. It was 180 feet in length, and graded 1½ inches to the yard. The gauge was 4 feet, and the sleepers 8 feet apart. The experiment with a loaded car was so successful that Leiper in the same year caused the first practical railroad in the United States to be constructed for the transportation of stone from his quarries on Crum Creek to his landing on Ridley Creek, in Delaware County, Pa., a distance of about 1 mile. It continued in use for 19 years. Some of the original foundations, consisting of rock in which holes were drilled and afterward plugged with wood to receive the spikes for holding the sleepers in place, may be seen to this day."

Silver-Aluminum Alloys.

Aluminum and silver make handsome white alloys, which, compared to those from pure aluminum, are much harder, in consequence of which they take a much higher polish, and at the same time they are preferable to the silver-copper alloys for the reason that they are unchangeable in air, and retain their white color. It has been proposed, therefore, no longer to alloy the world's coin with copper, but with aluminum, which makes them far more durable, and even after a long-continued use they retain their white color. Experiments on a vast scale were for this purpose instituted in European countries, but for some reason or other it appears that the silver-copper alloys were retained. According to the quantities of aluminum added, the alloys possess very varying physical characteristics. An alloy consisting of 100 parts aluminum and 5 parts silver differs but little from the pure aluminum, yet it is far harder and assumes a higher polish. An alloy consisting of 169 parts aluminum and 5 parts silver possesses a very remarkable degree of elasticity, and has therefore been recommended for the manufacture of balance springs for watches and dessert knives. An alloy composed of equal parts of aluminum and silver rivals bronze in hardness.

Heat Necessary for Electrical Conductivity.

A paper was recently read before the Paris Academy of Sciences on the electric conductibility of solid mercury and of pure metals at low temperatures, by MM. Cailletet and Bouty. From numerous experiments made with mercury, silver, tin, aluminum, magnesium, copper, iron, and platina, the authors conclude that the electric resistance of most pure metals decreases regularly when the temperature is lowered from 0 deg. to —123 deg., and that the coefficient of variation is apparently much the same for all. It seems probable that the resistance would become extremely slight at temperatures lower than —200 deg., although this point has not yet been practically tested.