

ing the company to the standard gauge of 4ft. 8½ inches, and the second—paragraphs 14 and 15—stating that although the railway Co. may rent power for their motors from other electric Co's., the agreement to price shall not be valid unless confirmed by a vote of shareholders representing two-thirds of the stock interest. Now the former provision may not be of any special disadvantage, but the latter is distinctly mischievous. Supposing the electric railway Co.'s generator or engine is disabled, then they must either stop their entire road until repairs can be made or else rent power temporarily from a neighbouring lighting or Ry. Co. This latter course may not be taken apparently without getting a two-thirds vote of shareholders called for the special purpose, which means calling persons from different parts of the country at a few minutes' or hours' notice every time a mishap occurs! Is this reasonable legislation, or is it obstruction? Another vexatious annoyance that steam roads are not subjected to is contained in paragraph 17, wherein it provides that the company may make contracts with any parties for construction or equipments, etc., but that such contract shall not be valid unless confirmed by a two-thirds vote as above. At a meeting called for the special purpose, what possible reason can there be for so restricting the powers of the Directors? The Joint Stock Co.'s Act, which is specially made to apply to "forwarding business" states clearly that "Directors may make contracts, etc., without any restrictions," and the Steam Railway Act contains no such withdrawal of power. Apparently as soon as a man becomes the Director of an electric railway, he shows his unfitness to wield the same powers given to the Director of a steam Co. Is this prejudice, or ignorance, or what? The Electric Railway Act contains practically the same provision as the Steam Railway Act as to borrowing powers, surveys, lands and valuation, highways, crossings, bridges, fences, tolls, etc., and the sections affecting Powers of Provisional Directors, Capital, etc., are practically taken from the Joint Stock Act. There are just a few provisions which may be considered. Paragraph 40, section (1) provides for the "bonding" of rails and the establishment of a system of return wires, in order to eliminate electrolytic effects in gas and water pipes, etc. This matter need not trouble promoters of inter-urban railways, and even in cities it can be satisfactorily dealt with by competent electricians. The section that seems most to invite hostile criticism is number 9 of paragraph 43, numbers 10 and 11 of same paragraph are sequels of number 9. It provides that "fares" (which have previously been limited in amount) shall be so regulated that, to state it shortly, the company shall never, no matter how large its business may be, or how great its risks, be allowed to declare a greater dividend than 8 per cent. Any surplus shall go into the "surplus tolls account," which will be a sort of reservoir out of which

will be made up the amount required during any particular year to bring the dividend up to that maximum figure. When (or if) the "surplus tolls, acc." shall total such a figure that it reaches one fifth of the average annual gross receipts of the company, there the company shall reduce the fares, in a certain proportion. Now 8 per cent. is a fair enough profit no doubt, and taken by themselves, sections 10 and 11 are fair; but one is justified in asking, why make a difference between steam railways and electric railways? The former may keep any profit it makes, the latter may not go beyond 8 per cent. Is there anything immoral about an electric railway? Does it ask or get any special privileges entitling the public to hedge it round with such a restriction? If it occupies the public highway, it pays rates and taxes; if it goes across private lands it pays for them, and if it is not in the public interest, why is it permitted to condemn the land along its route? As a whole, however, the same facilities are given to electric railways as to steam, and the restrictions, while annoying, are not vital.

The electro-technics of an electric railway are of very considerable importance, and should be very carefully gone into. The transmission of large quantities of power over great distances, by means of multiphasal generators, is such an important possibility that no such enterprise should be undertaken without a careful survey of waterpower in the vicinity. It is impossible, of course, to give any figure of general application; but the transmission over 5 to 10 miles is not regarded as any very special feature of engineering, whereas the advantages gained in reduction of subsequent costs of operation by using a waterpower may be very evident. The public are in the habit of jumping to conclusions as to electrical matters, and are apt to think wrongly, so that wherever there exists a possibility of using waterpower, no matter at what distance it may be, reference should be made to a professional man. Multiphasal apparatus is the direct outcome of the demand for long distance transmission, and is brought to a high level of efficiency. The entire construction of the plant, both electric, steam, waterpower, and track, should be of a thoroughly solid, substantial character. The better the roadbed the longer will it last with less repairs; and the easier will be the operating conditions for the rolling stock. Motors and trucks are certainly designed for strength, but are susceptible to damage by rough usage. The condition of the track has an influence on the life of the wheels; the comparative sizes of wheels on the same axle, or on the same truck, has a bearing on the electrical efficiency of the motors. The advisability of getting good material and paying good prices for it is well illustrated in a study of the life of wheels. It may be thought that a "wheel is a wheel"—but it is not always so. A thoroughly good wheel costs money and will run possibly 50,000 miles before it is

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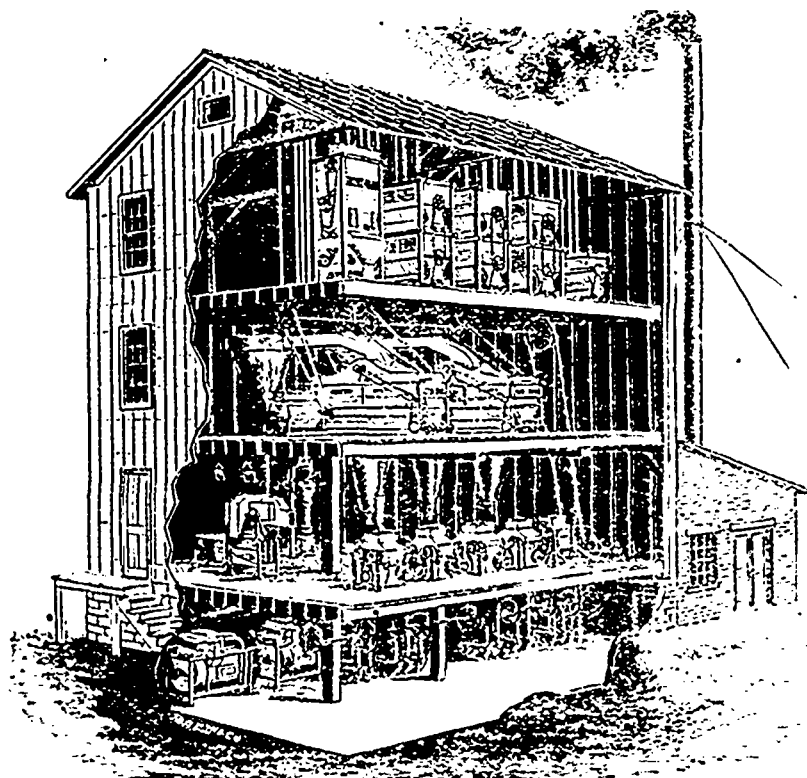
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