our mind conclusively." Any article can be made to fit an ignorant head. That little head of the Otago *Times* says that the bar-frame of the American locomotive was introduced because it was flexible, and that it was done at the expense of strength and stability. Every railway child must know that the very reverse is the case. It was adopted because it was less flexible, stronger, and more stable than any slab frame can ever be made. I intend to touch on this frame point again, and give some clever English engineers' opinions on it.

Bogies under tenders are another contrivance that does not suit the Otago mind. It says that brakes cannot be applied to them. Why not? They are on the bogies of every locomotive tender in the States, as well as on the bogies of all cars, and are found efficient and reliable.

Other trumped-up objections are that "poor materials" are used in American locomotives, that they are short-lived, work execrable, &c. I intend to give answers to all these points in an appendix, and chiefly from the pens of clever English writers, *professional men*, whose liberal minds have not been cramped up in the small quarters of those who carp at everything, and particularly American things.

This matter reminds me of what a gentleman from Melbourne told me of the love of abuse by the editors of that city. In referring to the first Governor of Victoria, Mr. La Trobe, he said that man was the best governor they ever had—honest, talented, and energetic. He did wonders for the infant colony, but he was so badgered and abused that he was driven from the colony by a set of howling editors, and is now living on a small pension in London, while some of these same editors are living there in elegance on their ill-gotten gains.

A junior partner in a law firm once asked his senior how he should conduct a case. He answered, "Why, by argument deduced from the merits of the case." "But there are no merits, and no argument to offer," said the junior. "Then," said the senior, "abuse the plaintiff." This appears to be the rule of action—the human nature of those weak brains that are eternally carping at things they cannot understand.

I might here state that the specifications for American engines are not left to the builders, as these writers assert, but are drawn up with much care and in complete detail; also that American engines are not in many cases "mere duplicates of others." The first engines built for New Zealand were different from any built before, and some delay, as well as considerable cost, was occasioned by having to make for them an entire new set of patterns. These are the engines Mr. Maxwell puts down as costing £2,800 each, and which cost really only £1,998.

It is contended that, for the colonies engines and all classes of rolling-stock can be got as good and as cheap in England as in the States; if so, then they ought to be got there. Any colony that would be going out of the limits of itself or its mother-country to get anything, without some good and valid reason, would, in my opinion, be doing an unjust and an unnatural act. It is contended that rolling-stock can be built as good and as cheap in New Zealand as it can be here; if so, it ought to be built there. It is easy enough to try the merits of this policy. I saw it once tried in South America in the matter of cars. It turned out fallacious, as the cars cost just double the cost of those they imported.

I beg to say, in concluding this already too long letter, that it is not written for the purpose of converting any one, nor is it written as a trade circular, or to advance my own personal interests, for I am not seeking or asking for business of any kind, nor do I expect any profit or compensation from any source, except the satisfaction that may result from throwing light on an important subject, with a faint hope that it may assist in removing the blindness of prejudice and the folly of error.

A man that has had the honor to write, by request of the British Government, an opinion on railway economy, and then refuse to receive any compensation, except thanks, from so high and mighty a patron, while others were asking and receiving fees far beyond £10,000 for similar opinions, need not fear that his acts will be misconstrued or attributed to any feeling but that of love for progress, prosperity, and the diffusion of knowledge among men.

I have, &c.,

W. W. Evans,
Member, Institution of Civil Engineers,
Member of American Society of Civil Engineers,
Member of Council, American Geographical Society.

The Hon. Sir Julius Vogel,
Agent-General for New Zealand, London.

P.S.—I must not close this long and no doubt tiresome letter to some to read, without offering my sincere thanks to Mr. Maxwell, to the editor of the *Engineer*, and other editors, for giving me a chance to ventilate this important matter of American railway plant more thoroughly than it would otherwise have been done.

THE TESTIMONY.

An Appendix, giving the opinions of several clever and well-known English engineers on the merits and peculiarities of American locomotives and railway plant.

As some of these extracts are taken from the proceedings of the Institution of Civil Engineers of England, and as those publications are not to be purchased, nor are open to the public, they may meet the eyes of some who would not see them otherwise, and will, I am sure, be read with interest by all who desire to see railway progress, and who study railway economy.

Extracts from the Report of Thomas Higinbotham, Engineer-in-Chief of Victorian Railways, to Parliament on the Railways of the United States in 1875.

Page 4. "I rode on the engine crossing the Sierra Nevada Mountains; the speed on falling gradients was very great, but the drivers appeared to have perfect confidence in their engines. I had opportunities of speaking to several drivers—Englishmen—who had driven engines in England; they all preferred the American to the English engines."

Page 12. "At Toronto, Canada, there are two railways of 3-feet-6-inch gauge—the Nipissing, 88 miles long, and the Toronto, Grey, and Bruce, 190 miles long. These two lines were stocked at first with engines and carriages and wagons built in England, which proved complete failures, and have been replaced by American engines and carriages; these are found to work well. The rigid wheel base of the English rolling-stock, the small wheels, and the radial axle boxes had been tried and condemned. The original rolling-stock was of light construction. An accident happened on the Nipissing line; a train left the track. I was informed that after the accident nothing was left of the rolling-stock but the wheels. The rolling-stock now used is as strong as that used on a road of 4-feet-8½-inch gauge; it is found to be much more economical than the light stock. The master mechanic (locomotive superintendent), who is an Englishman, told me that he preferred American to English engines and rolling-stock for railways in Canada."

Page 20. "The bogie truck and cast-iron wheels are two of the most important features of American engines and rolling-stock. On the Grank Trunk Railway of Canada, neglecting the experience gained in the States, English engines and rolling-stock were tried, but had to be abandoned and the American type adopted; very recently the same mistake was made on the Narrow Gauge Railway of Canada, and with the same result. The chilled cast-iron wheels stand well; they are safer in severe frosts than those with wrought-iron centres and steel tires, because they are in one piece. It is well known in England that some of the worst accidents have occurred from wheel tires breaking in frosty weather. There has always been a distrust of cast-iron wheels in England, but it is impossible to resist the testimony in favour of the safety of the cast-iron disc wheel which is used in the States. I feel convinced that the best of these wheels are as safe as the best wrought-iron wheels in any climate, and that they are safer than wrought-iron wheels with steel tires in countries subject to severe frosts. I did not go to the States at all prepossessed in favour of American engines; but what I saw there satisfied me that for the light railroads of this country they are better adapted than any others. I am of the opinion that it would be a wise course to obtain engines from the States. The vast system of railways in the States, extending over 70,000 miles, has led to the establishment of great works with the most perfect machinery for the manufacture of locomotives. The competition between these works secures first-class engines at moderate prices. The express trains on the London and North-Western Railway are drawn by engines with two pairs coupled. The practice on this railway has, admittedly, been influenced by that of the United States in this respect, and corresponds with it."

Page 60. "Iron tubes are used in the engine boilers in Switzerland, and are found to be more durable than those made of brass or copper."