neglected their own interests, and there is no reason why their monopoly should be extended in perpetuity. A scheme which secured their shareholders against actual loss by the laying of the Pacific cable would sufficiently meet the case.

It may not here be out of place to observe that in subsidies from the Australian Colonies, the Eastern Extension Company will have received by the year 1900 no less than £778,250, a sum exceeding the cost of two cables over the whole intervening distance from Asia to Australia. In 1893 the reserve fund of the company amounted to £633,686, after paying out of revenue the cost of new cables and cable-renewals to the extent of £1,160,685. These are large sums to be realised out of revenue, in addition to dividends equivalent to 9 per cent on the capital, before it had been watered.

The best of the various routes which have been proposed for the All-British Pacific Cable runs from Vancouver to Fanning Island, Fanning Island to Fiji, Fiji to Norfolk Island, and from Norfolk Island in two sections, one to New Zealand and the other to Australia. Fanning Island is of coral formation, and about ten miles long by four miles wide, with an excellent anchorage called Whaleman Bay, where ships of the largest class can lie. Its fertile soil produces bananas, figs, melons, and tomatoes in great abundance. In 1850 an Englishman, Captain Henry English, settled there with about a hundred and fifty natives, and placed himself under British protection. It has since been annexed to the Crown. The island was chosen as a landing-place for the cable on account of being the nearest British possession to Vancouver on the route to Australia.

The distance between Fanning Island and Vancouver is 3230 miles, which with 10 per cent for slack will represent a cable of about 3560 miles. The longest cable that has hitherto been made is the Jay Gould Atlantic cable of 1882, which is 2563 miles long, or nearly 1000 miles shorter. The length of a cable in itself adds very little to the difficulty of laying it from an engineering point of view, as it can be paid out in different sections, and if necessary from different ships, the section in one ship being spliced on to the buoyed end of a section laid by another.

But the length of a cable makes all the difference in the speed of working it, and on this its commercial value depends. The speed varies inversely as the square root of the length, so that a type of cable which gives 40 words a minute for 2000 miles would only give 10 words a minute for 4000 miles. For a given length the speed of a cable varies inversely as the product of its copper resistance and electrostatic capacity, so that in order to get a high speed it is necessary to have a low copper resistance and capacity. The copper resistance—or the resistance which the conductor offers to the electric current—can be decreased by increasing the thickness or weight of the copper, while the capacity can in like manner be decreased by increasing the thickness or weight of the insulating covering, which is generally of gutta-percha or india-rubber. As, however, a pound of insulator or dielectric is seven or eight times more expensive than a pound of copper, it follows that the most economical way to construct a long cable so as to give a good speed is to increase the weight of the conductor without increasing the