

without any difficulty. The same objection applies to a line going from the Gulf of Carpentaria and down the east coast; it is longer, and it is more exposed to interruptions; and the traffic, to a certain extent, is more impeded—I mean the international traffic is more impeded by local traffic. I advocate Colonel Glover's scheme for another reason—from an economical point of view—that it is the cheapest; and, looking at the small amount of traffic that we have, and taking a common sense view of the thing, I say that we do not require a second cable for the amount of business, that is to accommodate the business we do—it is simply to secure ourselves greater immunity from interruption. The amount of business we do in the whole year could be done by the cable in about ten days, working day and night. The cable could do the whole amount of business that it now does in ten days; and, therefore, I think it would be injudicious to pay £48,000 or £50,000 a year—and you would have to do that by any other scheme that has yet been submitted to us, except that of North-West Cape—when we can get it for about £30,000, or if the Government choose to advance the money, as was shown yesterday, for about £20,000 or £21,000 a year. The only line comparable in point of cheapness would be, of course, the line to the North-West Cape; but I would point out that several objections apply to that route which do not apply to the line to Port Darwin. If you look at the chart, you will see that all south of Java and the islands immediately to the eastward there is a volcanic gorge—a deep gorge—in fact, the sea dips very suddenly to a depth of 2,100 fathoms—[referring to the chart].

336. What chart is that?—This is the Admiralty chart. We do not know anything of the bottom of the sea, and the cable would lie throughout its course within the influences of the north-west and south-east monsoons; therefore the cable from Java to the North-West Cape, or the still longer line that has been mentioned from Galle to North-West Cape, to which far greater objections apply, are, in my opinion, I would even say inadvisable as regards the line from Galle, but certainly open to great objections when you could lay your cable in a sea the bottom of which is known, and the whole of the dangers of which are known. Then, when you get to North-West Cape, Western Australia would, of course, have to erect six hundred miles of land line. Western Australia is the smallest of all the colonies. We could scarcely expect it. She might, perhaps, erect her land line, but she would never be in a position to do what South Australia has done to man the stations. You can see at a glance the number it would require—the number of stations and the number of operators, and the operators must be of a high class; and I am quite sure that Western Australia could not for a moment afford to do what South Australia has done.

337. By Mr. Cuthbert.—Where would she have to take it to?—From Northampton to North-West Cape.—[The witness explained his meaning on a map.]

338. By Sir James Wilson.—She has a cable to Northampton?—No, a land line; and the whole of that line runs along the coast. It is all very near the coast. South Australia has spared no expense; all her stations along the overland line are as strong as they possibly can be, and we are in a position, if an interruption occurs on each side of any station, to send out a party each way simultaneously, so that the communication may be restored with as little delay as possible.

339. By Mr. Boucaut.—You made a contrast between the sea cables and the North-West Cape and Port Darwin, but you have not yet made the contrast between Port Darwin and Normantown?—That may be looked upon more from an economical point of view than from a scientific. I mean to say this, that there are not such grave scientific objections to the cable going to Normantown, or such practical difficulties as there are going to the West Cape perhaps; but in an economical point of view you are doing this—you are paying for a much longer cable for a very small traffic than you actually require; it does not make you any more secure. I speak now as a practical electrician—you are not a whit more secure from interruptions, as far as the cable is concerned, by going to Normantown than to Port Darwin; and in the event of an interruption, the chances are that the interruption of the cable would be longer; every extra mile of cable that you have you have *pro rata* additional chances of interruption. There is one other point, too, that I may mention, and it answers a question which the Hon. Mr. Mein put yesterday with regard to the condition of the cable in deep seas and shallow seas. It is in the main a thermometrical question; one reason why a cable in deep seas works better than one in shallow tropical seas is the lower temperature. The lower the temperature, the greater is the dielectric resistance—in other words, the better the insulation; but against that, and it operates very strongly in influencing the decision of telegraph engineers, is the difficulty of picking up a cable, especially as it gets old and its outer casing of iron wires rusts away. There is great difficulty in taking the cable up and effecting repairs, as was hinted at yesterday. You have an instance of this with the Atlantic cables during the last two years—the 1865 and 1866 cables for two years, if not more, were entirely silent, and at one time all the cables between America and England were silent, with the exception of one.

340. By Mr. Mein.—But that objection does not apply to the Normantown cable?—I will come to that presently. You have in the Gulf of Carpentaria a shallow sea of a high temperature, where the insulation of your cable would be more affected, and no doubt it is in the shallow seas where you will find the teredo or the worm that affects the cable, in my opinion, more active.

341. But have not you got the same objection more forcibly applying to the cable between Port Darwin and Java?—Between Port Darwin and Java the worm has scarcely touched the cable.

342. In ordinary circumstances, have you not a higher temperature in a lower latitude than you have in a higher latitude?—It depends upon the region of the earth. The temperature would be very nearly uniform upon that portion of the earth we are now considering; from the equator to twelve degrees on either side the equator the temperature is very nearly uniform. But it is evident that the longer the cable lies in those warm seas, the more liable you are to interruption; and, therefore, as an electrician, I would have as little cable as I possibly could. You can always repair land lines; it is not so easy to repair a cable, but it is more easy to repair a cable in shallow than in deep water.

343. An inference might be drawn from your remarks, without explanation, that the waters of the Gulf of Carpentaria are more objectionable as waters for a cable to lie in than the waters between Port Darwin and Java?—It is this, that a greater length lies in a sea of high temperature.

344. Have you any knowledge of the waters in the Gulf of Carpentaria?—I have.

345. Any personal knowledge?—Yes. I have been there; it is a shallow sea.

346. By Mr. Boucaut.—And no current comparable to what there is up above?—No; no strong tidal currents I suppose. But I may tell you this though, that if you want to take a cable from Port Darwin to either Normantown or Cape York, you have to traverse seas of very strong tidal currents. The tidal currents are so strong between Melville Island and Adam Bay, that at the Vernon Island, which is simply a