

Prices of batteries and ingredients.	bourne by this Government, I should advise that the Batteries in their complete state should be procured either from Messrs. Oppenheimer & Co. of Melbourne, or from England. The prices of these Batteries vary—the charges in their complete state would be about as follows : Chester's Main Battery 10s per cell, Grove's 7s. per cell, Daniell's 6s. 6d. per cell. The prices of the ingredients taken singly would be about as follows: Sulphuric Acid 7d. per lb., Nitric Acid 1s. 6d. to 2s., Sulphate of Copper 9d. per lb., Platinum Foil 40s. per oz., Platinum Wire ditto, Glasses 1s. 3d. each to 2s., Porcelain Cups 1s. to 2s. each., Zincs 2s. 3d. to 3s.
Wire.	The Main conducting Wire should be of the best "No. 6" Galvanized Iron, in half mile lengths manufactured expressly for Telegraph purposes; the quality of this Wire should be carefully attended to, or else in Atmospheric changes, it will be liable to constant breakage. It should weigh not less than from 560lbs. to 600lbs. per mile, and be stretched so that the deflection should not exceed two feet in any 60 feet length of wire. The Main Wire must be securely fastened to the Insulators with annealed Charcoal Wire (commonly called "tie" Wire) of No. 15 or 16 gauge. The Local or Office Wires must be of Copper, having an insulating covering of Gutta Percha, or of Cotton and Shell Lac, but of these two Insulators I decidedly prefer the former—though the <i>quality</i> of the Gutta Percha must be carefully looked to as some is porous and consequently defective and comparatively useless as an Insulator. The price of Main "No. 6" Galvanized Wire is from about 30s. to 40s. per cwt., Annealed Charcoal Wire, No. 16, 40s. per cwt., Gutta Percha Insulated Copper Wire £15 per mile.
Posts.	The Posts used in the construction of Telegraph Lines should be set at distances of from 58½ to 60 yards apart, constituting about thirty Posts to the mile—firmly placed perpendicularly in the ground, at a depth of not less than five feet, the Posts on these Lines are mostly of Blue Gum or Stringy Bark, but other woods such as Box (not Bastard Box) Blackwood, Iron Bark, or Swamp Oak are also adapted for the purpose. The Post should be 25 feet in length, 9 inches in diameter at the base, and not less than five inches at the top, our Posts are of 6 inches diameter at the base, but I prefer the 9 inches in preference to the lesser diameter, six feet from the base of the Post should be thoroughly well charred (though care must be taken not to burn the post too much for I have known many posts break in high winds, &c. from this cause)—and also be coated with Coal Tar.
Timber for Posts	The top should be firmly bound at one inch from its extremity with strong hoop iron, not less than one inch wide, and a hole be vertically bored in the top of the Post to a depth of 5 or 5½ inches to receive the Insulating Pin. The holes for the Posts are bored with an earth auger (as in fencing) to a depth of 5 feet, the Posts being in readiness along the Line, ten workmen could erect two miles of Telegraph per day.
Binding Posts.	Square painted Posts are used throughout the chief Towns in this Colony, and round Posts on the remainder of these Lines—similar to those already described.
Posts.	In some cases Forest Trees might be admitted in place of regular Posts, all such Trees should have the Bark removed for at least three feet below the point of attachment of the Insulators, and must be trimmed of all overhanging branches.
Clearing Line.	All Trees and Branches calculated in the least to endanger the Lines should be removed, and all Brush, Underwood, and Grass cleared away for a space of 25 feet on each side of the Lines.
Insulators.	The Insulators should be of the "Bell" shape, and of well baked and highly glazed earthenware: but I would strongly submit for the consideration of the Government of New Zealand the advisability of departing from the system of Insulation at present adopted in these Colonies, and of following that used on the English Lines, viz., to pass the wire through an insulated groove in the Post. One of the chief expenses of maintaining these Lines has been, and still is, the replacement of these Insulators which are destroyed in great numbers by stones, persons shooting at them, and in many cases I think by the wooden pins put up in dry weather expanding in the wet season and forcing the Insulator apart; I think the system suggested would prevent much of the damage, inconvenience, and expense which I mention, I may add that the suggestion has met with much approval from other Telegraphists, and I believe has lately been adopted, on my suggestion, on an extensive Colonial Line now in course of completion in another Colony.
System of Insulation.	The next question I come to is, "At what cost per mile Land and Submarine Lines respectively have been completed." (in Tasmania).
Cost Tasmanian Land Lines.	The Line from Hobart Town to Launceston (120 miles in length) was completed at a cost of £52 per mile, exclusive of Instruments and Office fittings, this price may appear low when compared with charges made in other Colonies, New South Wales for instance, where £57 10s per mile was paid, but the great facilities offered here for obtaining timber available for the work close to the proposed Lines must not be lost sight of, much also depends on the nature of the Country through which the Line passes, and as far as practicable, Country of a very hilly nature should be avoided.
Cost Tasmanian Submarine Cable	The Tasmanian Submarine Cable was contracted for at £45,000 inclusive of Land Lines, Cable, and Instruments, from Cape Otway to George Town. The construction of a Submarine Line of course depends much on the description of Cable required, and that again on the nature of the Sea bottom on which it will be deposited, and the nature of the shore at the various landing places.
SubmarineCables	I presume the chief points in procuring a Cable would be,— 1. The description of Cable required. 2. The exact length of Cable, allowance being made for a surplus in order at any future time to repair defects. 3. The description of shore ends required (and their extent) to prevent abrasion on the rocks, or otherwise.
Wire.	The conducting wire should be of the best quality of Copper, No. 16, annealed, expressly manufactured for Submarine Telegraph purposes, in complete lengths of not less than 700 yards.