

involve considerable difficulties. Still, the liability of the index to slip, and the probability that the indication of the thermometers would be affected by the great pressure to which they were exposed, rendered it very desirable to control their indications by an independent method.

“Two plans were proposed for this purpose, one by Sir Charles Wheatstone, and one by Mr. Siemens. Both plans involved the employment of a voltaic current, excited by a battery on deck; and required a cable for the conveyance of insulated wires. The former plan depended upon the action of an immersed Breguet’s thermometer, which, by an electro-mechanical arrangement, was read by an indicating instrument placed on deck. The latter plan made the indication of temperature depend on the existence of a thermal variation in the electric resistance of a conducting wire. It rested on the equalization of the derived currents in two perfectly similar partial circuits, containing each a copper wire running the whole length of the cable, the sea, and a resistance-coil of fine platinum wire; the coil in the one circuit being immersed in the sea at the end of the cable, and that in the other being immersed in a vessel on deck, containing water the temperature of which could be regulated by the addition of hot or cold water, and determined by an ordinary thermometer.

“The instruments required in Sir Charles Wheatstone’s plan were more expensive, and would take longer to construct; and, besides, the Committee were unwilling to risk the loss of a somewhat costly instrument in case the cable were to break. On these accounts they thought it best to adopt the simpler plan proposed by Mr. Siemens; and the apparatus required for carrying the plan into execution is now completed, and in use in the expedition.

“Meanwhile a plan had been devised by Dr. Miller for obviating the effect of pressure on a minimum thermometer, without preventing access to the stem for the purpose of setting the index. It consists in enclosing the bulb in an outer bulb rivetted on a little way up the stem, the interval between the bulbs being partly filled with liquid, for the sake of quicker conduction. The Committee have had a few minimum thermo-