December 11, 1856.

General SABINE, R.A., V.P. and Treasurer, in the Chair.

The Chairman announced that the President had appointed the following gentlemen Vice-Presidents:—

Major-General Sabine.
The Very Rev. The Dean of Ely.
William Robert Grove, Esq.
William Allen Miller, M.D.
Rear-Admiral Sir James Clark Ross.
Rear-Admiral William Henry Smyth.

The following communications were read:—

I. "Observations made to ascertain the Specific Gravity of Sea-water in the Northern and Southern Hemispheres." By Rear-Admiral PHILIP P. KING, R.N., F.R.S. &c. Received October 15, 1856.

(Abstract.)

The specimens of sea-water experimented upon were collected during the voyage of Her Majesty's Ship 'Adventure,' commencing at Rio de Janeiro, and from thence in succession to St. Catharine's, the River Plate, round the Falkland Islands to Cape Horn, and thence to Valparaiso; and during the ship's return from Valparaiso, through the Strait of Magalhaens to the River Plate and Rio de Janeiro. The series was then completed by the voyage to England.

From the author's observations it may be inferred that the density of the water of the Ocean is, very nearly, identical in all parts of the Atlantic between 40° North and 40° South latitude, the exceptions being due to local causes. Dry winds, by increasing the effect of evaporation, would naturally increase the density of the surface water,

The Royal Society is collaborating with JSTOR to digitize, preserve, and extend access to *Proceedings of the Royal Society of London.* www.jstor.org

whilst on the other hand, winds charged with vapour would have but little effect; and a heavy fall of rain, particularly in equatorial parts of the Ocean, where the sea is so little disturbed, would very sensibly diminish it. It is also very sensibly less in the vicinity of the coast, particularly when the latter is of a shoal character, as is the case between the River Plate and the Strait of Magalhaens, where the whole extent is fronted by a bank having from 30 to 50 fathoms of water.

The mean specific gravity of the water of the South Pacific, contained between the parallels of 10° and 40°, is 1026·48, and between 40° and 60° it is 1026·13.

The results obtained by the author are then compared with the following, viz.—

Observations made on board the 'Hamlet' in 1849, during a voyage from Sydney to England.

Observations made on board the 'Thomas Arbuthnot' in 1849 and 1850, during a voyage from England to Sydney.

Specific gravities of specimens of water collected by Captain J. Elphinstone Erskine, R.N., of Her Majesty's Ship 'Havannah,' the Senior Officer on the Australian Station, during a visit to New Caledonia, the Loyalty Islands, and to those at the south-eastern end of the Solomon Islands.

Specific gravities of specimens of water collected by the late Captain Sir James Everard Home, Bart., R.N., C.B., of Her Majesty's Ship 'Calliope,' the successor of Captain Erskine in the command of the Station, who visited the Friendly and the Fidjee Islands.

Specific gravities of specimens of water collected by Mr. Simpson, who commanded a trading vessel between China and Sydney, from the Indian Ocean between the Strait of Sunda and the Latitude of 36° South.

II. "On the Existence of Silver in Sea-water." By Frederick Field, F.C.S. Communicated by Michael Faraday, Esq., D.C.L., F.R.S. &c. Received October 23, 1856.

In a paper first published by MM. Malaguti, Durocher, and Sarzeaud in the 'Annales de Chimie et de Physique,' xxviii. p. 129,