A. HENRY TAYLOR, 5 Clifton Crescent, Folkestone; and
THOMAS TURNER, J.P., Cullompton,
were balloted for and duly elected Fellows of the Society.

The following Papers were read:—

"Variations in the Barometric Weight of the Lower Atmospheric Strata in India." By Prof. E. DOUGLAS ARCHIBALD, M.A., F.M.S. (p. 169.)

"A Sketch of the Winds and Weather experienced in the North Atlantic between latitudes 30° N. and 50° N. during February and March 1880." By CHARLES HARDING, F.M.S. (p. 142.)

"On the Meteorology of Mozufferpore, Tirhoot, for the year 1879." By CHARLES N. PEARSON, F.M.S. (p. 182.)

Mr. D. WINSTANLEY exhibited and described his Solar Radiograph.

JUNE 16th, 1880.

Ordinary Meeting.

GEORGE JAMES SYMONS, F.R.S., President, in the Chair.

FREDERICK W. BARRY, B.Sc., M.D., C.M., F.S.S., Nicosia, Cyprus;
ARTHUR WILLIAM MARTIN, 21 Alderley Street, Cape Town; and
CUTHBERT E. PEEK, Wimbledon,
were balloted for and duly elected Fellows of the Society.

SENOR ANTONIO AGUILAR, Real Observatorio, Madrid; and
Dr. H. HILDEBRAND HILDEBRANDSSON, Observatory, Upsala,
were balloted for and duly elected Honorary Members of the Society.

The following Papers were read:—

"Ozone in Nature, its Relations, Sources, and Influences, &c." By JOHN MULVANY, M.D., R.N. (p. 184.)

"The Average Height of the Barometer in London." By HENRY STORKS EATON, M.A., F.M.S. (p. 191.)

Notes on a Waterspout observed by Lieut. A. CARPENTER, F.M.S., H.M.S. 'Sparrowhawk,' March 23rd, 1880, at Morant Cays, SE of Jamaica, at a distance of 300 yards.

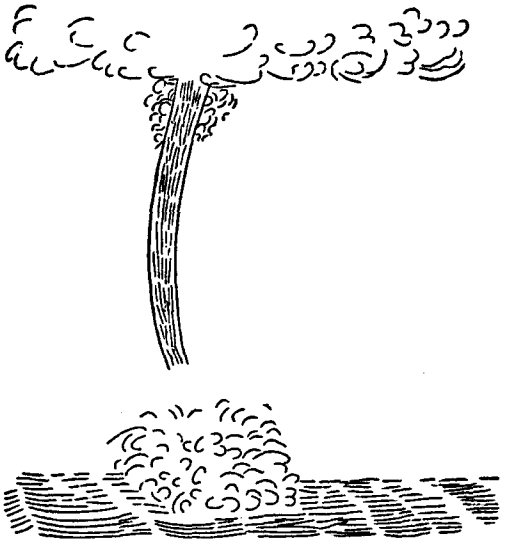
Surface of Water.—The approximate diameter of the area of disturbance was 25 yards; from it appeared a revolving drum of steam which scattered at a height of 40 feet. The water in the vicinity was not disturbed.

Spout.—The tube of the spout was regular, with a dark centre, as if hollow, and edges light, as if thick, giving it the appearance of a hollow tube of steam just condensed, the whole tube being in texture that of steam just after issuing from a pipe before turning quite white. Rapid sinuous waves occasionally ran about the upper portion. The lower end of the tube appeared to reach rather more than half way down to the sea from the cloud above.

The edges of the spout were perfectly regular, except at its junction with the cloud, where they were woolly.

Revolution.—It was impossible to say with certainty which way it was revolving. The revolution of the steam was obvious, but its direction uncertain. The revolution of the tube was not certain, but there was evidently rapid movement of *particles* in revolution.

Clouds.—Nimbus, with tendency to cumulus. A little cumulo-stratus about. Upper clouds, *nil.*



Rough Sketch of Waterspout.

Double Sinuous Form.

The *Barometer* was not affected at the time, but stood a little below its average height during the day. Time of phenomenon 7 a.m.

Bright clear calm day, with heavy clouds in the morning (from which the spout formed) and very hot in the afternoon.

The *Rays* of sunshine were very marked all day.

Capt. TOYNBEE remarked that Capt. T. W. Freeman, of the S.S. 'Nestor,' reports in his log :—February 16th, 1880, 3° 39′ N, 100° 22′ E, "10·30 a.m.—Saw a magnificent waterspout close to the ship. I could plainly see the water running up the central vortex in innumerable parallel lines, while the outside of the vortex seemed to be formed of a network of lace. It lasted about 10 minutes. The whirlwind on the water reminded me of a St. Catherine's wheel." The wind was S, force 1, at 8 a.m., and ESE, force 1, at noon ; at 10 a.m. there was a passing shower.

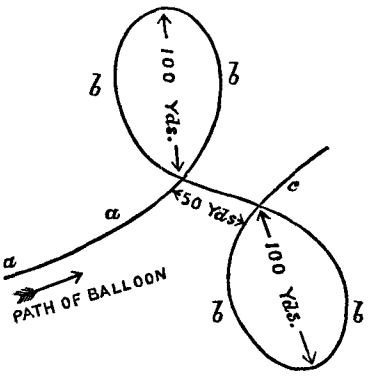
Account of a Balloon Ascent from Lewes on March 23rd, 1880. By Captain J. TEMPLER, R.M.R., and Captain H. ELSDALE, R.E.

The ascent was made in the balloon 'Crusader,' of about 25,000 cubic feet capacity, at 2·10 p.m., with an excellent cargo of gas, lifting 56lb. per 1,000 cubic feet. The ground current at starting was variable ; general direction from SSW ; pressure about ¼lb. per square foot ; rate 14 miles an hour.

From an elevation of 300 up to 500 feet the current was nearly W ; higher up it veered in a more northerly direction, and above 1,500 feet it was NW.

When about 7 miles from Lewes, and over Vert Wood, the balloon, then at about 800 feet, began to diverge from her course in a remarkable manner.

The accompanying sketch represents a horizontal plan of the path of the balloon ; *a*, *a* being her proper course



in approaching the wood, due to the then prevailing current, and *b*, *b*, *b* her subsequent path.

The balloon described, as will be seen, two considerable loops in her horizontal course. During this time her behaviour, viewed in a vertical plane, was extraordinary and unprecedented. After flapping for a few moments, as if suddenly caught between opposite currents, she ran down upon the wood below, in a manner suggestive of a whirlpool of air. It was necessary to throw out great quantities of ballast to check her descent and keep her off the trees. When at last checked in her downward course, and close to the ground, she rose rapidly with the strong ascending force due to the loss of about 150lbs. of ballast. It was then necessary to let out gas by opening the valve, to prevent an upward run, which would have carried the balloon to a dangerous height.

Hardly had an approximate equilibrium been again established, at an elevation of about 1,000 feet, when the same conditions occurred again, the balloon running so rapidly down upon the wood that we were among the trees before we stopped her descent. After this process had been two or three times repeated, and the balloon had arrived for the second time at the point marked *c* in plan, we thought it best to haul her down among the trees for shelter. This was done with the assistance of some woodcutters who were on the spot.

We then towed the balloon captive out of the wood by the aid of two ropes. This operation was attended with much difficulty owing to the fitful and variable character of the wind, and the balloon at one point was beaten down into the trees for a time; whilst elsewhere we found it advisable to keep her close to the ground under the shelter of the trees, to await the subsidence of the blast. Small boughs were whirled about in the wood at times, when the gusts were strong.

Captain Elsdale ascended again about a quarter of an hour later alone, from a point just outside the wood. Neither he nor Captain Templer, who observed the course of the balloon from the ground, then noticed anything irregular or unusual. The currents had however veered a little, so as to carry the balloon more easterly than at first.

DISCUSSION.

Capt. TEMPLER said that the woodcutters who helped them to secure the balloon, verified what had taken place, and he had also seen several boughs blown off the trees.

Mr. SCOTT said that the fact of the balloon being driven down when it came within the influence of the whirlwind would doubtless be held by M. Faye and others to afford strong evidence of the descent of the air in cyclones in general.

The PRESIDENT (Mr. Symons) inquired whether it was simply twigs or branches that were blown off the trees; and, if the latter, the greatest thickness which was noticed to have been broken through?

Capt. TEMPLER said the branches were about the size of a man's arm.

"Results of Meteorological Observations made at Stanley, Falkland Islands, 1875-77." By WILLIAM MARRIOTT, F.M.S., Assistant Secretary. (p. 199.)

"A New Thermograph." By WILLIAM DAVID BOWKETT.

The portion of the instrument directly influenced by variation of temperature consists of a flattened metallic tube (Bourdon's pressure gauge tube) bent into a semicircle. This tube is completely filled with linseed oil, and hermetically sealed. One end of the tube is fixed to the bed plate of the instrument; the other, or free end, is connected by a short link to a simple lever movement, which multiplies the first movement about 2½ times.

The long arm of this lever traverses radially the recording surface, a paper disc. This disc is divided by concentric circles into degrees, and by radii into hours and their sub-divisions. The disc is caused to rotate by means of ordinary clockwork once in twelve hours.

Any variation of temperature to which the instrument is subjected will