

- (h.) Exposure of thermometer to be uniform, or, if that cannot be effected, the four principal stations, or one of them, should mount thermometers on each plan adopted by the other colonies, and compare the readings on each kind of stand with the readings of a rotatory thermometer in the shade.
- (i.) The dry- and wet-bulb thermograph readings should be compared with the readings of the standard or ordinary dry- and wet-bulb thermometers at 9 a.m., 3 p.m., and 9 p.m.; and the readings of the thermograph should be referred to those of the ordinary dry and wet, or the correction supplied.
- (k.) The readings of the barograph should also be compared with the readings of the standard barometer at the same hours, and the differences given if not applied.
- (l.) Rain-gauges to be of one uniform pattern and size of receiving surface—viz., 8" in diameter, and the mouth of receiver to be 1 foot above the surface of the ground, in such a position as to be wholly unsheltered in all directions.
- (m.) *Atmometer*.—The form adopted at Adelaide is recommended. This consists of an outer tank of brick cemented, 4 feet square, internal measurement; and an inner tank of slate or marble, 3 feet square; both tanks being filled with water to the same level. The amount of evaporation is read off by means of a float carrying a graduated rod and vernier, divided 0·01 inch.
- (n.) Observations to be taken at Melbourne, Sydney, Wellington, and Adelaide, at 0h. 43m., Gr. m. t., or 7h. 35m., Washington, in compliance with the request of the late Brigadier-General A. J. Myer, Chief Signal Officer, U.S.

Reports on Resolution XXIV

66. Dr. Hector reported that he had experiments in progress upon the velocity and pressure of the wind, and upon solar thermometers, but they were not sufficiently advanced to be reported upon. Experiments had also been made with the swinging thermometer.

67 Mr. Todd reported that he also had made experiments on the subjects referred to members, but that they were not sufficiently advanced to be reported. He found that the swinging thermometers agreed very closely with the thermometers upon the stand, but were always lower than those upon the old Greenwich stand, which had been in use for so many years. For shade temperature he had for a number of years adopted two modes of mounting thermometers. In one case the instruments were mounted on a modified form of Greenwich stand, which was always kept turned with its back to the sun. The instruments are about 5 feet 6 inches above the ground, and are protected from rain by a wooden shade. His experience did not lead him to think that this is the best mode of mounting thermometers. The best plan, he considered, was a shed with an open louvre roof, which will effectually screen the stand (which should be simply a skeleton frame) and instruments from the sun, and yet leave free access to currents of air. This is the other method adopted at Adelaide, and is well well shown in a photograph submitted to the Conference [put in].

The shed is octagon-shaped, 10 feet wide, the louvre roof being supported by eight stout posts at a height (at the eaves) of about 7 feet 6 inches above the ground. The shed is floored, and the whole painted white. The skeleton frame, on which the thermometers are mounted, revolves on a wooden standard, and has a sloping back of well-oiled and painted canvas.

Comparing the results of the two methods, it is found that the mean temperatures on the stand and in the shed, as well as those at 6 p.m. and 9 p.m., and the minima are nearly identical, whilst the mid-day readings and maxima are higher on the stand. The maximum reading in the summer on the stand is often 3° or 4° higher than in the shed. The difference is less in the winter.

Taking the year through, the temperature on the stand exceeds that in the shed at different hours in the day by the following quantities:—

Mean readings on stand exceed mean readings in shed—

Minimum	—0·1	3 p.m.	..	+1·2
9 a.m.	.. +0·4	6 p.m.	..	—0·1
Noon ...	+1·0	9 p.m.	..	—0·1
Maximum ...	+1·6			

Approximate mean temperature of the year (mean of max. and min.)—

Stand	..	63·6
Shed	..	62·9

Shade Temperature.

68. Mr. Russell reported that he had made experiments with the Greenwich stand that had to be turned twice a day. With another, in which the exterior was composed of louvres, and the interior a box in which perfectly free and carefully arranged ventilation was provided for, at the same time that no radiation from the ground could affect the thermometers, he found that, if the south side of the box was removed, it gave a temperature the same as the shed; but, if the south side or door was shut, the temperature was thereby raised two degrees. Had found that thermometers placed on the south side of a wall, with a box to protect them from morning and evening sun, gave same mean temperature as shed.

69. That he had made a series of comparisons between a swung thermometer and a thermometer in the shed, with the following results:—

	Mean difference	0·2	Swung thermometer being highest.
Morning, 10·5 a.m.—Greatest difference	..	2·3	Swung highest.
Evening, 10·30 p.m.—Greatest difference		0·6	Swung lowest.

Swung in sun sometimes as much as 3·7 higher than swung in shade.