METHODS OF REDUCT ON OF THE READINGS

Hypsometer readings have been converted into equivalent air pressure by means of tables of Regnault (revised by Moritz). This pressure is the same as would be given by a mercury barometer, fully corrected for temperature, altitude and gravity; it is also the same as a *perfect* aneroid would give. The rest of the process of reduction for readings of all three instruments should be the same for all. This is the case for the journey 1913-15. In the two earlier journeys hypsometer readings were worked out with reduced labour by assuming sea-level pressure to be constant 29"·92, and also that air temperature changed 1° F per 331 feet of height. The resulting height should be the height above the level at which the pressure is 29"·92, which may or may not be that of sea-level.

As regards the barometer reductions of these two earlier journeys both mercury and aneroid were computed on Baily's formula. Corrections were applied to the aneroid readings, to make them accord with the mercury readings at all places where these were available also. The deduction of each barometer station of Rām Singh 1900-01 and 1906-7 was made using the previous one as a base station; while for some of Lāl Singh's stations* of 1907-08, Leh Fort, with a constant value of pressure 19·50 inches and temperature 55° F, was used as base station. For others, though Leh was still the base station, instead of the constant values as above, the readings at Leh corresponding to the time and date of the deduced stations were taken off the Daily Weather Report for use in the calculations. In Rām Singh's observations no account was taken of either the diurnal or seasonal change in barometer; but the procedure adopted for the reduction of his observations does give a better representation of the actual temperature of the air. It only remains to be said of Rām Singh's heights that Trotter's height of Camp 3 (Tāsh-kurghān) was used as initial height for the 1900-01 results and the height of Chitrāl for the 1906-7 results.

1913-15 JOURNEY

In the journey of 1913-15 there were three observers, Lāl Singh, Yakūb Khān and Afrāz-gul. Of these Lāl Singh alone used a mercury barometer, in addition to aneroids and hypsometer. He compared his mercury barometer with the barometer at the well-equipped Russian meteorological station, Kāshgar, with the following results :—

TABLE I

Comparison of Barometers at Kāshgar

Date and time of observation	Lāl Singh's Mer. Barometer	Russian Mer. Barometer	Lāl Singh's Thermometer	Russian Thermometer	BAROMETERS REDUCED TO 32° F		DIFFERENCE OF BAROMETERS, THERMOMETERS	
					Lāl Singh's Barometer	Russian Barometer	Russian— Lāl Singh's	Russian— Lāl Singh's
	Inches	*m. m.*	*Fahr.*	*Centd.*	*Inches*	*Inches*	*Inches*	*Fahr.*
6 A.M. 2. 7. 15	25·50	645·7	83°	24°·7	25·37	25·31	−0·06	−6·5
6 A.M. 3. 7. 15	25·42	645·5	79°	25°·7	25·30	25·30	0	−0·7
6 A.M. 4. 7. 15	25·54	645·6	80°	24°·3	25·41	25·31	−0·10	−4·3

At some stations Lāl Singh observed with all three instruments, and the following table shows the discrepancies which occur in these cases between the height by mercury barometer and aneroid, and between mercury barometer and hypsometer.

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* Group—Camp 451, Art-dawān, Camp 455, Kuch-kach-bulak-dawān, Yurung-kāsh below Zailik, Camp 457. On the 1907-08 journey Lāl Singh compared his aneroid with the mercurial barometer at Leh. In the computation of results the aneroid readings were corrected for the discrepancy between mercury and aneroid.