

## AN ACTIVE ROCK GLACIER, WAVBAL PASS, JAMMU AND KASHMIR HIMALAYA, INDIA

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**ABSTRACT.** A currently active rock glacier with a snout elevation of 4 055 m was observed in the Jammu and Kashmir Himalaya. Its formation is ascribed to stagnation of the terminal area of a true glacier.

**RÉSUMÉ.** *Un glacier rocheux actif, Wavbal Pass, Jammu et Kashmir Himalaya, Inde.* On a observé dans le Jammu et Kashmir Himalaya un glacier rocheux en activité avec une altitude de la langue de 4 055 m. Sa formation est attribuée à la stagnation de la zone terminale d'un vrai glacier.

**ZUSAMMENFASSUNG.** *Ein aktiver Blockgletscher am Wavbal-Pass, Jammu- und Kashmir-Himalaya, Indien.* Ein derzeit aktiver Blockgletscher, dessen Zunge auf 4 055 m Meereshöhe liegt, wurde im Jammu- und Kashmir-Himalaya beobachtet. Seine Entstehung wird der Stagnation des Zungengebietes eines echten Gletschers zugeschrieben.

DURING our recent glaciological/glacial geologic studies (National Science Foundation Grant ATM-79211288) in the Jammu and Kashmir Himalaya, we noted what might be the lowest-level active rock glacier (Fig. 1) in this part of the Himalaya. The rock glacier is located at lat.  $34^{\circ} 07' 30''$  N., long.  $75^{\circ} 30' 00''$  E. and is along one of the first major slope rises on the south-western edge of the Greater Himalaya. It faces north-east, has a snout elevation of approximately 4 390 m, and is approximately 1 km long. Evidence of its currently active state is indicated by its surface micro-relief, a terminus that



Fig. 1. Wavbal Pass rock glacier, Jammu and Kashmir Himalaya. View looking south-west.

slopes to angles as high as  $44^\circ$ , reports of slope steepening in the last 40 years related by locals (personal communication from Ghulam Ahmad Mir of Pahlgam, 1979), and apparent recent advance of the snout over vegetated areas.

A heavily debris-covered glacier exists less than 0.8 km east of the rock glacier. The proximity of the former and the fact that the rock glacier issues from a cirque similar to that holding the glacier indicates that the rock glacier probably formed from the terminal part of a cirque glacier and is a more advanced wastage form than the debris-laden glacier.

Stratigraphically, the rock glacier and the debris-covered glacier over-ride moraines produced by east-west flowing ice that date from the last major glacier invasion in the area. Therefore, both have advanced since the last maximum. Currently, however, alpine ice in the local area is being depleted, while remnants of these glaciers in the form of rock glaciers still appear to be active.

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