

SOME ASPECTS OF LANDSLIDES IN SRI LANKA

DEDICATION

by

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xii

SUMMARY

The investigation carried out by the Author into 'Some Aspects of Landslides in Sri Lanka' are set out in the seven Chapters that comprise this dissertation.

In Chapter one, a distinction has been made between 'landslides' and 'Creep phenomena' based on their rates of movement. The basis on which landslides are classified and the three basic types of landslide movement namely Falls, Flows and Slides have been described in brief giving the sub-divisions under each type. A few of the common types of Multiple and Complex landslides are described giving the circumstances in which they occur.

Chapter 2 describes in detail the causes of landslides considered under the two broad categories

(a) Factors contributing to increased shear stress

(b) Factors contributing to reduced shear strength

giving instances where these processes take place in nature as well as through the interference of human agents. The latter part of the chapter is devoted to the causes of Rockfalls which are found to be very different from the causes of other types of landslides, being heavily dependant on the Geological setting.

In Chapter 3, the Geology of the Central Hilly regions of Sri Lanka has been described in brief, touching on the various important physiographic regions which comprise it. The different types of earth mantles that are generally encountered in Central Sri Lanka are described giving in brief the factors that influence the formation and the subsequent behaviour of these mantles. The rainfall pattern in Sri Lanka is briefly indicated along with the extent of seismic activity in the region.

In Chapter 4, the author has given the classification of the various landslides according to the basis given in Chapter I. Where relevant, the Geological setting of a landslide locality has been described in brief, with suggestions as to the causes of some of these landslides and methods of controlling their movements.

Chapter 5 deals in brief with the methods available for the identification of minerals in soils and rocks under the following broad headings

- (a) Rock mineral identification in Hand specimens
- (b) Rock mineral identification based on Optical Mineralogy
- (c) D.T.A. Techniques for soils and rocks
- (d) X-ray diffraction methods for soils and rocks

The results obtained by the application of some of these techniques to the samples collected are presented.

Chapter 6 deals in brief with the various available methods of controlling landslide movements and the circumstances in which each method may successfully be adopted. The importance of improving the surface as well as sub-surface drainage in an affected area has been emphasised.

Chapter 7 deals in brief with the drawbacks experienced by the Author during his investigations and his suggestions as to how these drawbacks should be overcome for the benefit of future investigators. Some of the conclusions reached by the Author are in brief as follows:

- (a) Almost all the rockfalls have taken place along the boundaries between the peneplains showing the distinct possibility that their occurrence is due to a brecciated

zone adjacent to these massive faults in the bedrock

- (b) One does not often come across rotational slips in the hill country of Sri Lanka, as this type of landslide generally occurs in homogeneous terrains such as in clay and silt deposits which are not often come across.
- (c) The most devastating type of landslide encountered in Sri Lanka are slump-mudflows taking place in colluvial terrain (Ragala and Nawalapitiya) which possess the rapidity of an avalanche. However, when they occur in residual terrain they take place at a much slower rate and are not so devastating (Rattota-Gammaduwa Road).
- (d) Colluvial terrains which get saturated during periods of high rainfall precipitation give rise to rockfalls such as at Beragala.
- (e) In the Uva basin most landslide activity is assisted by the fact that easily weatherable feldspar is found contiguous to resistant quartz, in several types of feldspathic metamorphic rocks.

It has been suggested by the Author that the widespread nature of the landslide problem in Sri Lanka justifies the appointment of a committee on landslides comprising of officers from various organizations to actively direct research on landslides and pursue ways and means of minimising damage to life and property as a result to them.

For future investigators on landslides the Author has suggested that devastating types of slope failures in colluvial terrain should be first studied. It is also suggested that the weathering products

