LANDSLIDES of one kind or another occur in all parts of West Virginia but most frequently and with most damage to farm land in the northwestern third of the state. In this area (and adjoining portions of Ohio, Pennsylvania, and Kentucky) the dominant variety of "slide" is characterized by local sub-soil flow resulting in pronounced ridges or bulges in the turf down slope from a crescent-like slumped area, broken and roughened by one or more irregularly transverse crevasses. Scheffel (3), Rodgers (2), Ladd (1), and Sharpe (4) have described landslides of this kind but none has offered a distinctive name. They are locally called "slips" and because of their blister-like bulge it is proposed to call them "blister-slips."

Blister-slips are scattered with great variation in density over an area of about twelve million acres. West Virginia’s portion of this territory (approximately 5 million acres) has a large rural population increasingly dependent on grazing and hillside cropping. In several counties soil slips have developed to the point of serious damage to farm lands while throughout the whole area much expense in road and highway maintenance has resulted.

The general nature and causative factors for soil slips are recognized but detail is lacking to a large extent. The present study, while far from completion, has developed some details and indicated others which should be useful in the prevention and control of this variety of landslide.

PROCEDURE

Reconnaissance was made over the West Virginia area of blister slip occurrence to indicate the relation of slip prevalence to (a) geologic formations and structure; (b) topography, slope, and exposure; and (c) soil and land usage. Three slips near Morgantown are in process of core sampling and mapping. Water levels in and adjacent to these slips are observed from time to time. Laboratory examination of samples from the cores includes microscopic study, determinations of volume weight, specific gravity, mechanical analysis, pH, exchange capacity, exchangeable Ca, Mg, and K, and the amount of organic carbon.

RELATION OF BEDROCK TO BLISTER SLIPS

The geologic formations in the area are characterized by nearly horizontal rock layers in cyclic sequences of about this order: limestone on fissile, pyritic black shale on coal on clay on limestone on massive gray, red, or green shale on sandstone which in turn rests on limestone at the top of another sequence. A single sequence may be as little as 30 or as much as 100 feet thick. A hillside may contain from two to seven cyclic sequences made up of from 20 to 50 individual beds. Observation indicates that blister slips have their origin at or close to the level of the clay bed of certain sequences, that in the whole area there are at least 12, and at any one locality there are usually 3 or 4 of these slip-provoking horizons.

TOPOGRAPHY

Blister slips occur anywhere from within a few feet of hill tops down to stream level, most on slopes between 20 and 35%, lesser numbers on slopes to about 15% and up to 50%. On slopes over 35% blister slips frequently develop into slides. There is some indication that slips at the horizon of geologic sequence develop within a slope range peculiar to that sequence. While slips are definitely most abundant in coves, some do occur on sloping divides where surface drainage should be exceptionally good. Terraces of almost step-like regularity mark many hillsides. Some are rock terraces, others are the result of "creep." Slips more often start above or on the creep terraces. The exposure of a slope have little effect on the incidence of slips.

SOILS AND LAND USE

The hillside soils of the region are mainly Meigs, Dekalb, Westmoreland, Upshur, and Brook. If remapped today, the Dekalb areas would be classed as Muskingum or Gilpin and the Westmoreland would be considerably enlarged. Blister slips occur frequently in all of these except the Upshur. By far the greatest number of recent slips are seen in pastures although a few are in cultivated fields and occasionally one may find a...