the slate hills that run from the Kyles of Bute to Loch Lomond. Wherever any mass of rock occurs differing much from those around it in its power of resisting decomposition it affects the scenery, rising into a prominence where it is durable, or sinking into lower ground where it is not. This relation between relative destructibility and external configuration is traceable in every part of Scotland, and indeed may be regarded as the law that has mainly determined the present topography of the country.

The Highlands are separated into two completely disconnected and in some respects contrasted regions by the remarkable line of the Great Glen, which runs from Loch Linnhe to Inverness. In the northern portion the highest ground rises along the west coast, mounting steeply from the sea to an average height of perhaps between 2000 and 3000 feet. The watershed consequently keeps close to the Atlantic seaboard, indeed in some places it is not more than a mile and a half distant from the beach. From these heights, which catch the first downpour of the western rains, the ground falls eastwards, but with numerous heights that prolong the moun­tainous character, to the edge of the North Sea and the line of the Great Glen. The best conception of the difference in the general level on the two sides of the watershed may be obtained by observ­ing the contrast between the lengths of their streams. On the western side the drainage is poured into the Atlantic Ocean after flowing only a few miles, while on the eastern side it has to run at least 30 or 40. At the head of Loch Nevis the western stream is only 3 miles long ; that which starts from the eastern side has a course of some 18 to the Great Glen. Throughout the northern or north-western region a general uniformity of feature characterizes the scenery, betokening even at a distance the general monotony in the structure of the underlying schists. But the sameness is relieved along the western coast of Sutherland and Ross by singular groups of cones and stacks (to be afterwards referred to), and farther south by the terraced plateaus and abrupt conical hills of Skye, Rum, and Mull. The valleys run for the most part in a north-west and south-east direction, and this is also generally true of the sea lochs.

The south-eastern region of the Highlands, being more diversi­fied in geological structure, presents greater contrasts of scenery. In the first place, its valleys chiefly run in a south-west and north­east direction and so also do most of the lakes and sea lochs. This feature is strikingly exhibited in the western part of Argyllshire. But there are also numerous and important transverse valleys, of which that of the Garry and Tay is the most conspicuous example. Again, the watershed in this region is arranged somewhat differ­ently. It first strikes eastward round the head of Loch Laggan and then swings southward, pursuing a sinuous course till it emerges from the Highlands on the east side of Loch Lomond. But the streams flowing westward are still short, while those that run north-east and east have long courses and drain wide tracts of high ground. The Tay in particular pours a larger body of water into the sea than any other river in Great Britain. Moreover, the occurrence of many bosses of granite and other eruptive rocks gives rise to various interruptions in the monotonous scenery of the crystalline schists which constitute the greater part of the country. But a marked contrast may be traced between the configuration of the north-eastern district and the other parts of this region. In that area the Grampians rise into wide flat-topped heights or elevated moors often over 3000 and sometimes exceeding 4000 feet in height and bounded by steep declivities or not infrequently by precipices. Seen from an eminence on their surface, these plateaus look like fragments of an original broad tableland, which has been trenched into segments by the formation of the transverse and longitudinal valleys. Farther to the south-west in Perthshire, Inverness-shire, and Argyllshire, they give place to the ordinary hummocky crested ridges of Highland scenery, some summits on which, however, exceed 4000 feet in elevation. For the probable meaning of this transition from broad flat-topped heights to narrow crests and isolated peaks, see below (pp. 525-526).

Besides the principal tracts of low ground in the Highlands already referred to, there occur numerous long but narrow strips of flat land in the more important valleys. Each strath and glen is usually provided with a floor of detritus which, spread out be­tween the bases of the bounding hills, has been levelled into meadow-land by the rivers, and furnishes as a rule the only arable ground in each district.

2. The southern uplands form the most southerly of the three transverse belts in Scottish topography. Extending from St Patrick's Channel to St Abb’s Head, they constitute a well-defined belt of hilly ground, but present a striking contrast to the scenery of the Highlands. The rocks which underlie them consist almost wholly of Silurian grits, greywackes, and shales, which have been greatly plicated, the general axis of the folds running parallel with that of the whole belt, or from south-west to north-east. These uplands, though much less elevated than the Highlands (their highest point is not more than 2764 feet above the sea), rise with scarcely less abruptness above the lower tracts that bound them. Their north-western margin for the most part springs boldly above

the fields and moorlands of the midland valley, and its boundary for long distances continues remarkably straight. Their southern and south eastern limits are in general less prominently defined, except to the west of the Nith, where they plunge into the sea. Between the Solway Firth and the Cheviot Hills they pass under a line of high and picturesque escarpments which runs from Birrenswark in a north-east direction. In Berwickshire, however, they again tower boldly above the plain of the Merse. These up­lands are distinguished above all by the smoothness of their sur­face. They may be regarded as a rolling tableland or moorland, traversed by innumerable valleys which with gentle verdant declivities conduct the drainage to the sea. This character is impressively seen from the heights of Tweedsmuir. Wide mossy moors, lying 2000 feet or more above the sea and sometimes level as a racecourse, spread out on all sides. Their continuity, how­ever, is interrupted by numerous intervening valleys which separate them into detached flat-topped hills. Unlike the Highlands, these southern heights comparatively seldom present precipices of naked rock. Where the rock projects it more usually appears in low crags and knolls, from which long trails of grey or purple debris descend the slopes till they are lost among the grass. Hence, besides being smooth, the uplands are pre-eminently verdant. They form indeed excellent pasture-land, while the alluvial flats in the valleys and even some of the lower slopes of the hills are fitted for corn and green crops.

This uniformity of external aspect is doubtless traceable to the prevalence of the same kind of rocks and the same geological struc­ture. The Silurian greywackes and shales that underlie almost the whole of these uplands weather generally into small angular débris, and at a tolerably uniform rate of disintegration. But slight differences may readily be detected even where no feature interferes in a marked way with the general monotony. The bands of massive grit and coarse greywacke, for example, break up into larger blocks and from their greater hardness are apt to project above the general surface of the other and softer rocks. Hence their line of trend, which like that of all the other strata is in a north-easterly direction, may be followed from hill to hill even at a distance by their more craggy contours. Only in the higher tracts of these uplands are any rugged features to be seen that remind one of the more savage character of Highland scenery. In the heights of Hartfell (2651 feet) and Whitecoomb (2695), whence the Clyde, Tweed, Annan, and Moffat Water descend, the high moorlands have been scarped into gloomy corries, with crags and talus-slopes, which form a series of landscapes all the more striking from the abrupt and unexpected contrast they present to everything around them. In Galloway, also, the highest portions of the up­lands have acquired a ruggedness and wildness more like those of the Highlands than any other district in the south of Scotland. For this, however, there is an obvious geological reason. In that region the Silurian rocks have been invaded by large bosses of granite and have undergone a variable amount of metamorphism which has in some places altered them into hard crystalline schists. These various rocky masses, presenting great differences in their powers of resisting decay, have yielded unequally to disintegration : the harder portions project in rocky knolls, crags, and cliffs, while the softer parts have been worn down into more flowing outlines. The highest summit in the south of Scotland—Merrick (2764 feet) —consists of Silurian strata much altered by proximity to the granite, while the rest of the more prominent heights (all in Kirkcudbrightshire)—Rinns of Kells (2668 feet), Caimsmore of Carsphairn (2612), and Cairnsmore of Fleet (2331)—are formed of granite.

The watershed of the southern uplands is of much interest in relation to their geological history. It runs from the mouth of Loch Ryan in a sinuous north-easterly direction, keeping near the northern limit of the region till it reaches the basin of the Nith, where it quits the uplands altogether, descends into the lowlands of Ayrshire, and, after circling round the headwaters of the Nith, strikes south-eastwards across half the breadth of the uplands, then sweeps north and eastwards between the basins of the Clyde, Tweed, and Annan, and then through the moors that surround the sources of the Ettrick, Teviot, and Jed, into the Cheviot Hills. Here again the longest slope is on the east side, where the Tweed bears the whole drainage of that side into the sea. Although the rocks throughout the southern uplands have a persistent north-east and south-west strike, and though this trend is apparent in the bands of more rugged hills that mark the outcrop of hard grits and greywackes, nevertheless geological structure has been much less effective in determining the lines of ridge and valley than in the Highlands. On the southern side of the watershed, in Dumfries­shire and Galloway, the valleys run generally transversely from north-west to south-east. But in the eastern half of the uplands the valleys do not appear to have any relation to the geological structure of the ground underneath.

3. Between the two belts of high ground lie the broad lowlands of central Scotland, or the midland valley, bounded on the north side by the range of heights that extends from the mouth of the