that it is continued in Vaigatch Island and Nova Zembla *(q.v.).* Its dome-shaped summits, which attain a height of about 1000 feet above the *tundra* (Vozaipai, 1312 feet), are completely bare of trees, and its stony crags are separated by broad marshy tundras. It is uninhabited

II. The Obdorsk or Northern Urals, which begin within a few miles of the head of Kara Bay (Konstantinoff Kamen, in 68° 30' N. lat., 1490 feet), and extend in a south-western direction as far as the 64th parallel, form a distinct ridge of mountains, stony and craggy, sloping steeply towards the south-east and gently to­wards the marshes of Russia. Its highest elevations are on the 66th and 67th parallels (3600 to 4370 feet). Sometimes the main chain has on the west two or three secondary ones, formed by the upheaval of sedimentary rocks, and it is towards the southern ex­tremity of one of those that the highest peaks of the Urals occur (Sablya, 5407 feet, in 64° 47' N. lat., and Teplos-iz, 5540 feet, in 63° 55'). Dense coniferous forests, consisting chiefly of fir, pine, and larch, cover the slopes of the mountains and the narrow valleys ; but, as the less hospitable latitudes are approached, every species except the larch gradually disappears and the upper limit of vegeta­tion (2400 feet in the south) rapidly descends till it reaches the very base of the mountains towards the Arctic Circle, and forest vegetation disappears altogether about 65° lat. (67° in the plains of Russia and Siberia). These inhospitable hill-tracts, rising from the wide tundras which stretch for hundreds of miles to the west and east of the Urals, are quite uninhabited, save for a few hunters, who visit them in the summer in pursuit of the reindeer which here seek refuge from the mosquitoes of the lowlands.

III. Although usually reckoned to the Northern Urals, the section between the 64th and 61st parallels has again a wholly distinct character. It is represented on the maps as a girdle of chains, 20 to 35 miles in width, running north and south, and separated by long valleys. From the broad plateaus, or *parmas,* which stretch to­wards the north-west, it might be conjectured, however, that the structure is more complicated ; and the recent researches by MM. Fedoroff and Ivanoff have, in fact, shown that what is described as the main chain (or, more correctly, the main water-parting) of the Urals is a succession of plateaus stretching in a north-westerly direction,@@1 with broad, flat, marshy valleys, and rising here and there into isolated dome-shaped flat summits, mostly under 3000 feet (Yang-tuny, 62° 43' N. lat., 4166 feet). The whole region, except the mountain summits, is densely clothed with coniferous forests, birch appearing only occasionally in the south, and even the Scotch pine only in a few valleys. This part of the range is also uninhabited.

IV. The Middle Urals, between 61° and 55° 30' N. lat., and about 80 miles in breadth, are the best known, as they contain the richest iron, copper, and gold mines (Bogosłovsk, Gorobła- godatsk, and Ekaterinburg Urals). The Deneshkin Kameñ in the north (4238 feet) and the Tara-tash in the south (2800 feet) may be considered as marking the limits of this section. Here the oro­graphical structure is still more complicated, and the necessity of distinguishing the separate upheavals becomes still more apparent. In the north (61st to 60th parallel) there is a succession of chains with a distinct north-eastern trend ; and it still remains an open

question whether, for two degrees farther south, the whole of the gosłovsk Urals (5135 feet in the Konjakoff Kameñ, and from 3000 to 4000 feet in several other summits) do not consist of chains having the same direction. Farther south a broad swelling, which crosses northern Russia from the Kanin peninsula in the north to the sources of the river Petchora in the south-east, joins the Urals, and is continued into Asia by the plateau of the Tura and Isset rivers. To the south of the Katchkanar (2891 feet), *i.e.,* from the 58th to the 56th parallel, therefore, the Urals assume the ap­pearance of broad swellings from 1000 to 2000 feet in height, deeply ravined and with gentle slopes. These low and ravine-broken plateaus, the higher parts of which can be reached from Russia on a very gentle gradient, have been utilized for centuries as the chief highway to Siberia. They have none of the aspects of an alpine tract ; and the traveller to Siberia cannot but experience a feeling of disappointment as his horses, still running at full speed, reach the marble column, inscribed “Europe” on one side and “Asia” on the other, which marks the water-parting (1180 feet) between the Russian and Siberian rivers. The eastern slope is steeper, but even there Ekaterinburg is only 350 feet below the water-parting. The valleys have a decidedly south-eastern direction, and such is also the course of the railway from Perm to Tyumeñ, as soon as it reaches the Siberian slope. The plateau-like swellings of this division terminate farther south in a depression, about 70 miles broad, stretching from north-west to south-east, where the water­parting has a height of only a few hundred feet. The Middle Urals are still densely forested, notwithstanding the immense quantities of timber and fuel which are constantly being taken from them. The vegetation is much more varied than in the north (birch, oak, lime, and maple), a rich undergrowth of bushes growing to­gether with the conifers, and the banks of the rivers being adorned

with the wild cherry *(Prunus padus),* poplar, willow, and alder. The valleys and lower slopes are covered with a thick sheet of rich humus and have become the site of large and wealthy villages. The mines also have given rise to a considerable population. The southern parts of the Middle Urals may be estimated to have a total agricultural and mining population of nearly 1,500,000.

V. The Southern Urals (from 55° 30' to 51° N. lat.) are now well known both orographically and geologically;@@2 and it appears that, instead of consisting of three chains of mountains radiating from Mount Yurma, as was formerly supposed, they consist of a series of three parallel chains running north-east and south-west, and therefore constitute a quite independent part of the Ural com- plexus. The Ural-tau proper is a low sinuous chain extending due south-west and hardly exceeding 2200 to 2800 feet in height. It slopes gently towards the north-west and abruptly towards the south-east, where several short and low chains (Ilmen, Irenty, &c. ) rise in the basins of the Mias and the Ui. In the west a chain separated from the Ural-tau by a longitudinal valley accompanies it throughout its entire length. This, although pierced by the rivers which rise in the longitudinal valley just mentioned (Ai, upper Byełaya), nevertheless rises to a much greater height than the Ural-tau. Its wild stony ridge has an altitude of 3375 feet in the Yurma, and 3950 feet in the Taganai; while the Urenga and Iremel Mountains exceed 3500 feet, and the peaks bearing these names reach 4013 and 5040 feet respectively. Farther west, another series of chains, parallel to the above, is described under various names (Zurat-kul, Zigałga, Nary) ; they reach nearly the same altitudes (Zigałga and Yaman-tau, 4880 and 5400 feet respect­ively). A number of other chains, also parallel and ranging from 2000 to 3000 feet, accompany them in the west. The whole system has thus the character of a swelling nearly 65 miles wide, inter­sected by a series of parallel chains, the results of as many foldings of the sedimentary rocks, which have undergone extensive denuda­tion. Some of the chains are exceedingly craggy, and most of them are covered with masses of angular *débris,* sometimes concealed under thick sheets of marshy mosses. The gorges by which the rivers pierce the Devonian limestones on their way towards the lower terraces are most picturesque in the west, where the Urals assume an alpine character. The forests are no longer continuous ; the gentle slopes of the hilly tracts are dotted with woods, mostly of deciduous trees, while the hollows contain rich pasture grounds. The thick layers of sedimentary rock which are lifted *en masse* on the western slope cover a wide area farther to the west in the shape of a plateau which already assumes the features of a steppe (see Ufa). The whole region, formerly the abode of Bashkirs, is rapidly being colonized by Russians.

Farther south, between the 53d and 51st parallels, the Ural-tau, still composed of crystalline rocks (diorite, serpentine, granite), continues in the same direction, but is covered as we advance by horizontal Cretaceous deposits and, except when deeply trenched by rivers, assumes the appearance of a plateau which hardly reaches 1500 feet. It is continued farther south-west (towards the Volga) under the name of Obschiy Syrt. A narrow longitudinal valley watered by the Sakmara (right-hand tributary of the Ural) separates the Ural-tau and the Guberlinsk Mountains (as the preceding tract is called) from the Irendyk chain, about 20 miles in width, which reaches 2300 feet in its higher parts. It is cut by the Ural river at Orsk and extends farther south-west towards the sources of the Ilek ; while in the east a wide granitic plateau, with only a few remainders of its former Devonian and Carboniferous covering, some 130 miles broad and nearly 1000 feet high, lies about the sources of the Siberian rivers, and is known by such local names as Kara- Edyr-tau, Djabik-Karagai, and the like.

VI. As a rule the Urals are not shown on maps to the south of the great bend of the Ural river, where quite independent ranges of hills, or flat swellings, are represented (Jaman-tau, Mugojar Hills). It appears, however, from recent exploration@@3 that the Mugojar Hills may safely be regarded as a farther continuation of the upheavals which constitute the Urals. The Cretaceous plateau north of the Ural river is continued to the south of it ; it again assumes a mountainous character in the Jaman-tau (50° N. lat.) and joins the Mugojar Hills, which consist of diorites and crystalline slates and reach their maximum in the Airuk Mountain (about 1000 feet). A range of heights connects the Mugojar Hills with the Ust-Urt plateau (see Transcaspian Region). It is hardly necessary to say that these plateaus and flat hills to the south of the river Ural have all the characters of the Ciscaspian and Transcaspian steppes.

*Geology.—*Whatever the variety of the orographically independent systems of mountains and plateaus embodied under the general name of Urals, a certain “ geotectonic ” similarity may be observed in all of them. Denudation has been active on so grand a scale that entire strata of sedimentary deposits have been removed from their original positions and scattered in the form of *debris* to distances of more than 100 miles on both sides of the Urals, so as

@@@1 See map in the *Izvestia* or the Kuss. Geogr. Soc., vol. xxii., 1886.

*@@@2 Carte Géologique,* sheet 139, *ut sup.*

@@@3 P. Nazaroff, in *Bull. de la Soc. des Naturalistes de Moscou,* 1886, No. 4.