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## Volcanic Necks of Piatigorsk, Southern Russia

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Silver Lake coal, Beede. (Trans. Kansas Acad. Sci., Vol. XV. p. 80, 1898 ) One of the upper coal seams of the lower Waubensee (Atchison) shales. It is mined in Shawnee county, Kansas, at Silver Lake, and also southwest of Topeka.

Spadra coal, Winslow. (Arkansas Geol. Sur., Ann. Rept. 1888, Vol. III, p. 32, 1888 ) Near middle of Arkansan series. in Johnson county, Arkansas.

Spring Creek coal seam, Broadhead. (Missouri Geol. Sur., Rept 1873-4, p. 236, 1874.) Believed to be the same as the Mystic or Mendota coal of Putman county, Missouri, adjoining Sullivan county on the north. It lies in the Henrietta division.

Summit coal, McGee. (Trans. St. Louis Acad. Sci., Vol V, p. 334, 1888.) In Macon county, Missouri. the highest seam mined. Upper part of Cherokee.

Tebo coal, Winslow. (Missouri Geol. Sur., Vol. I, p. 134, 1891.) Appellation of the chief seam in Henry county, Missouri. Horizon is middle Cherokee.

Thayer coal, Haworth. (Kansas Univ. Quart., Vol. III, p. 305, 1895.) A seam in the median part of the Thayer shales, in Neosho county, southeastern Kansas.

Topeka coal, Haworth. (Kans. Univ. Quart., Vol. III, p. 273, 1895.) One of the seams in the Platte shales. in Shawnee county, Kansas.

Warrensburg coal, Broadhead. (Missouri Geol. Sur., Iron Ores and Coal Fields. pt. ii, p. 184, 1873 ) A thin seam in the upper part of the Cherokee division, in Johnson county, Missouri

Wapello horizon, Bain. (Iowa Geol. Sur., Vol. IX, p. 99, 1899.) An extensive coal in southeast Iowa, lying in the lower part of the Cherokee.

Waverly coal, Winslow. (Missouri Geol. Sur., Vol. IX, Sheet Rept. No. 1, p. 60, 1892 ) In eastern Lafayette county, Missouri, the lowest seam mined. Cherokee division.

Wheeler coal, St. John. (Iowa Geol. Sur., Vol. I, p. 276, 1870.) One of the lower coals of the Marais des Cygnes, in Warren county, Iowa.

What Cheer coal field, Bain. (Iowa Geol. Sur., Vol. IV, p. 284, 1895. This coal seam, in Keokuk and Mahaska counties, Iowa, lies very near the base of the Cherokee.

Wier City-Pittsburg View, Haworth and Kirk. (Kansas Union Quart., Vol. II, p. 105, 1894.) In southeast Kansas. the most important seam of the Cherokee.

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## VOLCANIC NECKS OF PIATIGORSK, SOUTHERN RUSSIA.

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BY CHARLES B. KEYES.

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(Abstract.)

On the Rostov and Wladikavkas railroad, in southern Russia, there rises out of the flat steppes, a few hours before reaching the last mentioned place, a remarkable group

of steep-sided hills, or mountains, each isolated from the others. The principal town of the region is Piatigorsk, which is about ten miles from the railway station of Mineralniya Vody.

The purpose of referring at this time, to these hills, which reach elevations from 1,500 to 2,500 feet above the plain (figure 5), is to call attention to certain geological phenomena that are unusually well developed; and incidentally to exhibit photographs of the highest mountain peak in Europe, which is nearby.

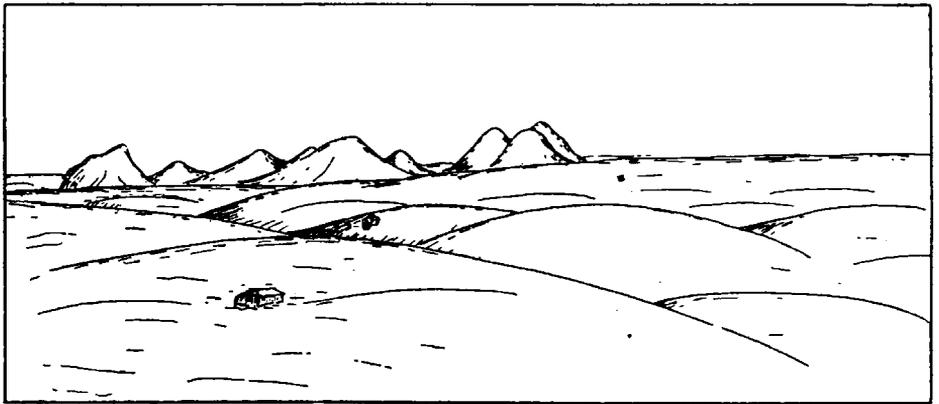


Figure 5. Volcanic necks of Piatigorsk, four miles away.

The plain around Piatigorsk is made up of flat-lying Tertiary deposits. Out of these rise the isolated volcanic mountains, composed mainly of white or gray trachytes. The ash and scoriaceous materials have all been removed, leaving the harder lavas which occupied the pipes of the vents and the central parts of the cones, standing out in abrupt mounds. These vents appear to represent the dying stages of the great outburst which gave birth to the towering volcanic cone of Mt. Elburz, twenty miles distant.

Authorities have long considered Mt. Blanc, in the Alps, to be the highest point in all Europe. Its height above sea-level is placed at 15,780 feet. Recent measurements show that the Caucasus mountains present no less than five peaks, every one of which is more elevated than any part of the Swiss district.

Mt. Elburz is an isolated cone on the north flank of the great Caucasian chain, and rises to a height of 18,526 feet

above the level of the Black sea, or nearly 3,000 feet beyond the highest level of Mt. Blanc. As an elevation Mt. Elburz is a much more striking object of the landscape than the Swiss mountain, for the reason that it rises directly out of the low-lying steppes, the level of which is only a few hundred feet above sea-level, so that it slopes from peak to foot nearly down to the datum plane, while the base of Mt. Blanc is several thousand feet above the sea. Kasbec (16,546 feet), Dikhtau (16,925 feet), Koshtantau (17,096 feet), and Ihkara (17,278 feet) are names of other high peaks in the more central parts of the Caucasus.

Mt. Blanc is visible about 100 miles. Mt. Elburz is said to be visible 200 miles distant. That is to say: If Elburz were located at Kansas City we could from the State House steps on clear days catch glimpses of its snow-crowned top. The photographs were taken on one of the excursions of the International geological congress, and the larger one is probably the best ever obtained of the mountain.

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## A COMPARISON OF MEDIA FOR THE QUANTITATIVE ESTIMATION OF BACTERIA IN MILK.

BY C. H. ECKLES.

During the past three years the writer has made quantitative estimates of the bacteria in a large number of milk samples. During this work certain facts developed which have very important relations to the accuracy of such estimates.

It was early observed that ordinary peptone agar is entirely unsuited for the purpose as a very small number develop as compared with the same medium to which 2 per cent. of lactose has been added, or with gelatine. It was also observed that when students were given peptone agar to use in isolating milk bacteria, that they very rarely, if ever, found the acid organism, although it often constituted a majority of the entire number present in the milk.