sheep in the valley of the Arys, while lower down, as far as Julek, the Iginchis carry on agriculture. AU this applies of course only to the right bank ; on the left the moisture is absorbed by the hot winds which cross the Kyzyl-kum sands towards the river. The dryness of the atmosphere has a marked effect upon the Syr when it gets below Julek, the Kara-kum sands being then on its right. Ten miles below Perovsk the river traverses a marshy depression (the bottom of a lake not yet fully dried up), where it divides into two branches— the Jamaπ-darya and the Kara-uzyak. The latter spreads out into marshes and ponds, from which it again issues to join the former at Karamakchi, after a course of 8o m. The main arm, owing to its shallowness and sinuosity, is veιy difficult to navigate, and the difficulty is increased by the rapidity of the current and the want of fuel. Between Kazalinsk and the Sea of Aral (158 ft.) navigation becomes somewhat easier, except for the last iom., where the river divides into three shallow branches before entering the “ Blue Sea.” All three have at their mouths sandy bars with only 3 ft. of water.

Two former right-hand tributaries of the Syr—the Chu and the Sary-su—now disappear in the sands some 60 m. before reaching it. The Chu, which is 600 m. in length, rises in the Tian-shan south-west of Lake lssyk-kub and as the Kashkar flows towardsLakelssyk-kub but a few miles before reaching that lake turns suddenly to the north- west, enters under the name of Chu the narrow gorge of Buam, and, piercing the snow clad Kunghei Ala-tau, emerges on its northern slope, having descended from 5500 ft. to less than 2000 in a distance of not more than 50 m. In this part of its course it receives from the right the Kebin, whose high valley equals in size that of the upper Rhone. It then flows north-westwards through the valley of rish- pek, and, avoiding the Muyun-kum sands, describes a wide curve to the north before finally taking a western direction. Numberless streams flow towards it from the snow-clad Alexander Mountains, but they are for the most part lost in the sands before reaching it. The Talas, 170 m. long, formerly an affluent of the Chu, which rises in the highest parts of that range, pierces the Cha-archa Mountains, and, flowing past Aulie-ata on the south border of the Muyun-kum, enters the salt lake of Kara-kul 60 m. from the Chu. The Chu ter- minates in the Saumal-kul group of lakes, 60 m. from the Syr. Another elongated group of lakes—the Uzun-kul—near the above, receives the Sary-su, which has a length of nearly 570 m. and flows rapidly in a narrow channel along the western edge of the northern Famine Steppe (Bekpak-dala).

The delta of the Syr begins at Perovsk, whence it sends a branch to the south-west, the Jany-darya (New River), which formerly reached the south-eastern comer of the Sea of Arab very near to the mouth of the Amu-darya. The Kirghiz affirm that a canal dug for irrigation by the Kara-kalpaks gave origin to this river. It had, however, but a temporary existence. A dam.erected by the people. of Khokand at Ak-mechet (Perovsk) caused its disappearance, and the Russians found nothing but a dry bed in 182o. . When the dam was removed the Jany-darya again reappeared, but it failed to reach the Sea of Aral; in 1853 if terminated in Lake Kuchka-denghiz, after a course of 250 m.; all traces of its bed were then lost in the sand. Five centuries ago, in the time of Timur, the Mongol prince of Samar- kand, the Jany-darya brought the waters of the Syr to the. Daukara lakes, close by the present mouth of the Amu. The series of old river-beds in the Kyzyl-kum, which are still seen above Perovsk, indicates that the Syr had a constant tendency to seek a channel to the south-west, and that its present delta is but *a* vestige of what it was once. At a still more remote period this delta probably comprised all the space between the Kara-tau and the Nura-tau in Samarkand ; and the series of elongated lakes at the base of the Nura- tau—the Tuz-kaneh and Bogdan-ata lakes—represent an old branch of thσdeltaof the Syr which probably joined the Zarafshan before reaching the Amu. The cause of this immense change is simply the rapid desiccation of all the northern and central parts of Asia, due to the fact that we are now living in the later phase of the Lacustrine period, which has followed the Glacial period. The extension of the Caspian Sea as far as the Sary-kamysh lakes during the post-Pliocene period and the extension of the Sea of Aral at least 100 m. to the east of its present position are both proved by the existence of post-Pliocene marine deposits. (P. A. K. ; J. T. Be.)

**SYR-DARYA,** or Syr-Darπnsk, a province of Russian Turkestan, lying on both sides of the Syr-darya river, from its embouchure in the Sea of Aral up to Khojent, where it issues from the mountain region of the Tian-shan. The province is bounded N. by the provinces of Turgai, Akmolinsk and Semipalatinsk; E. by Semiryechensk; S. by Ferghana, Zarafshan, Bokhara and Khiva; and W. by Khiva and the Sea of Aral. Its area (166,000 sq. m.), its population (over a million and a half) and the city of Tashkent make it the most important province of Russian Turkestan.

The south-eastern boundary runs along the Chotkal Mountains (14,000 ft.), which separate the river Chotkal from the river Naryn, and join the Alexander Mountains on the east. A series of short chains, such as the Talas-tau and Ala-tau, fringe the above on the north-west, and occupy the south-east of the province. The snow-clad summits of the Talas-tau reach 14,000 to 15,000 ft. in altitude, and immense glaciers occur about Manas Mountain. This range seems to run from west-south-west to east- north-east; the other flanking chains have a decidedly south­westerly direction, and are much lower, the outlying ranges having rather the character of broad plateaus above 2000 ft. in altitude, where the Kirghiz find excellent pasture-grounds. Some of them, such as the Kazyk-urt, rise isolated from the steppe. The Kara-tau is quite separate from the preceding and runs at right angles to them—that is,.from north-west to south- east. It belongs therefore to another series of upheavals prevalent in western Asia, to which Richthofen has given the name of the “ Kara-tau series.” Its length is about 270 m., and its average altitude about 5000 ft., rising at some points to 6000 and 7000 it. lt separates the river Syr-darya from the river Chu, and its gentle south-western slope contains the sources of a multitude of streams which water the oasis around the town of Turkestan.

The mountainous, tracts occupy, however, only a small part of Syr-darya, the rest is steppe. Three different areas must be dis­tinguished—the Kyzyl-kum, the Muyun-kum or Ak-kum, and the Kara-kum. The Kyzyl-kum (red sands) sands stretch between the Amu and the Syr, and have a gradual ascent from 160 ft. at the Sea of Aral to 1500 and 2000 ft. in the south-east. They are partly shifting, partly stationary (see Kara-Kum). In the west the sur­face is overlaid with remains of Aral-Caspian deposits. As the Tian-shan is approached the steppe assumes another character : a thick sheet ot loess girdles the foothills and forms the fertile soil to which Turkestan is indebted for its productive fields and gardens. The Kara-kum sands, situated north-east of the Sea of Arab are manifestly a former bottom of the lake.

Tn the east the steppe yields some vegetation and is visited by the Kirghiz. The barkhans do not shift, being covered with *CαUigonum, Tamarix, Hοloχylon αnernοdendron.* The Muvun-kum or Ak-kum steppe, between the Kara-tau Mountains and the Chu River, is quite uninhabited, except in the loess region at the northern base of the mountains. (For the geological history of the western Tian-shan ranges see Tian-Shan.) Throughout the Cretaceous and earlier Tertiary periods the lowlands of Syr-darya were under the sea. The character of the region during the post-Pliocene period remains unsettled. A girdle of loess, varying in width from 30 to 50 m., encircles all the mountain tracts, increasing in extent in Bokhara and at the lower end of the valley of Ferghana. It seems certain that during the Lacustrine period the Caspian was connected by a narrow gulf with the Aral basin, which was then much larger, while another inland sea of great dimensions covered the present Balkash basin, and at an earlier period may have been connected with the Aral basin. Recent traces of these basins are found in the steppes.

Tne chief river of the province is the Syr-darya *{q.υ.).* The frontier touches the eastern shore of the Sea of Aral, and numerous small lakes, mostly salt, are scattered over the sandy plains. A few lakes of alpine character occur in the valleys of the hilly tracts.

The climate of the province varies greatly in its different parts. It is most severe in the mountain region; and in the lowlands it is very hot and dry. Asa whole, the western parts of the Tian-shan receive but little precipitation, and are therefore very poor in forests. In the lowlands the heat of the dry summer is almost insupportable, the thermometer rising to 1110 F. in the shade; the winter is severe in the lower parts of the province, where the Syr remains frozen for three months. The average yearly temperature at Tashkent and Kazalinsk respectively is 58∙3o and 46∙40 (January, 29o and 120 ; July, 77'5° and 780).

The terraces of loess mentioned above are alone available for cultivation, and accordingly less than 1 % (o∙8) of the total area of the province is under crops, the remainder being either quite barren (57 %) or pasture land (42 %). ln the few cases where cultivation is possible, jt is carried to great perfection owing to a highly developed system of irrigation—two crops being gathered every year. Wheat and barley come first, then peas, millet and lentils, which are grown- in the autumn. Rye and oats are grown only about Kazalinsk. Cotton is cultivated. Gardening is greatly developed. Sericulture is an important source of income. Livestock breeding is largely pursued, not only by the nomads but by the settled population. Fishing is prosecuted to some extent on the lower Syr. Timber and firewood are exceedingly dear.

The population of the province was estimated in 1906 as 1,779,000. It is comparatively dense in certain parts. The Russians, number barely 8500, if the military be left out of account. Kirghiz (50%) and Sarts (9∙8%) are the main elements of the population, with Uzbegs (4∙3%), and a few Jews, Tajiks, Tatars, Persians and Hindus. The predominant occupations of the Sarts, Uzbegs, Tajiks and settled Kirghiz are agriculture and gardening, but the Kirghiz lead chiefly a nomadic pastoral life. . Manufactures are represented by cotton mills, tanneries and distilleries; but a great variety of petty industries are practised in the towns and villages.

Syr-darya is divided into six districts, the· chief towns of which are Tashkent, Aulie-ata, Kazalinsk, Perovsk, Chimkent and Amu-darya. (P. A. K. ; J. T. Be.)