MAP SUPPLEMENT—WESTERN THEATER OF WAR

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Mountain Views and Hot Sulphur Baths Attract Visitors to Pyatigorsk

Sanatoriums line the terraced hillside park of this health resort in the northern Caucasus. From Tambukan Lake (background) come radioactive waters and medicinal mud. Closely grouped in this area are 17 mountains of volcanic origin, giving rise to mineral springs. Popular resorts have sprung up around them (opposite page).

Roaming Russia's Caucasus

Rugged Mountains and Hardy Fighters Guard the Soviet Union's Caucasian Treasury of Manganese and Oil

By Rolf Singer

Research Associate, Farlow Herbarium, Harvard University

DOOR to Russia's Caucasus is Rostov on the Don. Not far southeast of that gateway city the country and the people begin to change.

Through dense clouds of dust whirled up by the train, we caught our first glimpse of Circassian or Tatar horsemen in the Caucasian national costume. They wore long coats with a cartridge band sewn across the chest, and carried the long, thin, straight Caucasian dagger, often in a magnificent silver-inlaid scabbard.

Despite the intense heat, they sported black lambskin caps perched at a jaunty angle. They call themselves "Adygei," and "the Autonomous Territory of Adygei," a small settlement of Circassians, is all that remains of the once great Circassian nation, conquered and colonized by the Russians in the 19th century.

Circassians are excellent horsemen and proudly exhibit their skill, especially on national holidays. Their chief industry is more prosaic—vegetable canning.

As the train rolled onward, camels appeared. The shapes of the distant hills grew more distinct and weird. The air became drier, more transparent. The shadows took on a violet hue.

White Phantom at Asia's Door

Just as the Westerner realizes he is approaching the threshold of Asia, he sees rising in the south, like a glittering white phantom floating above the monotonous chains of hills, the rounded twin peaks of Elbrus (Elborus), highest mountain in the Caucasus and in Europe (see "Theater of War in Europe, Africa, and Western Asia," 26½ by 31-inch Map Supplement with this issue).

Suddenly the train left the loneliness of the steppe and rolled into a cultivated district of resort hotels, parks, well-kept stations, and roads. This is the Kavminvody, the region of Caucasian mineral baths.

Pyatigorsk is known for its sulphur baths, and others for treatment of gastric ulcers. Most famous is Kislovodsk, chiefly for alleviation of heart disease (pages 90, 95).

Mineral waters of the various resorts are also popular table beverages in the Soviet Union. Narzan, the Kislovodsk water, was exported in large quantities before the present war. Warm springs of this region owe their existence to the once volcanic nature of near-by Elbrus.

Locally, Elbrus is called "Mingitau," meaning "White Mountain." It was ascended and adequately mapped before any of the other high Caucasian peaks.

When I made my first trip to Elbrus in 1928 with a group of scientists, we approached our destination from the northeast by the only route which then existed, an old road from Kislovodsk. It consisted of irregular wheel tracks visible only to our Russian drivers.

Shepherds Friendly, But Not Their Dogs

At the end of the road, near a small village, mountaineers gathered to look us over and sell us horses. We bargained for several days in true oriental fashion. They asked twice as much as they hoped to receive, and we offered half as much as we expected to pay.

In the evening, Said, Achmed, and the others would break off negotiations "for good" —only to turn up next morning in the best of humor, demanding ten rubles less.

Before we obtained horses, I took a number of trips on foot into the surrounding valleys and the mountains flanking them.

On one of these trips I came to an upland shepherd's hut, and a pack of vicious white Caucasian sheep dogs attacked me. I warded them off with the end of my ice ax and angry cries of "Rrrr," learned from the Circassians, until Dadau, a Balkar shepherd, came along brandishing a rifle and rescued me. Two other shepherds and a boy, the entire population of the settlement, came running up.

I had been commissioned by my friends to buy a sheep, but unfortunately I knew no Balkar at the time, and Dadau knew no Russian. I pointed to the mountain, where, like moving spots, thousands of black sheep were grazing over the slope. The shepherds looked at me in uncomprehending silence.

I bleated like a sheep. They looked sympathetic and giggled.

I defined a sheep in my best Russian. They mumbled approval but produced no sheep.

Sovfoto

Beside Grazing Herds, Ranchers and Milkmaids Learn Scientific Cattle Raising

The class is conducted on the edge of rich pastureland in Kabardino-Balkaria, Caucasus mountain republic. In summer months horses, cattle, and sheep from the collective farms in the lowland plains are driven up the slopes to these highland meadows.

Finally, to the best of my ability, I drew a black sheep with two horns on a sheet of paper and passed my masterpiece around the circle. The older shepherd made some comment and the others repeated it. There was a glacial silence.

When I learned later that my drawing had been taken for a picture of the devil, I knew I would never make an artist. I had to climb the mountainside and bring back a living example of the Caucasian fat-tailed sheep before they understood.

We concluded the sale, and a gay evening followed. Dadau taught me to play Balkar national dances on my harmonica, and in the light of the campfire, to the clapping of the shepherds, the men danced in fiery, rapid rhythm, their shadows like weird apparitions in the night. Sometimes the thundering of an avalanche drowned out the shepherds' clapping.

After the dancing we drank the familiar, refreshing sour milk and ate disk-shaped bread made of water and corn meal, which Dadau had baked in the ashes of the fire.

My friends vied with one another in spitting into the fire, but that didn't detract from the taste of the meal. However, the bread weighs like a stone on your stomach if you are unaccustomed to it. Sour milk, bread, cheese, and now and then a bit of mutton are the main nourishment of the Balkars.

Women No Longer Do All the Work

For about ten years the Balkar peasants of the Elbrus region have been in the process of collectivization, which they have accepted more readily than other Caucasian farmers.

Collective-farming methods have been effective in the cattle-breeding industry and have served as an inducement for the men to work.

At the time of my first visit, the women did practically all the work at home and in the fields, while their husbands, brothers, and sons sat about in the middle of the village, chatting, philosophizing, making deals, playing games, smoking, or simply gazing into the air.

Nowadays, of course, most of the men are at work or in the Army.

On a trip from Nalchik, capital of the

Sovfoto

When Farmers Can't Go to Town, Traveling Stores Come to Them

So vast are the Soviet collective farms on the North Caucasus steppes that crews live in the fields, during busy season, in portable houses (background). Here a commissary on wheels, carrying the slogan, "Serves all field camps," rumbles out to location with a full stock of soap, razor blades, candy, and other small commodities.

Kabardino-Balkar Republic, to upper Balkaria, I talked with a leading citizen of the Republic. He told me that the population of the Russian and German settlements around Nalchik was encouraged to intermarry with the mountain tribes in the hope that the latter, by mixing with people of a higher culture, would learn more progressive methods of agriculture and achieve a higher cultural level.

He showed me articles in the Balkar and Russian local press recommending intermarriage, but I saw no indication that the appeal met with success. Since then the Germans have been deported as potential fifth columnists.

The village houses are pressed close to the mountain slopes. They are built of stone and consist of a single dark, stuffy room. Grass grows over the top, so that one man's roof is his neighbor's terrace.

Beyond "Pig Pass" Dwell the Svans

After my visit with Dadau, I hastened to obtain a primer in the local school. The pictures explained the words and I soon had a small vocabulary. But in my next adventure, my knowledge of Balkar did me less good than a bit of chocolate.

My friends had gone off southward across the mountains with the baggage. I followed with our single horse and a guide.

Our path mounted steeply, first through a fir forest, then through pasture land, until we came to a shepherd's hut above the glacier. From here our course led over an ice-covered pass, on the other side of which lay the Nakra Valley, inhabited by Svans (page 103).

Although most of their customs retain a heathen stamp, the Svans are Christians. Their religion allows them to eat pork, and they do so as often as they can afford it.

Because of the pork-eating propensities of the Svans, the Balkars have called the pass Donguz-Orun, meaning "Pig Pass." Likewise, the mountain is called "Pig Mountain"; the glacier, "Pig Glacier," and so on.

To the Balkars the eating of pork is an abomination, and the antipathy they feel for the Svans is mutual. The Svans made a habit of catching the sheep of their Moham-

medan neighbors, killing the shepherds and bringing their booty across the pass. This activity was considered so praiseworthy that the Svan prince used to take part in person.

Consequently, a Balkar guard with a rifle was stationed on the pass. Yunus, my "guide," knew this, and, trusting in the armed support of his compatriot, kept trying to extort money from me. "Ber, ber," meaning "give, give," was the refrain.

Fortunately, I was able to make friends with the guard by giving him chocolate, a rare delicacy. This, he said, he loved "more than real tobacco and the most beautiful woman." Yunus was obliged to leave me unshorn and was sent home.

A year later, in 1929, when my expedition climbed Elbrus, we found conditions much changed. An automobile road led from Nalchik to the foot of the mountain. A shelter maintained by the Soviet Tourist Society occupied the site of our camp the year before, and the bridge had been repaired.

Said, whose horse I had bought on the last trip, was now one of the first mountain guides in Balkaria. Although he had no idea of mountain-climbing, he was well paid for leading swarms of Russian vacationists, as badly equipped as he was, to the pass below the two peaks. Here he would stop and explain that the weather made further ascent dangerous.

On the Roof of the Caucasus

Our equipment on our backs, we struggled slowly across the moraine to the eternal snow. We spent the night on the ice, near a kind of tin dog-hut called "Refuge 11," entirely filled by six Russians who had arrived before us.

The next day members of our expedition reached the summit of Elbrus, 18,471 feet, achieving the first ascension of the peak on skis.

As we climbed, it was indeed novel to see the mountain peaks, even the highest and proudest among them, sinking lower and lower beneath us. By the time the summit was reached, however, what began as a breath-taking panorama had sunk into a sort of relief map, more interesting than beautiful. Far below lay a sea of peaks, from the Georgian Military Highway in the east to the last snowy mountains in the west.

Ushba, one of the most impressive Caucasian peaks, seems no more than a small hill near by. Behind Ushba you see a low chain, and still farther to the south, in a bluish mist, the Transcaucasian lowland. Beyond the lowlands, on especially clear days, you can discern a whitish cone, Mount Ararat, the heraldic mountain of Armenia, at present in Turkish territory.

In Batumi I once heard a Turk ask an Armenian: "Why do you have Ararat on your coat of arms when it doesn't belong to you?" The Armenian replied: "Does the moon belong to you?"

Mountains Guard Manganese and Oil

The main Caucasian chain, called "Greater Caucasus" in contrast to the southern chain, called "Lesser Caucasus," runs from the Strait of Kerch on the Black Sea to Baku on the Caspian. It is about 770 miles long and has a maximum width of 140 miles. The west part is not quite so high as the central portion, but drops sharply to the Black Sea.

To reach the manganese mines and oil wells and gain possession of the fertile valleys of Transcaucasia, an invading army from the north would have to cross the main chain, an extremely difficult feat. Some of the mountains are higher, wilder, and steeper than the Alps, and the passes, with the exception of the most westerly, are higher and more easily defended than the Alpine passes.

Moreover, between the First and Second World Wars the Russians built strategic roads and trained mountain troops in the Caucasus. They brought movies, radios, automobiles, schools, and a written language to the mountain peoples.

The inhabitants have never seen any culture but the Russian and consequently regard all culture as Russian. Today the majority of the mountain population of the Caucasus is loyal to the Russians.

In 1937 a hotel was built on the site of Refuge 11, where we had once spent the night on the ice (page 104). Supply wagons full of meat, potatoes, and wine are hauled to the hotel by tractors.

On the saddle of the Elbrus, where Said, the guide, used to end his "ascents," stands a modern observatory. Near the hotel skiing instructors conduct classes in alpinism, teaching the use of ropes, first aid, map reading, etc. The ski trip to the summit, which we were the first to make, is now a requirement for those aspiring to the blue insignia denoting an "alpinist of the USSR."

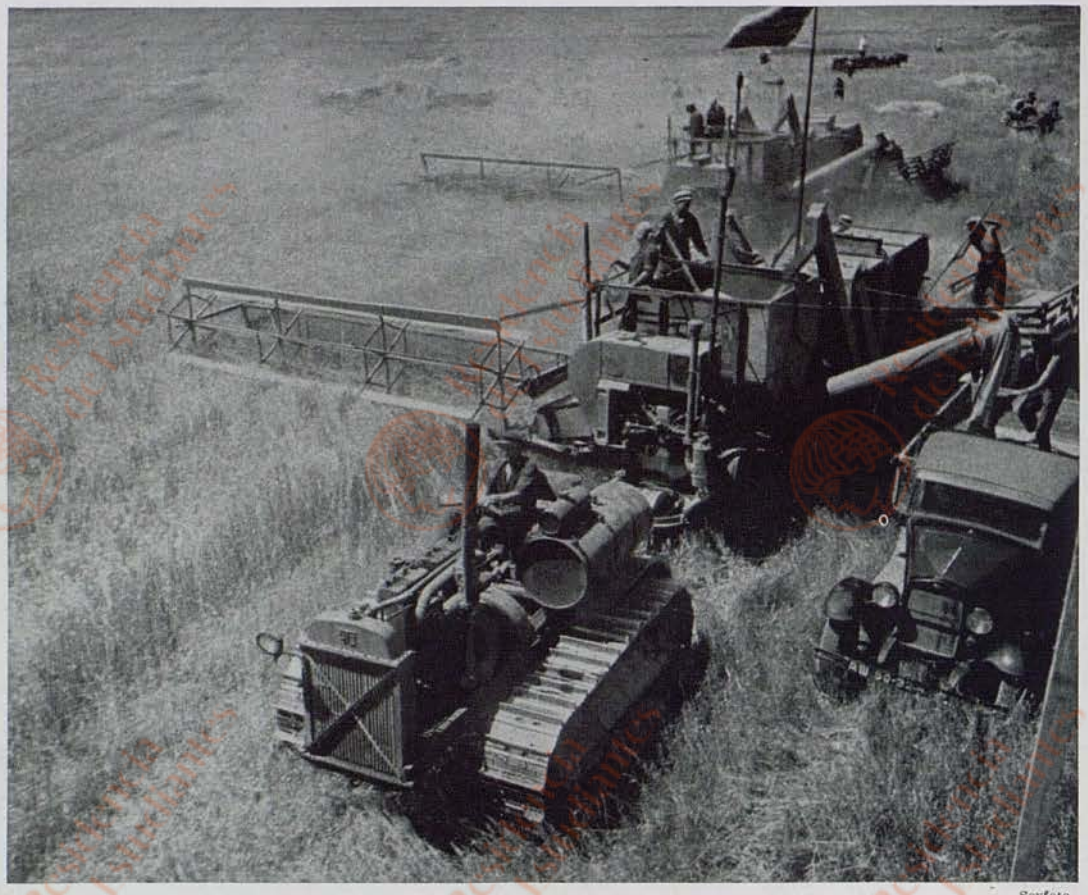
The Russian form of alpinism differs from the Swiss in at least one essential: It cannot be engaged in without official permission. I almost flunked an instructors' examination for not knowing that unlicensed mountain climbers are liable to arrest.

Russians are not allowed to make independent explorations, and only those foreign expeditions which have been approved by In-

Sovfoto

Sufferers from Heart Ailments Fill Karl Marx Street in Kislovodsk

They seek relief in this most famous of Caucasus Mountain health resorts. A mineral spring here yields more than 625,000 gallons of carbonated water, known as Narzan, every 24 hours (page 91). Before the war large shipments were exported. The second-story sidewalks are reminiscent of those in Chester, England.



Sovfoto

Soviet Farmers Harvest Bumper Crops on the North Caucasus Steppes

This collective farm is in the heart of the Soviet Union's richest grain region, lying between the Black and Caspian Seas north of the mountains. Crops move to market over a network of railroads. Gateway to the entire area is Rostov on the Don, river port and railway junction as large as Newark, New Jersey.

tourist, the Soviet tourist organization for foreigners, have this privilege. Since 1939, however, foreign expeditions have been almost entirely prohibited because of a not unjustifiable fear of espionage.

Sport for Defense

Every summer in peacetime, sport groups of the trade unions camp around Elbrus in tent colonies for a short course in mountaineering. One year, for instance, the Leningrad metalworkers had a camp in the region west of Elbrus, and the Nauka (science) group, organized by the union for scientific professions, camped in an adjacent valley.

These mountain-climbing expeditions are organized and planned by the central Moscow commission for sports. The aim is frankly represented as training for defense of the Soviet Union. Equipment, even shoes and clothing, is furnished free (pages 99, 102).

By their semimilitary sport organization, the Russians have built up a reserve army for mountain warfare. Should German troops land in Transcaucasia or break into the North Caucasus by way of Rostov, the Soviet sport organization would get its supreme test.

One of the most interesting sections of the Caucasus is Svanetia, southeast of Elbrus, and the rapidity of its cultural development is just as amazing as that of Balkaria, its northern neighbor.

From the time of the Russian civil war, until 1928, when I entered my first Svan village, no foreign expedition had set foot on Svan soil.

The mayor, elder, or chairman of the village council—all different names for the same dignitary—came proudly and inquisitively to meet me. He was the only man in the whole village who spoke Russian.

"Where do you come from?" he asked.

"From Vienna."

"Where is that?"

Sovfoto

Daghestan Babies Attend Kindergarten While Their Mothers Till the Fields

Their homes are on the "January 9th" Collective Farm, named after the historic Bloody Sunday in 1905. On that date, a throng of workers, singing religious songs, marched to the Winter Palace in Leningrad (then St. Petersburg) to confer with Tsar Nicholas II. The tsar was absent. Troops opened fire on the defenseless crowd, killing about 1,000.

"In Austria."

"Is that the same as England? We don't like the English."

Later, when a few photographs and some tobacco had established friendly relations, he leaned over and whispered into my ear: "But, I assure you, we like the Russians even less."

"Blood Vengeance" Reduced Population

At that time there were virtually no Communists in Svanetia. They were hardly necessary, for the prevailing order was a sort of primitive family communism. The princes had been driven out by the East, or Free Svans, hundreds of years before, the West Svan prince having been sent home from the wars, naked, unarmed and on foot, the greatest disgrace that can befall a Caucasian prince. In every village the soil was tilled in common.

During Russia's civil war, for the first time since the Russian occupation the Svans were free to devote themselves to their feuds involving blood vengeance. It was traditional for a young man to carry away a girl from a neighboring family, and for the girl's uncle to wreak vengeance on the young man.

Innumerable family wars broke out. Within a few years the male population had fallen about fifty percent.

The population was further reduced by the restoration of the Svan custom, prohibited by the tsar, of smothering unwanted newborn girl babies by putting a handful of ashes in their mouths, in order to spare them the disgrace of possible old-maidhood.

When the Soviets took over the administration of the neighboring section of Tsebelda, the Svans began a kind of peasant war against them. Failing to drive out the Reds, they retreated with their families and all their belongings to several uninhabited valleys,

Sovfoto

Skirts Billow and Boots Thump in a Caucasus Mass *Lezghinka*

Mountain horsemen and their partners take part in this favorite national dance at a *djigit*, or horse show festival, in Pyatigorsk (page 90). From the northern Caucasus come the celebrated Cossacks, whose reputation for daring horsemanship is world-wide.

where they settled. Every year more families packed their chattels on horseback and migrated to the new and growing villages in the west.

These historical facts were unknown to us when we entered the district. On the basis of the available maps, we expected to find a wilderness where unfortunately there was none—unfortunately because the Svans are not always the most pleasant company. As late as 1939 a Russian geological expedition was attacked by Svan bandits, the leader murdered, and another member wounded.

Our displeasure at finding the territory inhabited gradually gave way to the joy of discovery. In the end everything went off well enough.

Bullets, Then Apologies

In one village, where we arrived at dusk, Svans shot at us with rifles from an orchard. They apologized later, saying they had taken us for bandits.

Once real bandits did steal our entire baggage. By chance we came upon them again by a romantic campfire in the midst of the Colchian forest. They returned our baggage, piece by piece, on condition that we leave them a tin box.

"What do you need it for?"

"For my wife's sewing things," answered the chief.

I didn't argue.

At length we reached the Sukhumi Military Highway leading over the Klukhor, an important pass in the west. Except for the level stretch near the coast, the highway at that time was impassable for automobiles. We traversed the lower part as far as Sukhumi in an ordinary peasant's cart.

Klukhor Pass itself is covered with snow most of the year and is difficult even for pedestrians to cross. I expected to ask the soldiers presumably stationed at the Klukhor Pass barracks for a saddle, hay, and a night's lodging. But when we arrived, we found the barracks were nothing but a small ruin, about 100 feet square, standing where the "military highway" definitely turned into a footpath.

The untrodden and almost impenetrable forest, the remains of avalanches surrounded by luxuriant vegetation, the towering cliffs

Sovfoto

White-clad Soviet Youths Learn to Defend the Caucasus

At an alpinist training camp an instructor shows a sports society how to descend a sheer wall of ice with spiked shoes and ropes. Such groups of young men and women are semimilitary (page 96).

Sovfoto

"Now Tell Me the Same Thing, But Say It in Russian"

The teacher and her assistant in this Kabardino-Balkaria school test little Vladimir Gazbashiev's knowledge of Russian. He and his fellow pupils speak a native tongue related to Turkish, one of numerous dialects in use for centuries throughout the mountain area.

and gleaming icefields in the distance, were inexpressibly beautiful. We crossed the dense mountain forest, waded along rushing mountain brooks, and pitched camp at the other end, amid fragrant alpine shrubbery, at a place visited only by an occasional Abkhaz shepherd.

The Autonomous Republic of the Abkhaze consists chiefly of the Kodor Valley and the territory northwest of it. In their own homeland the Abkhaze are outnumbered by Georgians and Greeks.

A large part of the cattle-raising population follows the herds, men, women, and children carrying their chattels from one grazing ground to the next. In the worst months of winter these Abkhaze take refuge near the sea, where there seldom is frost.

Moisture in the winds from the Black Sea condenses on the south side of the west Caucasian chain, and rainy days are frequent in the Abkhaz territory. Sometimes the rain is so abundant that one really thinks of building an ark and landing on Mount Ararat. The frequent rains account for the extraordinarily luxuriant vegetation in this district.

Peasant's Palate Collects a Specimen

As we sat in our tent on one of these rainy days, Abkhaz peasants came to visit us. They looked over my plant collection, which I was at pains to keep dry, and let water run down on it from the broad brims of their white felt hats.

The pride of my collection was a particularly beautiful *Exobasidium* (parasite of the Pontian rhododendrons), a great rarity in herbariums. Suddenly one of the peasants took my Exobasidium, told me it was a delicacy, and, before I realized what he was up to, swallowed it.

Having damaged my plants and swallowed my prize specimen, they announced the purpose of their visit. They had come to ask us, on the basis of our scientific knowledge, if we knew whether or not there was a God.

In this region, the valleys less than about 3,000 feet in altitude were infested with malaria until the recent draining of swamps. Sometimes virtually the whole population of a village was taken sick.

Here, as elsewhere in Russia, quinine was exceedingly hard to obtain, and since we had plenty of it with us, we were soon known as the great medicine men.

Old and young came to us with all sorts of pleas and ailments. We helped them as best we could. Our most difficult case was a doddering old woman who asked us for a medicine that would give her children.

We left Abkhazia with the promise to come back. On every subsequent trip we were amazed at the change in the country. Each year a new strip of jungle was deforested and cultivated. The trees were burned down and a simple wooden hut erected, often on stilts on account of the dampness of the soil. The first crop was always corn and was followed by more valuable crops.

The Svans, more than some other Caucasians, have broken the spell which for a thousand years seems to have chained them to their mountain homeland. Now they spread out and settle. The Government is giving them schools and clubs.

Today parents ask their children to write letters for them: "Anton dearest, we are alive and well. . . ." "Can you write that already, son?"

Prince Becomes a Government Clerk

Even in Svanetia proper, which I crossed again with my American friend, Rand Herron, great changes have taken place. As we were driving our donkeys across the steep, sunny mountain slopes, a group of armed riders came toward us.

After the "whence and whither" with which every conversation begins here, one of the riders whispered to me significantly: "Do you know who that is who spoke to you? He is a prince."

It turned out that the speaker was actually the ex-Prince of West Svanetia, Prince Dadish Kiliani, whose father once presented Ushba, one of the most beautiful mountains in the country, as a souvenir to a foreign woman mountaineer, confirming his gift with a kiss.

Since only members of the Communist Party had the right to bear arms, I asked the Prince how he managed to ride around openly with a rifle. It turned out that he had joined the Communist Party in preference to going unarmed. He had accepted a job as clerk in the new government building.

A few years later we might have met Dadish Kiliani in a motorcar. By 1939 tourists were traveling by truck to this territory, which was previously accessible only on foot or horseback, and that only three months of the year.

Despite rapid changes in living and travel conditions, the Caucasus has retained much of its picturesque quality. Although little is done to preserve them, the battlements and embrasures of medieval Svanetian fortresses still stand.

Svanetia is naturally suited to fruit growing and cattle raising, and its climate is one of the best for the cure of tuberculosis. Yet in

Sovfoto

A Daughter of Daghestan in the Caucasus Offers a Drink of Cool Mountain Water

Her brass water jug is an example of old North Caucasus craftsmanship. For generations these mountaineers have excelled in metalwork. Most celebrated are their exquisitely hand-wrought silver daggers, swords, and cartridge cases.

famine times as much as a fourth of the population has been tubercular as a result of hunger and bad living conditions.

In winter the lack of food caused a large part of the male population to migrate to the lowlands and hire out for work in the vineyards. Recently, however, the men have begun to work at home as lumbermen.

Funeral and Marriage Feast Combined

We learned from Svan acquaintances in Taurari that an old man had just died and that my former donkey driver had married. The result was a banquet in celebration of both the funeral and the wedding.

The food for a banquet is provided in common by the whole village, since the villages are for the most part clan settlements in which everyone is related. Long tables and benches are set up in the open before the church, facing the mighty snow-capped mountains. The whole village is invited to partake of Cousin Uman's stuffed barley bread, old Anton's baked squash, and real Russian tinned fish.

The tables were not even cleared in the afternoon when the funeral was transformed into the wedding. The only change was that the priest now performed a religious service, which I did not understand, and the women mourners who had sobbed, beaten their breasts, and sung in falsetto tremolos long enough, were allowed to go home.

I was amazed at the immense quantities of food which the Svans consumed in one day, perhaps to compensate for leaner times.

Sovfoto

Journey's End in Sight—A Pack Train Nears the Twin Peaks of Lofty Mount Elbrus

The mountain climbers are members of a Soviet sports society on a mass excursion to the double-headed, snow-capped cone. The western peak, 18,471 feet above sea level, is slightly higher than the eastern. Both summits are the funnels of ancient craters, now filled with snow and ice (page 94).

Sovfoto

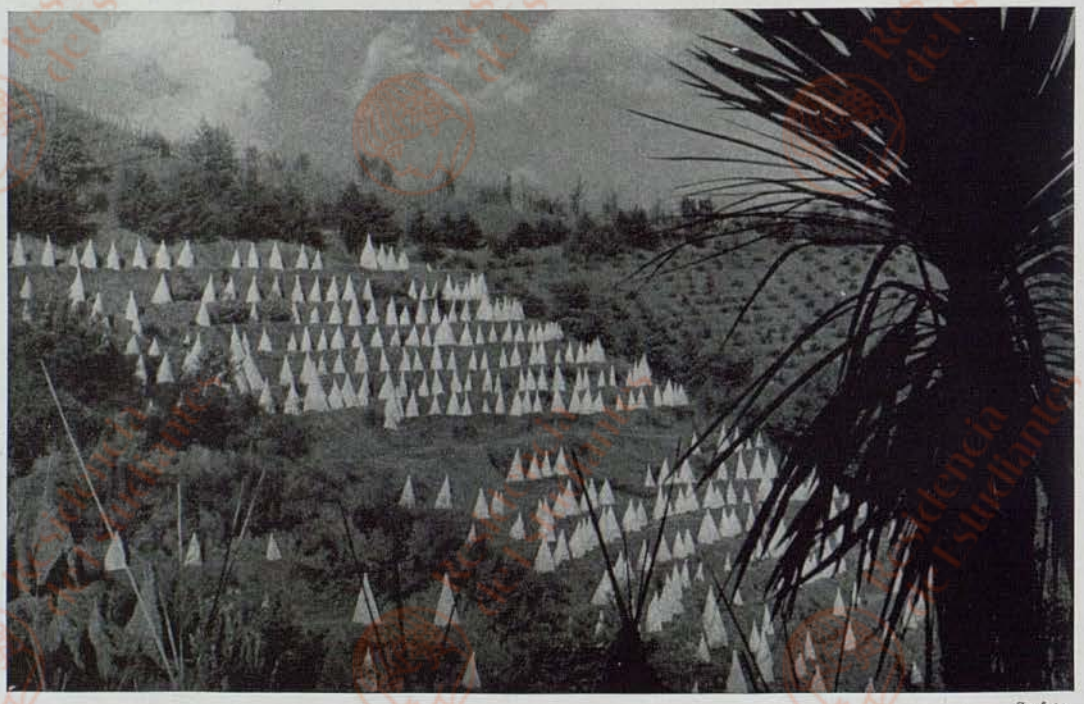
Svan Mountaineers Turn Out with a Brass Band to Serenade a Sports Society at an Alpiniad

The mountain festival is part of the 20th anniversary observance of the founding of the Workers' and Peasants' Red Army and Navy. In the days of the tsars, such a parade in Svanetia would have been the signal for bloodshed, for the mountain folk bitterly resented the intrusion of outsiders.

Sovfoto

Streamlining Comes to Europe's Highest Peak, Mount Elbrus

Although this blimp-shaped hotel in the Caucasus is almost 14,000 feet above sea level, it is still nearly a mile below the summit. With steam heat and electric lights, the hostelry is the welcome Refuge 11 for hardy climbers on their way to the top (page 94).



Sovfoto

Winter Bivouac—Not Tents for a Regiment, But for an Orchard of Lemon Trees

Three layers of white cheesecloth keep off frost during winter months. Fruits thrive near the Black Sea, and this coastal zone of Abkhazia forms a gigantic natural hothouse (page 107).

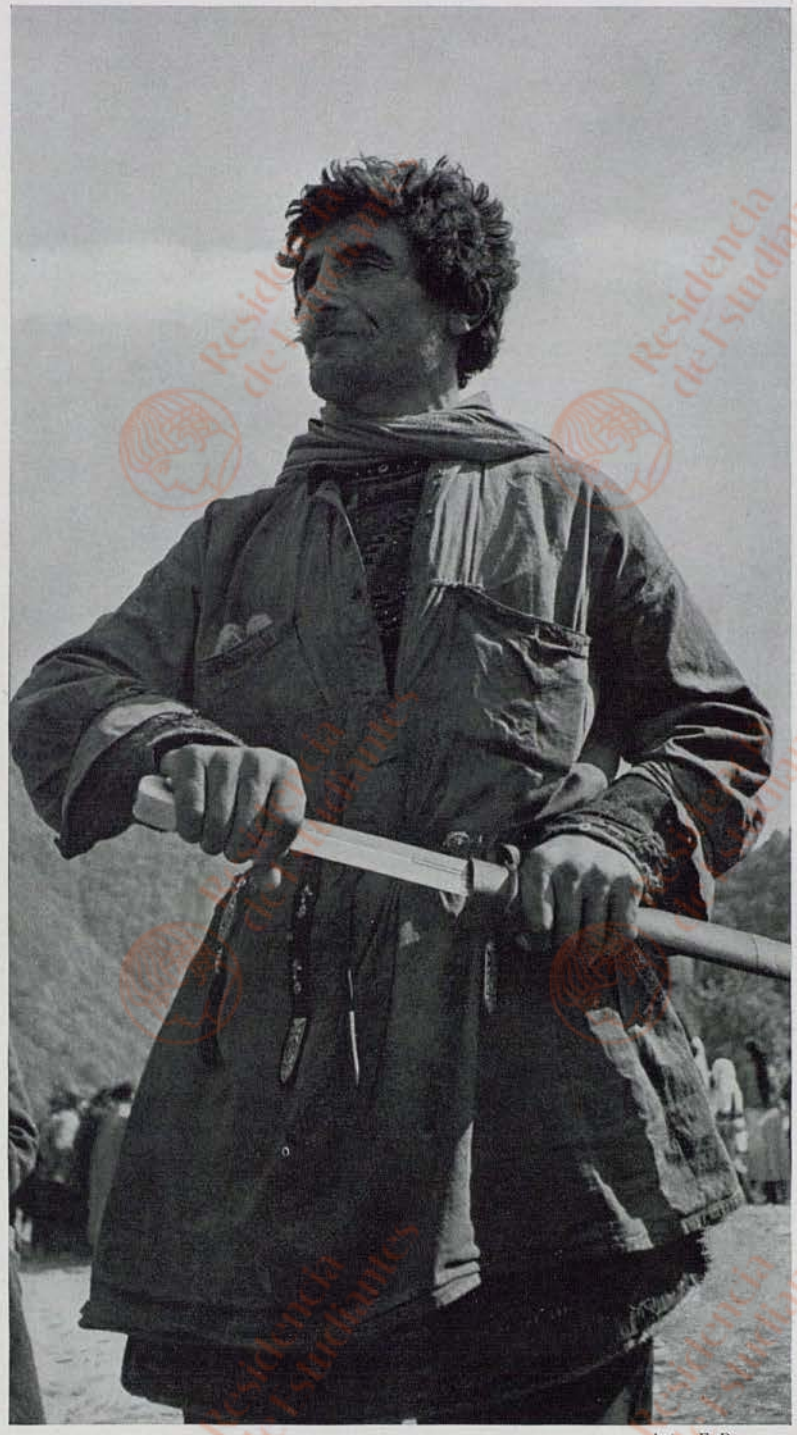
In the evening we were invited to the house of Roba, the donkey driver and bridegroom. *Raki,* a liquor made from corn or more frequently from elderberries, was served. Everyone present, a man and woman alternating, drained a glass at one gulp, made a speech invariably greeted with laughter or applause, and then sprinkled the remaining drops on the fire.

We were applauded as wildly as the previous speakers, although no more than two or three of the guests understood a word we spoke.

In one of the mountain villages our donkey driver invited us to a Balkar meal. To make the hospitality complete he had the numerous women of his family stand before us in a row and invited us to choose the ones we liked best for the last day of our stay. He hinted that he would by no means reject a return present in the form of a fur cap. It was very hard to decline.

The sequel was that we had to waste two days finding a new driver.

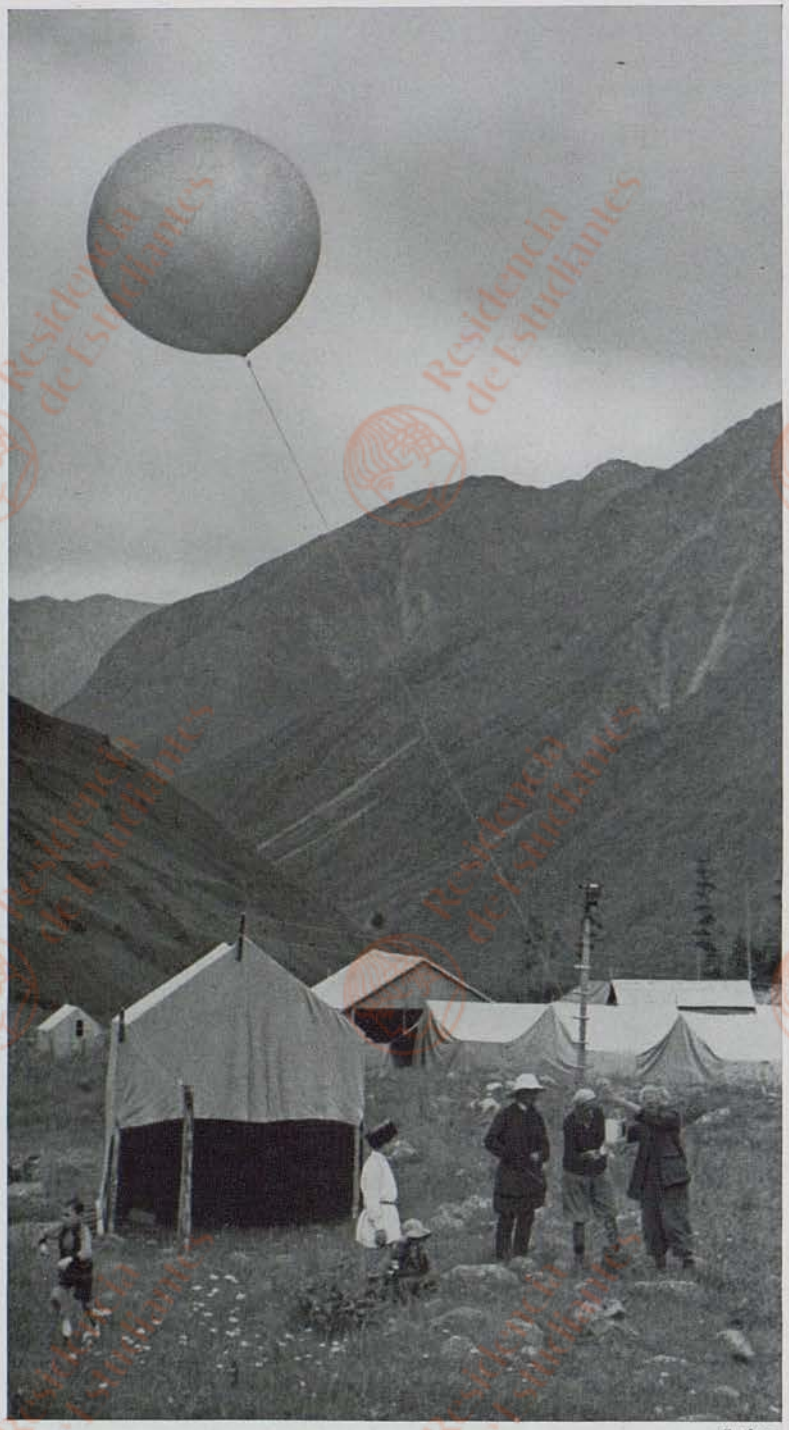
The Caucasus is a plant hunter's paradise. Never have I seen such luxuriant vegetation as in the Seskhvir Valley, for example. We had to cut our way through the woods with our knives and ice axes, and in the meadows bushes growing to a height of seven to ten feet hid us from one another.



Anton F. Baumann

Fearless and Independent Is the Svan Mountaineer with His Ready Blade

His tribe, suspicious of strangers, clung to its rugged homeland in the Caucasus for a thousand years. Now many have adopted modern ways, expanding into near-by valleys and clearing wilderness for cultivation. The government has set up clubs and schools for them, and children have learned to write letters for their parents (page 100). A few Svans remain unchanged, and banditry in some areas persists.



Sovfoto

With a Radio Sounding Balloon, They Study Air Currents Amid Caucasian Peaks

On the slopes of Mount Elbrus, in the Caucasus, an annual expedition of the Soviet Academy of Sciences has set up its camp. Its members learn about aerial currents, physical texture of clouds, and optical properties of fog (page 96). Physiologists study the reactions of the body, particularly the heart, at high altitudes. From their experiments they have learned how to combat mountain sickness.

The plants were incredibly colorful, particularly the impressive *Telekia,* which looks like a sunflower, and the ten- to twelve-feet high *Heracleum mantegazzianum,* a gigantic cow parsnip.

The moldy dampness of the forest floor was an eldorado for millions of mushrooms, and on the shores of the brooks were large quantities of bear dung, although we never saw a bear.

We had to cross the rushing, unbridged Seskhvir River several times. The donkeys waded belly-deep in the gushing water, while we ourselves crossed on a huge Nordmann's fir that had fallen over the stream.

Once, in the excitement, our donkey foal escaped me and fell into the water. Fortunately, he soon grounded on a sandbank. After this experience he developed a sad fear of water. At every little rivulet he hesitated, filled with terror.

Copper and Molybdenum Found

Even today, all the higher Caucasian peaks have not yet been climbed and explored. However, new data about the mountain groups, compiled in Soviet cartographic institutes, is now available, and I am told a new map of the Caucasus has been prepared. But the latter is kept a dark secret lest it fall into the hands of foreign general staffs.

One of the most in-

adequately explored sections of the Caucasus was the region about 55 miles southeast of Elbrus along the border between Ossetia and Balkaria. In 1929 a German expedition was there at the same time as ours. This we learned from Balkars whom we met on a narrow, perilous road hewn out of rock in the deep ravine of the Cherek.

"What are they looking for up there? It must be copper," the Balkars mumbled.

They were not far wrong, for geologists did find molybdenum and copper in east Balkaria a few years later. Where in 1929 there had been a lonely Balkar village, today there are miners' settlements and a newly built highway over which trucks carry the ore to the valley.

After two to three months' climbing in the high mountains, sleeping in uncomfortable tents, doing scientific work in the virgin forests, and engaging in linguistic struggles with the Svans, Balkars, Abkhaze, and Ossetians, it felt good to turn toward the comforts of the cities and resorts of the south.

Down to the Black Sea

The closer we came to the seashore the more tropical the vegetation became, in the forest as well as in the cultivated sections. There were wild figs and chestnut trees in the forest, and fruit of almost every kind in the gardens and experimental plantations. Here, side by side with more northerly varieties, pomegranates, figs, melons, persimmons, oranges, tangerines, and even bananas thrive (page 104).

Nearly every year some new plant is acclimatized. Recently, for example, the gutta-percha tree has been successfully introduced to this section.

Farther inland, rice and tea are grown in large quantities. Native Caucasian tea culture has developed to such an extent that it meets much of the enormous Russian demand.

The Caucasus is an old wine country. We often met Georgian wanderers who offered us a swallow of new wine from a flask slung on their shoulders.

As soon as we reached a city, the invitations began. At every glass of wine—and the host sees to it that there are many—Georgian custom requires a toast.

The Caucasian cities vie with one another in hospitality, as far as political and economic conditions permit. In Sukhumi (formerly Sukhum Kale, meaning Water-Sand-Fortress in Turkish) a Georgian innkeeper refused to accept money for large quantities of Kakhetinian wine we had consumed. His only demand was: "When you get home, tell them the Georgians are good people."

This was in 1928. Since then the circumstances of the Georgians have changed considerably. Here, as everywhere in Russia, private inns have disappeared, there is no room in the hotels, and foreigners are looked on with suspicion.

We continued our journey along the Caucasian Riviera to the Crimea by ship. Beyond Sukhumi deep green banks descend steeply to the bright blue sea. We passed Byzantine ruins, castles built by Russian grand dukes, white villas, sanatoria with broad terraces.

From the little village of Khosta the Caucasian Nature Preserve extends inland. It is about 60 miles in diameter and embraces the southern slopes of the mountain range as well as the west Caucasian peaks.

Train with "Artificial Climate"

Near the city of Adler the railroad begins again. It is the only line that crosses the watershed of the Greater Caucasus, and it goes over the western end, where the mountains and passes are not so high. The Moscow-Adler line was the first in Russia with air-conditioned trains—trains "with artificial climate," as the Russians call them.

As we went westward, the mountains grew lower. After leaving Novorossisk, which produces enormous amounts of cement for the Soviet Union's hydroelectrical developments and industrial plants (page 113), the ship no longer followed the coast, but headed straight for the southern tip of the Crimea, for Yalta or Sevastopol.

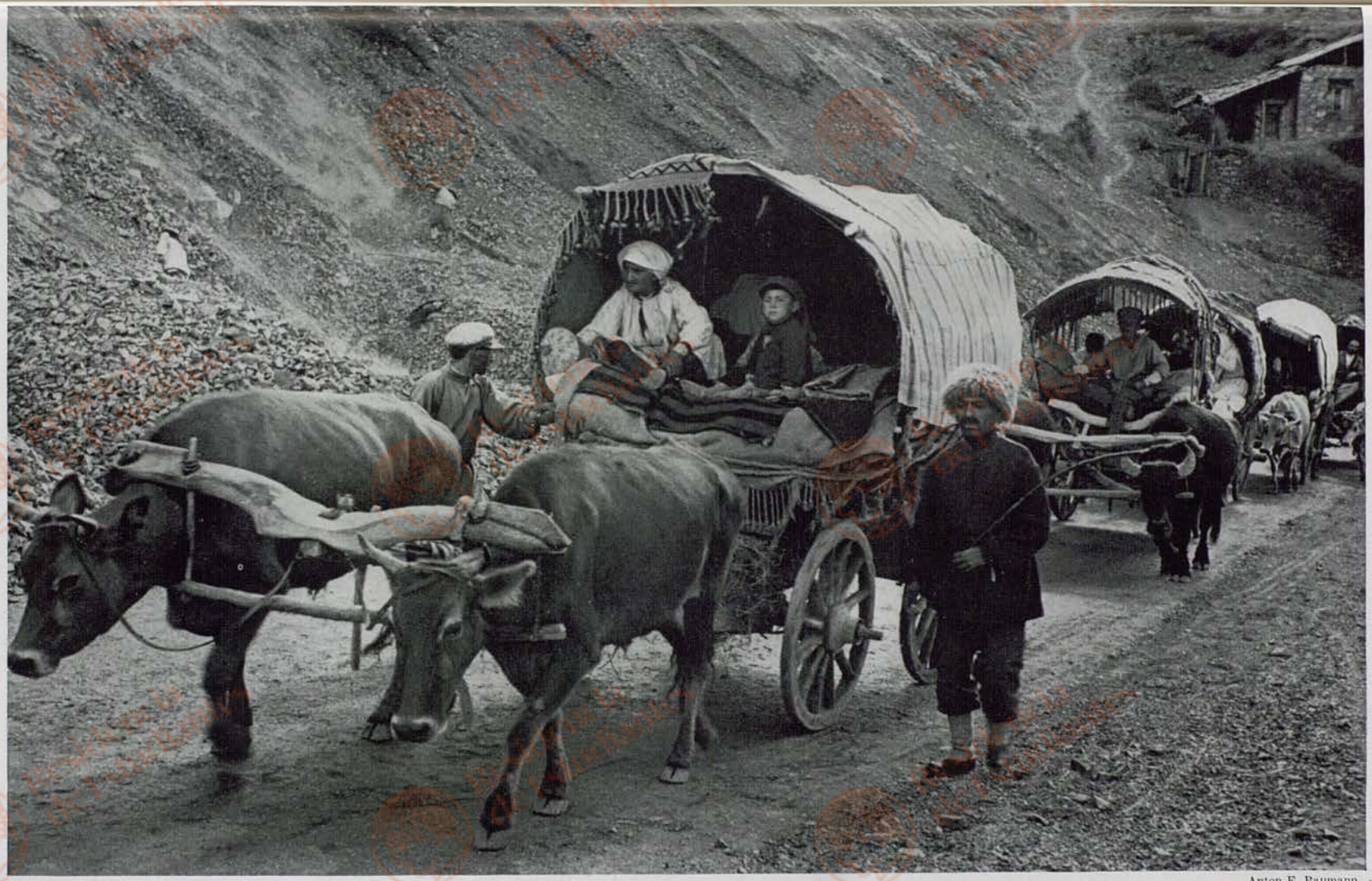
A few years later, in 1939, the tourist associations began to give out prospectuses for a trip in these waters on the "fastest passenger ship in the world," a strange, shallow-draft, double-bottomed craft made entirely of plastic and capable of carrying 150 persons at a speed of 45 miles an hour (p. 117). At the moment it is no doubt engaged in troop transport.

For many years there has been regular airplane service along the Black Sea Riviera. I was intending to repeat my journey by air, when once again I learned that in the Orient—and the Caucasus is purest Orient—there is no use making plans, for they rarely turn out as expected. An accident on the newly built Zugdidi-Kutaisi railroad stretch made me miss the plane, which later crashed into the Black Sea.

Service was suspended while the cause of the accident was being investigated, and I was forced to take the train. The only rail route, then as now, is around the whole Caucasus, from the subtropical Black Sea regions to the deserts of the Caspian Sea area, and back

Caucasus Vacationists Pause in Green Pastures Before Tackling 16,541-foot Kazbek, with Its Eight Mighty Glaciers

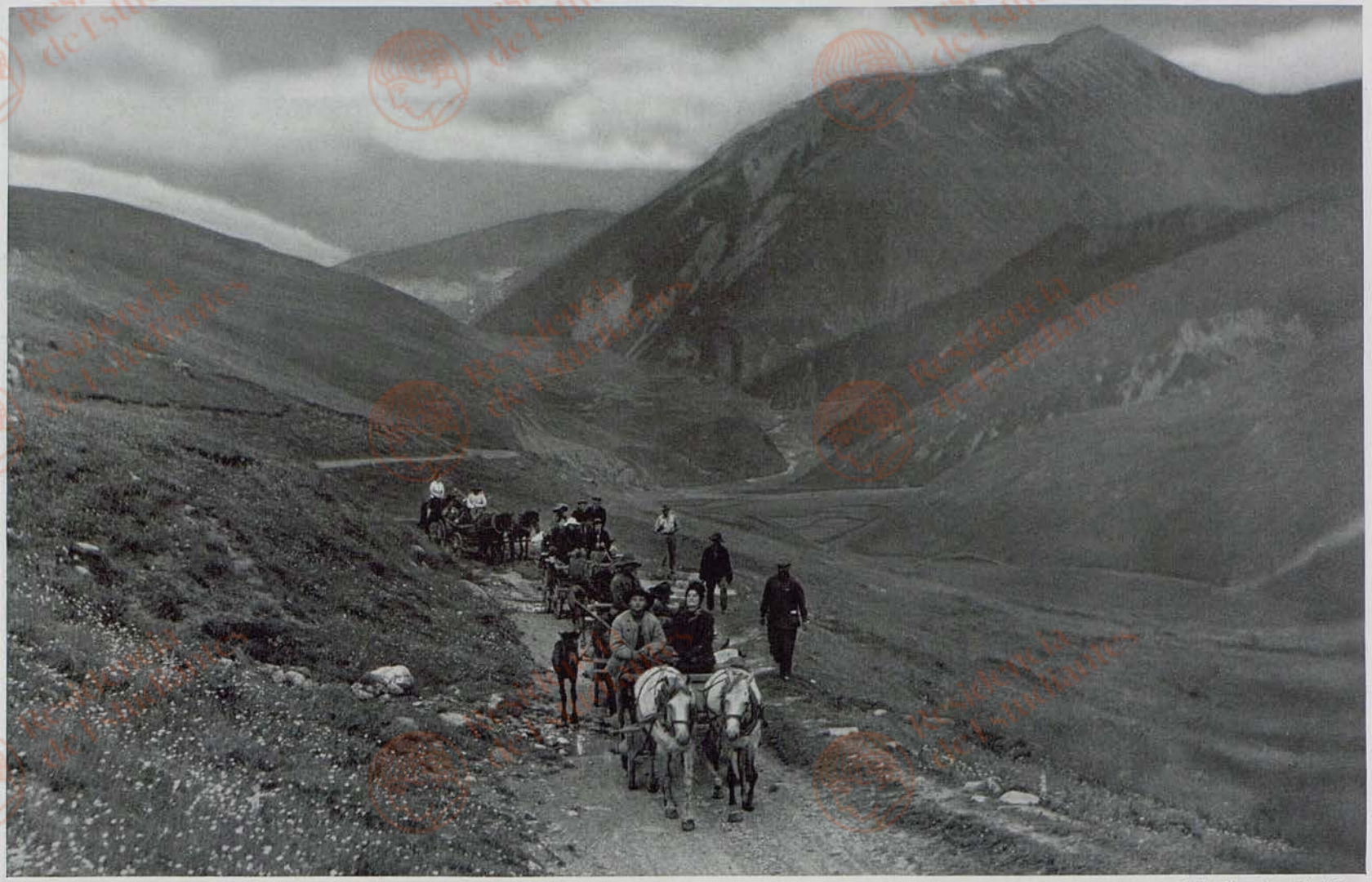
Sovfoto



Anton F. Baumann

By Covered Wagon, Cattle Herders Move to New Grazing Grounds in the Caucasus

With the approach of winter, other mountain families travel, bag and baggage, in their bullock carts to the lowlands. There they escape the intense cold, and the men work in the vineyards. Recently, the growth of the lumber industry has meant winter jobs for the men at home, thus cutting down the number of migratory workers.



Julien Bryan from Black Star

Mountain Farmers Go to Market on the Ossetian Military Highway, One of Three Main Roads Across the Crest of the Caucasus

Southern terminus of this route is Kutaisi. Farther east runs the famous Georgian Military Highway to Tiflis. To the west a third route goes to Sukhumi, on the Black Sea. For the Nazis to invade Transcaucasia by these land routes would be a tremendous task. Rugged mountains and narrow passes are natural fortifications.

Vittorio Sella

Stone Refuge Towers, with Windowless Houses Snuggling at Their Bases, Overlook All Approaches to the Svanetian Town of Gebi

Relics of a vanished lawless era are these square, loopholed columns found in many villages near the crest of the Caucasus Mountains. Many are built of granite blocks. Nearly all are whitewashed. When invaders took a community by assault, the surviving inhabitants would flee to the towers and defend themselves to the last.

Julien Bryan from Black Star

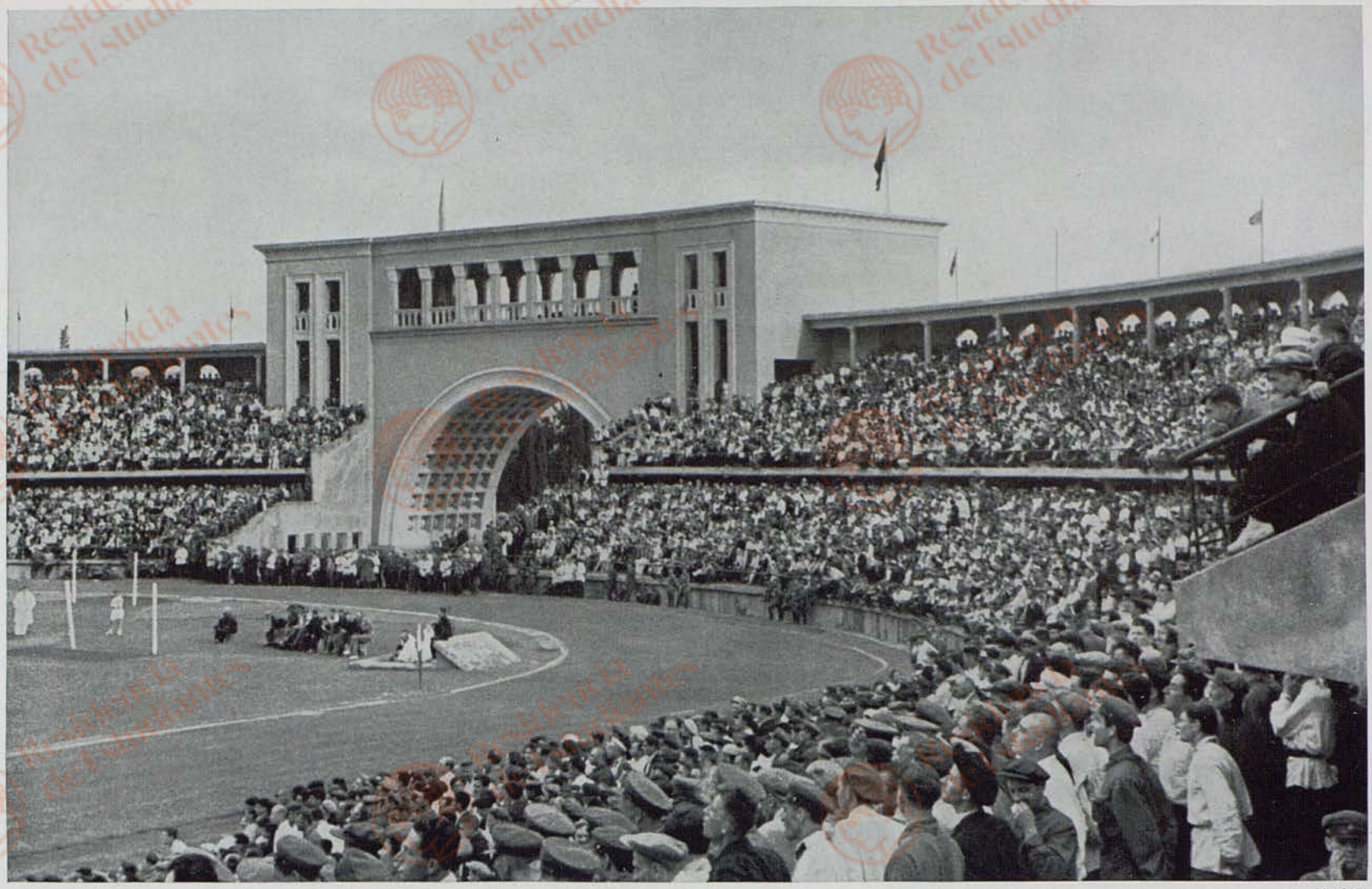
Freighters and Tankers Come to Batumi, Black Sea Port, for Oil Piped Across Transcaucasia

The 510-mile pipeline, completed twelve years ago, ends close to the water front, at huge refineries built by the Government. Special harbor pipes carry the fuel from the refineries to the ships. Batumi leads all other Soviet ports in exportation of oil. The sign in the center of the picture indicates that this is a passenger pier.

Sovfoto

Wheat and Champagne Go to Sea from the Harbor of Novorossisk

The grain comes from the North Caucasian steppes and is stored in a huge modern elevator with a capacity of more than 55,000 tons. The champagne comes from 500 acres of vineyards which surround the city. Some years more than 275,000 quarts of the wine are exported. In foreground, the Soviet steamer *Gruzia*.



Sovfoto

In the New "Dynamo" Stadium, Tiflis Celebrates the 20th Anniversary of the Georgian Soviet Socialist Republic

The huge amphitheater is named for the sports society responsible for its erection. The Republics of Georgia, Armenia, and Azerbaijan make up the Soviet's "Deep South" below the Caucasus Mountains. Tiflis is the capital of Georgia (pages 118 and 120).

Sovfoto

Maiminat Saibutdinova, Girl Tractor Driver, Takes Time Out for Target Practice at a Daghestan Farm Machine Station

With her fellow workers she learns guerrilla warfare tactics to be used if the Nazis invade her homeland. These young highlanders thus add expert knowledge of modern weapons to their centuries-old mountain-fighting heritage. Daghestan lies on the northern side of the Caucasus and stretches along the Caspian Sea.

Julien Bryan

Machines Are Replacing Manpower, But Human Muscle Still Finds Plenty to Do

On a collective farm two Georgians hand-haul a wickerwork wagon laden with newly threshed wheat. Ten million acres of land in Russia's Georgia are devoted to collective farming, with many tractors and other machines to lighten the drudgery.

Sovfoto

Into Sterch-Kertch the Mountaineer Rides to Post a Letter

He carries the traditional Daghestan silver cartridge cases in his breast pockets. Today they are more ornamental than useful. Like his forebears, he wears a warm lamb's-wool cap and long wool coat.

Sovfoto

With 150 Passengers, This Glider Cuts the Waves at 45 Miles an Hour

Powered by two 675-horsepower engines and two smaller auxiliary motors, this 78-foot Black Sea speedster has a cruising range of 373 miles. The glider makes the 75-mile trip from Sochi to Sukhumi, an eight-hour voyage for a Diesel-engined express boat, in two hours (page 107).

Sovfoto

Sturgeon from the Mouth of the Kura River Go by Air to City Markets

The rushing Kura enters the Caspian Sea about 80 miles south of Baku. From here comes world-famous Russian caviar, salted roe of the sturgeon.

Sovfoto

Ashugs of Azerbaijan Sing Century-old Songs

When the tsars were in power, these folk bards were persecuted because they sang of freedom. Today they are favorites throughout the countryside and take part in the concerts of the Azerbaijan State Philharmonic Orchestra.

again westward to Rostov, along the steppes of the North Caucasus.

After I had made myself comfortable in the practical bunk, it occurred to me that the change in route might have some advantages. The train would take me through regions far more interesting to the modern world than the luxuriant vegetation of Abkhazia or the lonely mountain peaks.

Millions of Tons of Manganese

I was awakened early in the morning by the cry: "Shorapani! Change for Chiatura!" To whom do these names of Georgian provincial towns mean anything? Yet they are exceedingly important from an industrial point of view.

Near the obscure little town of Chiatura are the largest deposits of high-grade manganese in the world. Manganese is required for making steel.

Long, empty freight trains roll daily through the Kvirila Valley to the pits and return full of ore, which normally is carried to Poti, a Black Sea port, for shipment.

The manganese reserves in Georgia are estimated at 140 to 150 million tons of crude ore—enough for several mechanized world wars, or for immense peaceful progress.

The next interesting stop is Tbilisi, the official name of the capital of Georgia, second largest city in the Caucasus. Outside of Russia, the Russian name, Tiflis, is more familiar, but the Russians prefer to use the Georgian name to emphasize the Georgian character of the city.

The population takes pride in being the best dressed in any city of the Soviet Union. Caucasian national costumes of all sorts mingle with modern fashions in the restaurants and theaters. The national Georgian opera, second only to those of Moscow and Leningrad, is in Tiflis (pages 114 and 120).

Scarcely any other city in the world has such a babel of languages. One hears Georgian and Russian most often, but there is also plenty of Jewish, Armenian, Turkish, Greek, Iranian, and German, as well as the languages and dialects of some fifty Caucasian peoples who frequent the city. Arab geographers had good reason to call the Caucasus "Mountain of Languages."

In the last few years, Transcaucasia has been faced with the problem of keeping the power supply adequate to the increasing demands of heavy industry. The organization

Sovfoto

How Goes the Battle? News from the Front Reaches Daghestan

Townspeople gather before Agvali's newsstand to read the latest bulletins. Before the Russian conquest, in the 19th century, none of the 20 tongues spoken by the mixed tribes of this Caucasus Mountain district had been reduced to writing. Today 52 newspapers are published in 10 different languages.

Sovfoto

Shahnazarov, Village Schoolmaster, Reads the News to Old Daghestan Farmers

In their youth they had no opportunity to learn to read or write. Here, on the Gergebil Collective Farm, they are kept informed by younger men. Their grandchildren often write letters for them.

Sovfoto

Students Compare Notes from a Vantage Point Overlooking Tiflis' Square of Heroes

The plaza is a memorial to distinguished scientists, men of letters, and soldiers of the Soviet Union (page 118). Joseph Stalin, Soviet Premier, was born in the village of Gori near this city. His father was a Tiflis shoe factory worker. Here Stalin, as a youngster, first led revolutionary movements against the tsars.

of defense industries in the United States involves the same problem.

The Georgian authorities solve it in typically Soviet fashion: Whenever there is a current shortage due to the power demands of new factories, private consumption of power is rigorously throttled. In the last few years it has not been unusual for a traveler to arrive in Tiflis by the light of oil lamps.

At such times the streetcars run only at predetermined hours, and other means of transportation become frightfully overcrowded.

Forest of Oil Derricks Near Baku

From Tiflis one can either take a bus directly northward on the Georgian Military Highway, the only highway that crosses the main chain, to Ordzhonikidze, the capital of northern Ossetia, or take the train around the whole East Caucasus in a wide circle along the Caspian Sea. I decided to take the train.

After Tiflis the landscape becomes steadily drier, the woods gradually vanish, and the train travels for almost a whole day through desert country, all the way to the Caspian Sea.

In the night shadows of this waste land, we saw a strange forest, the first in 1,000 miles. It turned out to be a forest of oil derricks, extending about ten miles northeast of the so-called "Black City" of Baku. Almost half a million of Baku's 810,000 inhabitants live directly or indirectly from petroleum.

Oil and manganese are the two great magnets drawing the attention of the world to the Caucasus.

From 80 to 90 percent of the crude oil produced in the Soviet Union comes from Caucasian wells. The annual production is

Sovfoto

Ships Refuel at Floating Filling Stations Far Out in the Caspian Sea

Oil tankers from Baku have anchored along the route of southbound vessels. The tankers thus avoid the long, tortuous passage through the Volga Delta into the port of Astrakhan. Skippers leave Astrakhan with little fuel, knowing that the oil boats will be waiting for them. Baku, on the Caspian, is the center of the Soviet Union's richest oil-producing region. This modern city is as populous as St. Louis.

estimated by experts at approximately 30,400,000 metric tons, or 212,800,000 barrels—about as much as California's annual output.

Baku has the character of a modern industrial city. It is surrounded by pleasant new suburbs with parks and playgrounds. Donkey-riding peasants, for whom time is still the cheapest thing on earth, are a picturesque contrast amid the rushing buses and electric suburban trains. The variety of Caucasian nationalities gives the city a gay stamp.

The railroad continues northward along the shore of the "bluest of all seas," as the Russians like to call the Caspian, past the wheatfields and herds of cattle in Daghestan, past fishing boats and picturesque old cities. Most memorable of these hoary towns is Derbent, vivid against the mountain slope with its innumerable motley-colored towers and walls.

From Makhach Kala, capital of the Republic of Daghestan, and the northernmost of the coastal oil fields, it is about 550 miles over North Caucasian steppes back to Rostov. Over this vast area the train traveler sees pastures, herds, lambskin caps, hilly steppes, Cossack settlements with sunflower plantations, tractors and combines working on broad fields, and here and there Red Army soldiers maneuvering.

Here he is most aware of the vast monotony of the Russian landscape, the endless distances. After a bumpy night, he looks out of the window and sees seemingly the same grazing horse, the same small hut he saw at twilight, alone against the violet profile of the distant heights.

THEATER OF WAR IN EUROPE AFRICA AND WESTERN ASIA

Compiled and Drawn in the Cartographic Section of
The National Geographic Society *for*
THE NATIONAL GEOGRAPHIC MAGAZINE

Gilbert Grosvenor, Editor

Scale 1:15,000,000 or 236.7 miles to the inch

STATUTE MILES 0 100 200 300 400 500 600 700 800 900 1000
KILOMETERS 0 100 200 300 400 500 600 700 800 900 1000

Azimuthal Equidistant Projection, Pole of Projection Latitude 40° Longitude 20° E.
International Boundaries as of Sept. 1, 1939, the day Germany invaded Poland.

Capitals ⊛ ⊙
Principal railways
Railways under construction
Oil pipe lines — Oil fields ▲
Canals — Ruins
Elevations in Feet + 2000

Deserts · Glaciers · Swamps · Tundra

Altitudes

Meters	Feet
2000	6562
1000	3280
500	1640
200	656
Sea level	0
	Below sea level

James M. Darley, Chief Cartographer
Culture by Appbia E. Holdstock and Wellman Chamberlin
Relief by John J. Brehm
Washington July, 1942

AIRLINE DISTANCES IN STATUTE MILES

	Aden (Arabia)	Alexandria (Egypt)	Archangel (U.S.S.R.)	Athens (Greece)	Baghdad (Iraq)	Basra (Iraq)	Belfast (Northern Ireland)	Berlin (Germany)	Brazzaville (French Equatorial Africa)	Bucharest (Rumania)	Budapest (Hungary)	Cologne (Köln) (Germany)	Dakar (French West Africa)	Diego Suarez (Madagascar)	Freetown (Sierra Leone)	Gibraltar (Mediterranean)	Helsingfors (Finland)	Horta (Azores)	Istanbul (Turkey)	Karachi (India)	Khartoum (Anglo-Egyptian Sudan)	Kuibyshev (U.S.S.R.)	Lagos (Nigeria)	Las Palmas (Canary Islands)	Lerwick (Shetland Islands)	Lisbon (Portugal)	London (England)	Marseille (France)	Mombasa (Kenya)	Moscow (U.S.S.R.)	Munich (Germany)	Newfoundland Airport	Reykjavik (Iceland)	Rome (Italy)	Sal (Cape Verde Islands)	Tashkent (U.S.S.R.)	Tiflis (U.S.S.R.)	Tripoli (Libia)	Trondheim (Norway)	Tunis (Tunisia)
Aden (Arabia)		1595	3580	2180	1435	1435	3965	3675	3975	2855	3455	3540	3755	1755	3580	3430	3790	3960	2180	1595	1595	1595	3675	3430	3960	3960	3750	3750	3750	3960	3750	3750	3960	3750	3750	3750	3750	3750	3750	3750
Alexandria (Egypt)	1595		2800	630	895	895	2165	1965	2375	1175	1665	1745	2165	1165	2000	1665	2000	2165	1745	1000	1000	1000	2075	1745	2165	2165	1955	1955	1955	2165	1955	1955	2165	1955	1955	1955	1955	1955	1955	1955
Archangel (U.S.S.R.)	3580	2800		2160	2600	2600	1060	1060	3160	2160	1660	1060	3160	3160	2800	2800	1060	2800	2160	3160	3160	3160	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
Athens (Greece)	2180	630	2160		1200	1200	2530	2330	3140	1540	1030	1110	2530	2530	2165	2165	1425	2165	1540	2530	2530	2530	1425	2165	2165	1425	1425	1425	1425	1425	1425	1425	2165	1425	1425	1425	1425	1425	1425	1425
Baghdad (Iraq)	1435	895	2600	1200		282	2565	2365	3175	1575	1925	2005	2565	1925	2565	2205	2400	2565	1205	1205	1205	1205	2475	2205	2565	2565	2355	2355	2355	2565	2355	2355	2565	2355	2355	2355	2355	2355	2355	2355
Basra (Iraq)	1435	895	2600	1200	282		2565	2365	3175	1575	1925	2005	2565	1925	2565	2205	2400	2565	1205	1205	1205	1205	2475	2205	2565	2565	2355	2355	2355	2565	2355	2355	2565	2355	2355	2355	2355	2355	2355	2355
Belfast (Northern Ireland)	3965	2165	1060	2530	2565	2565		1060	3160	2160	1660	1060	3160	3160	2800	2800	1060	2800	2160	3160	3160	3160	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
Berlin (Germany)	3675	1965	1060	2330	2365	2365	1060		3160	1960	1460	1060	3160	3160	2800	2800	1060	2800	1960	3160	3160	3160	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
Brazzaville (French Equatorial Africa)	3975	2375	3160	3140	3175	3175	3160	3160		3140	3140	3160	1975	3140	1975	3140	3160	3140	3140	3140	3140	3140	1975	1975	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140
Bucharest (Rumania)	2855	1175	2160	1540	1575	1575	2160	1960	3140		1030	1660	3140	3140	2800	2800	1660	2800	1030	3140	3140	3140	1660	2800	2800	1660	1660	1660	1660	1660	1660	1660	2800	1660	1660	1660	1660	1660	1660	1660
Budapest (Hungary)	3455	1665	1660	1030	1925	1925	1660	1460	3140	1030		1660	3140	3140	2800	2800	1660	2800	1030	3140	3140	3140	1660	2800	2800	1660	1660	1660	1660	1660	1660	1660	2800	1660	1660	1660	1660	1660	1660	1660
Cologne (Köln) (Germany)	3540	1745	1060	1110	2005	2005	1060	1060	3160	1660	1660		3160	3160	2800	2800	1060	2800	1660	3160	3160	3160	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
Dakar (French West Africa)	3755	2165	3160	2530	2565	2565	3160	3160	1975	3140	3140	3160		3140	1975	3140	3160	3140	3140	3140	3140	3140	1975	1975	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140
Diego Suarez (Madagascar)	1755	1165	3160	2530	1925	1925	3160	3160	3140	3140	3140	3160	3140		3140	3140	3160	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140
Freetown (Sierra Leone)	3580	2000	2800	2165	2565	2565	2800	2800	1975	2800	2800	2800	1975	3140		2800	2800	2800	2800	3140	3140	3140	1975	1975	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800
Gibraltar (Mediterranean)	3430	1665	2800	2165	2205	2205	2800	2800	3140	2800	2800	2800	3140	3140	2800		2800	2800	2800	3140	3140	3140	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800
Helsingfors (Finland)	3790	2000	1060	2165	2400	2400	1060	1060	3160	1660	1660	1060	3160	3160	2800	2800		2800	1660	3160	3160	3160	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
Horta (Azores)	3960	2165	2800	2165	2565	2565	2800	2800	3140	2800	2800	2800	3140	3140	2800	2800	2800		2800	3140	3140	3140	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800
Istanbul (Turkey)	2180	1745	2160	1540	1205	1205	2160	1960	3140	1030	1030	1660	3140	3140	2800	2800	1660	2800		3140	3140	3140	1660	2800	2800	1660	1660	1660	1660	1660	1660	1660	2800	1660	1660	1660	1660	1660	1660	1660
Karachi (India)	1595	1000	3160	2530	1205	1205	3160	3160	3140	3140	3140	3160	3140	3140	3140	3140	3160	3140	3140		3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140
Khartoum (Anglo-Egyptian Sudan)	1595	1000	3160	2530	1205	1205	3160	3160	3140	3140	3140	3160	3140	3140	3140	3140	3160	3140	3140	3140		3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140
Kuibyshev (U.S.S.R.)	1595	1000	3160	2530	1205	1205	3160	3160	3140	3140	3140	3160	3140	3140	3140	3140	3160	3140	3140	3140	3140		3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140	3140
Lagos (Nigeria)	3675	2075	1060	1425	2475	2475	1060	1060	1975	3140	3140	1060	1975	3140	2800	2800	1060	2800	1660	3140	3140	3140		2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
Las Palmas (Canary Islands)	3430	1745	2800	2165	2205	2205	2800	2800	1975	2800	2800	2800	1975	3140	2800	2800	2800	2800	2800	3140	3140	3140	2800		2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800
Lerwick (Shetland Islands)	3960	2165	2800	2165	2565	2565	2800	2800	3140	2800	2800	2800	3140	3140	2800	2800	2800	2800	2800	3140	3140	3140	2800	2800		2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800
Lisbon (Portugal)	3960	2165	1060	1425	2565	2565	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800		1060	1060	1060	1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
London (England)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060		1060	1060	1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
Marseille (France)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060		1060	1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
Mombasa (Kenya)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060		1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
Moscow (U.S.S.R.)	3960	2165	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060	1060		1060	1060	2800	1060	1060	1060	1060	1060	1060	1060
Munich (Germany)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060	1060	1060		1060	2800	1060	1060	1060	1060	1060	1060	1060
Newfoundland Airport	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060	1060	1060	1060		2800	1060	1060	1060	1060	1060	1060	1060
Reykjavik (Iceland)	3960	2165	2800	2165	2565	2565	2800	2800	3140	2800	2800	2800	3140	3140	2800	2800	2800	2800	2800	3140	3140	3140	2800	2800	2800	2800	2800	2800	2800	2800	2800	2800		2800	2800	2800	2800	2800	2800	2800
Rome (Italy)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800		1060	1060	1060	1060	1060	1060
Sal (Cape Verde Islands)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060		1060	1060	1060	1060	1060
Tashkent (U.S.S.R.)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060		1060	1060	1060	1060
Tiflis (U.S.S.R.)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060	1060		1060	1060	1060
Tripoli (Libia)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060	1060	1060		1060	1060
Trondheim (Norway)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060	1060	1060	1060		1060
Tunis (Tunisia)	3750	1955	1060	1425	2355	2355	1060	1060	3140	1660	1660	1060	3140	3140	2800	2800	1060	2800	1660	3140	3140	3140	1060	2800	2800	1060	1060	1060	1060	1060	1060	1060	2800	1060	1060	1060	1060	1060	1060	