Animal genetic resources of the USSR

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5. HORSES

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A great number of horse breeds have been developed in the vast territory and differing climatic zones of the USSR as a result of deliberate breeding or by unconscious selection under the influence of varied natural, social and economic conditions.

Table 5.1 HORSE NUMBERS IN THE USSR ON 1 JANUARY 1980
(Data of CSU - Central Board of Statistics)

Breed	Total	Purebred
Kazakh	312 447	63 329
Russian Trotter	287 267	26 803
Orlov Trotter	252 112	18 514
Yakut	134 014	133 431
Don	127 684	18 120
Byelorussian Harness	93 040	27 560
New Kirgiz	56 650	10 713
Russian Heavy Draught	48 490	4 314
Bashkir	45 717	15 368
Kustanai	41 772	2 922
Kushum	38 901	4 829
Soviet Heavy Draught	35 039	3 375

Kabarda	28 543	8 549
Karabair	28 223	25 499
Budyonny	22 293	5 668
Vladimir Heavy Draught	16 962	1 255
Tori	15 643	3 349
Latvian	13 939	1 200
Altai	10 011	3 500
Lithuanian Heavy Draught	9 000	5 122
Lokai	8 900	7 344
Ukrainian Saddle	7 458	923
Thoroughbred	6 990	6 990
Zhmudka	3 782	2 392
Akhal-Teke	3 579	1 168
Trakehner	2 839	1 765
Vyatka	1 840	11
Tersk	1 198	518
Iomud	964	616
Arab	784	484

Estonian Native	182	152
Deliboz	94	94

Some breeds were widespread and used in crossbreeding with the less productive ones. Others were kept pure but the area of their breeding is restricted. The breeding of some breeds has declined and they are now on the verge of extinction, for instance the Mingrelian, Mezen, Pechora and Tushin.

At the same time new breeds have been developed. For instance, during 1945-85 the following breeds received official recognition; Budyonny, Tersk, Vladimir, Tori, New Kirgiz, Kustanai, Latvian and Kushum. The breeding work for developing the Ukrainian Saddle and Byelorussian Harness breeds is nearing completion.

On 1 January, 1980, state farms had 3 053 100 breed horses including 550 400 purebreds. The monograph describes 33 breeds totalling 2 936 900 including 18% of purebreds. The monograph does not cover 11 breeds and breed groups present in small numbers and totalling 116 200 head. They include Voronezh Coach, Hutsul, Kuznetsk, Chumysh and others.

The Breed Regionalization Plan envisages an increase in the number of purebreds. When systematic grading up with stud sires is employed, crosses of the second and third generations are regarded as belonging to the breed while crosses of the forth and later generations are accepted as purebreds.

The State Studbooks register pedigree sires and dams of elite or 1st class which are used for breeding at stud farms and stables. Registered horses are the best animals and make up the nucleus of the breed. About 60% of Thoroughbreds are registered, 33% of Budyonny and Don, 28-35% of Russian and Orlov Trotters, 28% of Russian and Soviet Draught and over 80% of Arabian, Akhal-Teke and Trakehner.

The elite nucleus of major breeds of horses is concentrated in 104 horse breeding centres where in tensive breeding activities are undertaken. the horse genetic resources of the USSR are widely used through out the world, horses being exported to over 20 countries.

HORSE
Akhal-Teke

SADDLE HORSES
AKHAL-TEKE (Akhaltekinskaya)

The breed is a direct descendant of ancient riding horses. It had emerged by the turn of the 8th century at the the time when Turkmenian horses were regarded as the best in Central Asia. It was developed in the oases in the southeast of the Kara-Kum desert and the foothills of the Kopet-Dag.

The Akhal-Teke was bred on the basis of a particular rearing system involving horse raising on a man-grown fodder consisting of limited but highly nutritive feed such as corn, alfalfa, bread and animal protein where available. This is typical only of the desert and semi-desert, as horse keeping on the steppes involves feeding substantial amounts of grass and hay.

From the Akhal and the Tejen oases in Turkmenia the breed was introduced into many other places. During the 8-10th centuries the guards of the khalif of Baghdad consisted of Turkmen horsemen mounted on Turkmenian horses. Persian, Bukhara and Turkmenian stallions were extensively employed in the stables of Russian tsars in the 14-17th centuries. In the 15-19th centuries the Turkmenian penetrated to western Europe. In the USSR the Akhal-Teke is now found in Turkmenia, southern Kazakhstan and in North Caucasus.

Its conformation is as follows: head - light and clean-cut, straight and long in the muzzle; neck -

long, thin, muscular, sometimes with a protruding throat-latch; long and high withers; long and often slightly dipped back; long loin; straight croup. The Akhal-Teke has a typical linear exterior. The chest is narrow and not very deep. Sloping shoulders, clean long legs, hard but moderately developed joints, long and often steeply sloping pasterns. Large and hard low-heeled hoofs. Tight thin skin; thin hair coat, mane and tail. Delicate but hardy build.

The average measurements (in cm) of stallions at studs are as follows: height at withers 158.3, oblique body length 159.8, chest girth 176.3, cannon bone girth 19.1, mares: 157.1, 158.9, 176.0 and 18.8 respectively. Live weight of stallions is 430-500 kg.

Age at maturity is 5-6 years, which is relatively late. Akhal-Teke horses show excellent speed, although they lack range and strength. Their action is distinguished by a strength, smoothness and elegant carriage which are well appreciated in modern classic events and particularly in the dressage. The jump is very soft and elastic. However, insufficient height and strength prevent it from fully matching the requirements of modern competitions. Nevertheless, Absent, Muar and Penteli of the Akhal-Teke breed are well-known names in world equestrian sports as winners in international competitions and the Olympic Games. The unique sporting assets of the breed are employed in crossbreeding the Akhal-Teke with the Trakehnen, Hanover and the Latvian riding breeds.

The Akhal-Teke combines average fertility with extended longevity. It is not uncommon that stallions are widely employed after the age of 20. The record longevity of 30 years was attained by the mare Elan which produced 17 foals. At the same time the breed is not easily acclimatized in other regions of the country.

Intensive agriculture and poor competitiveness have resulted in a sharp decline in the purebred population. Volumes III-V (1941-75) of the Studbook recorded 849 stallions and 1406 mares. However, volume VI of 1981 had only 87 stallions and 300 mares. This suggests that the breed's gene pool is strictly limited. The majority of the modern Akhal-Teke are direct male-line descendants of the sire Boinou (1885).

The Akhal-Teke has a low frequency of transferrin types. In 732 specimens the frequencies of different alleles were as follows: D 0.17; F 0.52; H 0.08; 0 0.09; R 0.17. Transferrin M is absent; H and 0 are rare.

The breed consists of 7 sire lines and 5 mare familes; two new lines are being formed.

It is planned to raise the breeding nucleus up to 700 mares. The breed has been spreading internationally. The United States and the Federal Republic of Germany plan to form Akhal-Teke breed societies.

HORSE
Arab

ARAB (Chistokrovnaya arabskaya)

Like the Thoroughbred the pure Arabian breed is employed to improve the type and action of other breeds. Many investigators believe it to be the most ancient pure breed. Others think it developed as a result of crossing between ancient breeds of Africa, Central Asia and Asia Minor. The Arabian is believed to have originated during the 4-8th centuries in the hot dry climate of the steppes, deserts and oases in the Arabian peninsula.

The first Arabian horses were imported into Russia during the rule of Ivan the Terrible. The first use of Arab stallions in England is recorded a little later. Extensive import of the Arab into Russia began in the mid-18th century i.e. in the era of the Turkish wars. A.G. Orlov imported 30 stallions and 12 of them were used at his stud. Smetanka proved to be the best and his descendants became the progenitors of the Orlov Trotter and Orlov Riding horse. Orlov was the first Russian to export Arab horses. From his stud he sold the stallions Alibei and Orlov Arabian to Britain. Prior to the 1917 Revolution the Arab was raised at private studs: Sangushko, Brabitsky, Pototsky, Sherbatova and Stroganov. After the Revolution the Soviet Government took steps to revive horse breeding and instituted the Tersk stud on the basis of the former Stroganov and Sultan Ghirey farms.

Breeding of Arabian horses with a selection programme started in 1925. The Tersk stud imported several stallions from Hungary and France in 1930, from Britain in 1936, and from Poland in 1939. As a result of continuous breeding a distinctive group of Arab horses was produced

perfectly adapted to conditions in the USSR. The Arab is currently concentrated at five studs and two horse breeding farms. The mare population stands at 250.

Separation into intra-breed types is a specific feature of modern Arab horses. The Siglavi type has pronounced Oriental features, proportional build, fine-boned and robust constitution, low stature and adequate body size. The Koheilan type is distinguished by prominent body mass, large height, solid build and the ability to thrive irrespective of management conditions. The Koheilans show good action and satisfactory endurance. The Hadban type has less pronounded Oriental lineage, greater height, excellent limbs constitution, well-developed musculature; it shows high action and better endurance. The Koheilan-Siglavi type has been bred at the Tersk stud as a very promising one which successfully combines many assets of its progenitors. Outside the USSR it is named the "Tersk" type.

The Arabian stallion measurements (in cm) are as follows: height at withers 154, oblique body length 152, chest girth 178, cannon bone girth 19.3; mares: 151, 151, 178 and 18.7 respectively.

Arabian horses bred in the USSR are larger and have a better conformation than those in many other countries. They have light, straight or dished heads with wide jaws, broad forehead, large eyes and short muzzle. A long high-set neck is arched to the poll. Long, well-muscled withers. Sloping shoulders prevail in the Hadban and the Koheilan-Siglavi types. Medium-long straight back, medium-long and flat loin; long, correctly-sloping wide croup, the sacrum often short; wide and deep chest. All types have well-developed costal cartilage. Correctly-set forelegs; well-developed forearms, knee-joints and cannons, medium-long and properly sloping pasterns. Correctly-set hindlegs, well-developed hock-joints, cannons and fetlock-joints. Sometimes there is a tendency to sickle-hocked hindlegs and formation of oxostoses. Solid tendons and ligaments, exceptionally hard hoofs. Predominant colour is chestnut; bay and grey are rare. There are no other colours in the breed.

The Arabian is an energetic, active and well-disposed horse.

Arab horses raised in the USSR show remarkable endurance. Their speed records in the Soviet Union exceed those in other countries by 3 sec. The USSR record for 2000 m is 2 min 14 sec, Polish 2 min 22 sec, Egyptian 2 min 18.4 sec, the United States 2 min 17.1 sec. The Arabian has also shown excellent endurance in long-distance races: 5 hr 6 min for 100 km under a 80 kg rider; 1 hr 38 min 8 sec for 50 km. An admirable example of their hardiness was the 1941 ride of the Tersk stud trainees from Lvov to Mineralnye Vody during the war. All Arabian horses, the two-year-olds included, successfully reached their destination. They work quite well in harness and may be used for different jobs.

Arabian horses bred in the USSR have remarkable fertility and longevity. The average foaling rate is 86 births per 100 mares; gestation period is 340 days. The outstanding mares Gazella and Tarashcha (dam and daughter) produced 22 foals each. The stallion Nasim lived to the age of 31 years. There have been no recorded cases of melanosarcoma in the breed.

The breed's structure consists of intra-breed types, sire lines and mare families. The Nasim, Korei and Koheilan lines are the best represented. In the course of the breed's improvement in the USSR 5 mare families were formed.

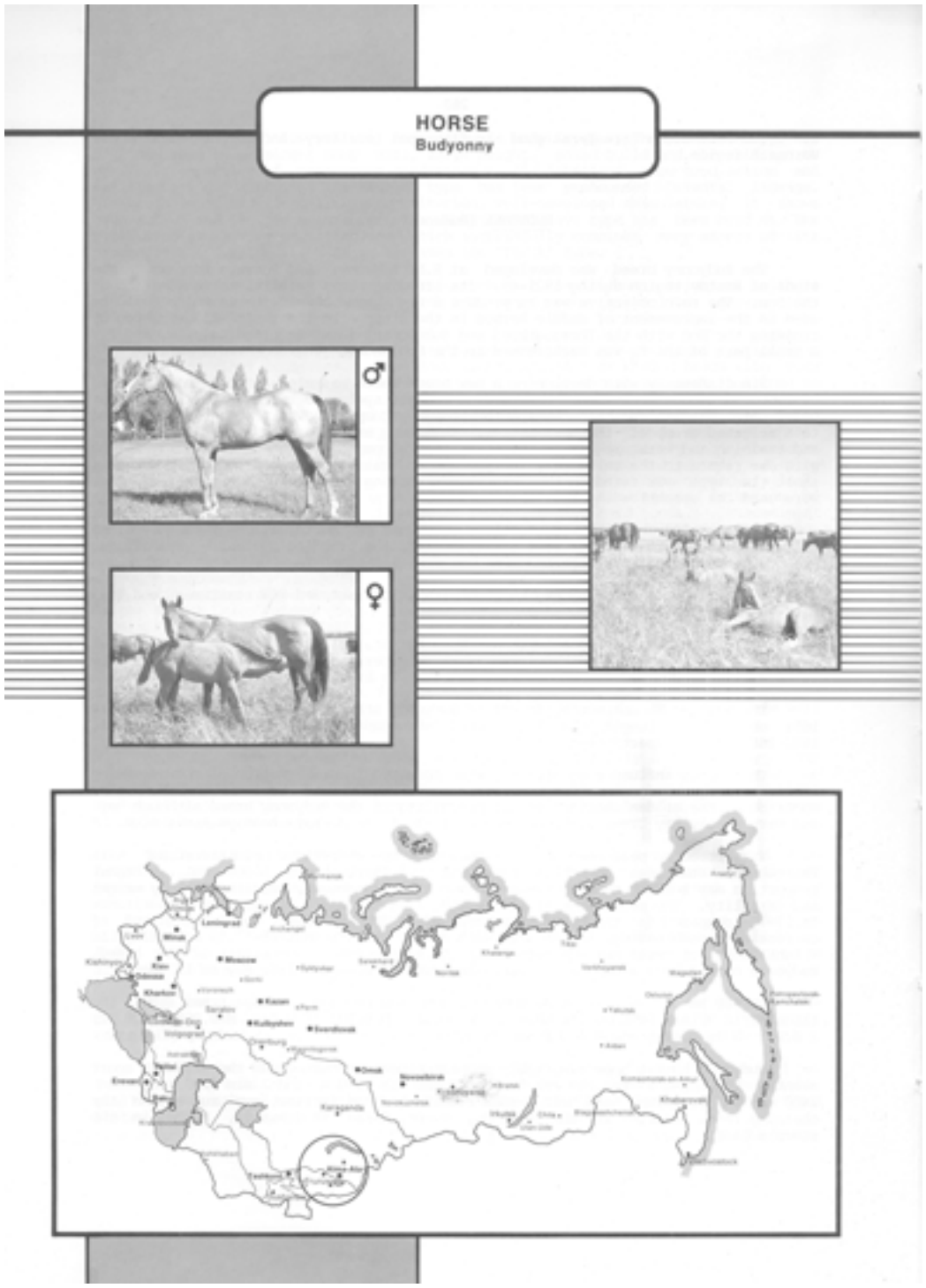
The breed has the following blood group antigen frequencies: Aa 0.98; Ac 0.14; Ca 0.99; Da 0.00; Db 0.31; Dd 0.90; De 0.56; Dh absent; Pa 0.51; Qa 0.40. The polymorphism of the serum protein system is represented by 5 transferrin alleles, 2 albumin and 5 esterase and cocarboxylase alleles.

The Arabian is a most useful breed for improving small and light horses like the Karabakh, Deliboz, Iomud, Lokai and Tersk. It offers a rich source of genes for commercial production of

various competition horses by crossbreeding.

The Arabian is an effective export item. Koheilan-Siglavi animals raised at Tersk stud and sold for export have repeatedly won prizes at national competitions, stallion exhibitions and races in the Netherlands, the FRG, France and the United States.

The best studs are Tersk stud in Stavropol territory and Khrenovski stud in Voronezh region.



BUDYONNY (Budennovskaya)

The Budyonny breed was developed at S.M. Budennyi and Pervaya Konnaya Armia studs of Rostov region during 1921-49. Its breeding went parallel to restoration of the Don. The main objective was to produce a high-grade cavalry horse which could be used in the improvement of saddle horses in the steppe regions. It was developed by crossing the Don with the Thoroughbred and subsequent inter se breeding of F_1 and F_2. A small part of the F_3 was backcrossed to the Don and the Thoroughbred.

Simultaneously with developing a new breed there was elaborated a novel method of improved taboon management. According to this system high-grade stock were kept under unfavourable conditions in special barns. Complete diet feeding was provided to a selected group of the best horses. The young stock received adequate exercise and training and were regularly tested at the

hippodrome. The taboons were formed with due regard to the uniformity in type and to mass selection standards. Within a short time type was fixed in the crossbreds forming the breeding nucleus and they were used for crossbreeding the local horses.

Although 100 Thoroughbred stallions were used in the formation of the new breed only the descendants of four were admitted into the breeding nucleus - Sympatiaga, Svetets, Inferno and Kokas.

Volumes I-V of the Budyonny studbook (1951-79) recorded 724 stallions and 4643 mares.

The modern Budyonny is a horse of ample height, solid clean build, with regular exterior and heavily-muscled body. It is easy tempered and energetic. The Budyonny is an easily broken and reasonably fast jumper. It is one of the best racehorses.

The average measurements (in cm) of Budyonny stallions are: height at withers 165; oblique body length 165; chest girth 190; cannon bone girth 22; mares: 161, 162, 188 and 20 respectively.

The strong influence of the Don breed resulted in preservation of corresponding intra-breed types in the Budyonny - eastern, heavy and basic. The Don also contributed the golden chestnut colour prevailing in the Budyonny breed although bay, and very rarely bay brown or black, may be seen at the Pervaya Konnaya Armia stud.

The breed's performance is improved by corrective crossbreeding with Thoroughbred stallions up to a level of 5/8 Thoroughbred blood but a higher proportion may lead to certain weaknesses such as poor bones, decline in body weight and fertility. The percentage of live births from the mares of the above inheritance is 67-70 compared to the breed's average of 78-80. However, on a background of corrective crossbreeding, inbreeding with a high coefficient (6-12.5% according to Wright) does not cause any depression in the main economic characters of the breed. Budyonny horses have a long life span. The average economic life may be 15 years.

In 400 horses at the S.M. Budennyi and the Pervaya Konnaya Armai studs the transferrin allele frequencies were as follows: D 0.18; F 0.51; H 0.05; 0 0.22; R 0.04; H is absent and H and R are rare.

Budyonny horses show remarkable endurance both in racing and the classic sport events. The breed's records are 1 min 43 sec for 1600 m and 2 min 35.9 sec for 2400 m. The stallion Reis held a USSR record and had international success in the obstacle race, Pintset in the three-day event, Gasan in dressage, Priboi in the steeplechase.

The breed is represented by 6 lines.

The best breeding centres are S.M. Budennyi, Pervaya Konnaya Armia and K.E. Voroshilov studs in Rostov region.

HORSE
Deliboz

DELIBOZ (Delibozskaya)

This breed of oriental saddle horses was formed in Kazakh, Akstafa and Tauz regions of Azerbaijan and adjacent areas of Georgia and Armenia. Some earlier publications described it as the "Kazakh" horse of Azerbaijan or as the Azerbaijan horse.

Specialists singled out a specific Deliboz type among large horse populations studied in the 1930s and late 1940s. Those horses were improved by Arabian and Karabakh saddle-type stallions. Deliboz horses spread widely throughout western Azerbaijan. In 1943 a State Breeding Cooperative (gosplemrassadnik) was established to improve horse populations of the Republic.

Since the 1950s Azerbaijan horses have been improved by Arabian and Tersk sires while Karabakh was bred separately. Crossbreeding involved horses of the Deliboz type.

Deliboz horses differ from others by a clean, short head with a broad forehead and narrow nose, a compact heavy neck, a ribbed massive body with a good top line and an even, long back and loin. Legs are clean and well proportioned and the cannon bone girth is larger than that of other horses.

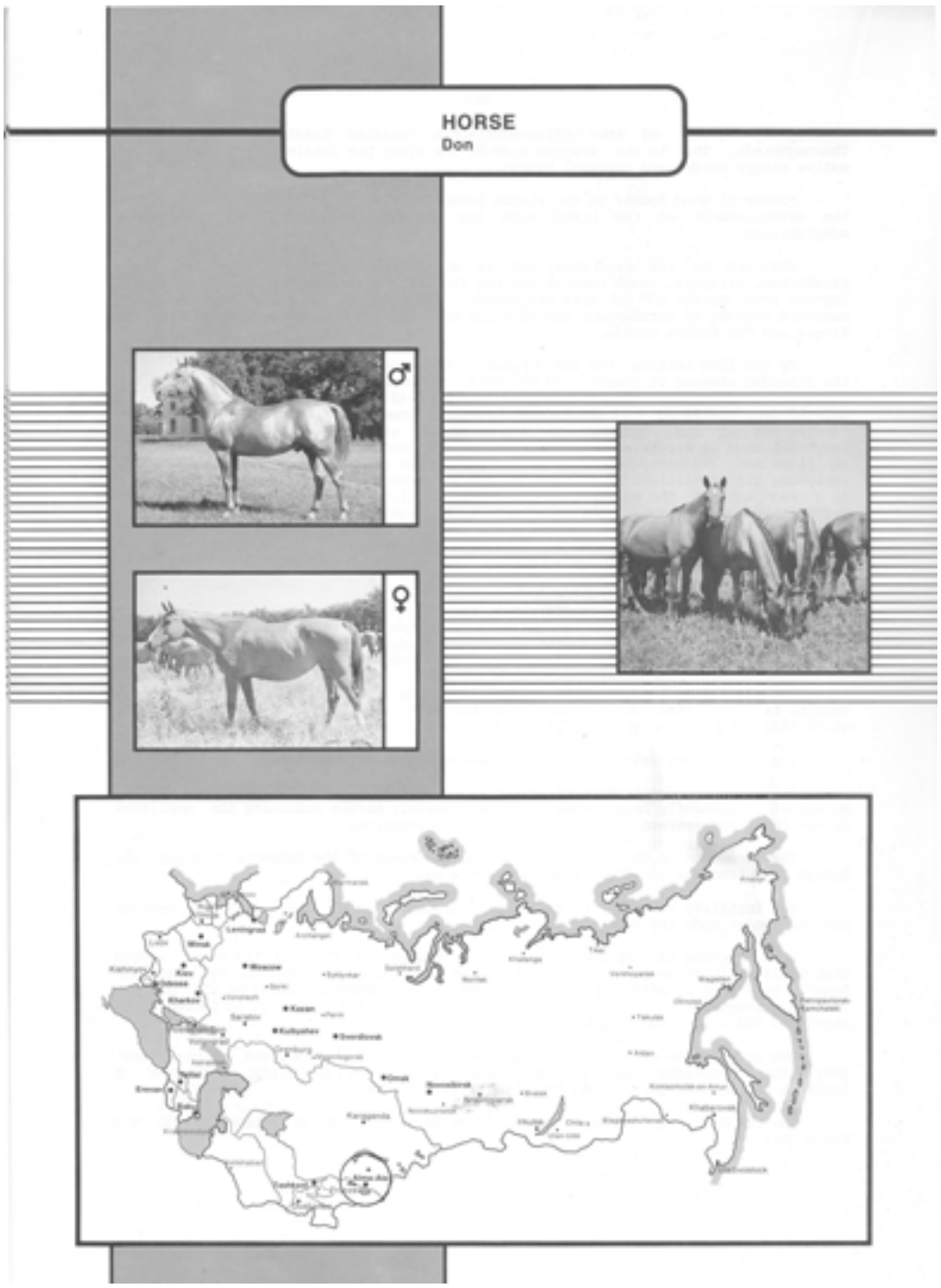
Deliboz is characterized by unstable temperament and predominantly rack (or pace) gait. A typical feature is a peculiar lengthwise fold on the tongue giving the impression of a forked

tongue.

Average withers height is 152 cm, chest girth 172 cm and cannon bone girth 19.4 cm.

The Deliboz horses show good working capacity. They easily cover 45-55 km a day in highlands under a pack weighing 115-130 kg, arid 70 km under a rider. The best racing results are 1 min 56 sec for 1600 m and 2 min 55 sec for 2400 m.

At present the pedigree nucleus of Deliboz is represented by descendants of Tersk stallions Tselostat and Pygmalion; therefore the problem arises of how to restore the breeding nucleus of local horses. Dashyuz stud farm has the 140 most typical Deliboz horses including breeding mares with a high proportion of Tersk blood. It is planned to breed them pure but with single back crossing to one or two stallions with little Tersk blood in order to preserve the valuable traits of the crosses.



DON (Donskaya)

The Don breed was developed on the steppes of the Don river and its tributaries. It arose mainly from the south Russian steppe horses crossed with stallions of oriental breeds such as the Persian, Karabakh and Turkmenian.

While intensive horse breeding in the Don area began in the late 18th century, the selection of the

Don breed started in the 1830s. The modern Don breed had emerged by the 20th century. The population in the west Don region was improved chiefly by horses of the Orlov-Rostopchin (Russian Saddle horse) and by Thoroughbreds. That in the steppes east of the river Don retained many features of native steppe horses and oriental breeds.

Plenty of good fodder in the virgin lands and keeping in taboons contributed to the establishment of the breed with its strong constitution and remarkable adaptability.

This led to its extensive use in all steppe regions - west and south Kazakhstan, Kirgizia, south Siberia and the Transbaikal area - both as a purebred to improve local horses and to form new breeds. The Don was admirably adapted to the mountain regions of Kazakhstan and Kirgizia and used in the development of the New Kirgiz and the Kushum breeds.

By the 20th century the Don population had become the largest in Russia. In the Transdon steppes it reached 70 000 head. However, during World War One and the Civil War it practically disappeared. Volume I (1949) of the Don studbook recorded only 89 pure stallions and 466 mares. Reestablishment of the breeding nucleus was carried out at S.M. Budennyi and Zimovnikovski studs in Rostov region and at Issyk-Kul stud in Kirgizia. Numbers rose and fell and in 1980 Volume VI recorded 126 stallions and 392 mares and the total population of purebreds numbered 17 000. Including all generations of crossbreds the Don breed numbered 128 000. Classified as a saddle breed the modern Don has a distinctive exterior. Its features are: medium-sized or sometimes light head with a straight or slightly dished face, wide forehead, fleshy jaw, medium-length neck low- or high-set, prominent crest and insignificant throat latch, medium withers, straight, flat and wide back, wide and flat loin, correctly sloping or sometimes straight croup, well-developed chest and wide trunk.

The modern Don has considerably improved forelegs. While in 1950-60 underdeveloped knee-joint and knees which were too far back occurred in 20% of purebreds, the defect is now practically eradicated. The shoulder and the pasterns also showed much improvement. The number of sickle-hocked horses has decreased.

The measurement of breeding animals at studs in 1984 produced the following results (in cm): stallions - height at withers 166; oblique body length 164; chest girth 194; cannon bone girth 21.0; mares 164, 165, 195 and 20.5 respectively.

The predominant colour is chestnut, often with a golden sheen.

The breed now consists of three intra-breed types - eastern, heavy and saddle. An effort is presently being made to use extensively horses combining the qualities of the heavy and eastern types with improved conformation.

The formation of the new Zaboi line on the basis of the Zabavnik line and the Gulsyn line from the old Cheln line is almost complete.

The fertility is high - up to 87% live births with 85% survival to one year of age even under moderate management conditions.

Pure breeding in improved taboons and infusion of Thoroughbred blood showed that while an increase in Wright's inbreeding coefficient to 8-10% did not decrease height, body size or performance an increase of Thoroughbred blood over 25% sharply reduced fitness for the taboon conditions and eventually resulted in an increase in abortions and a decline of body size.

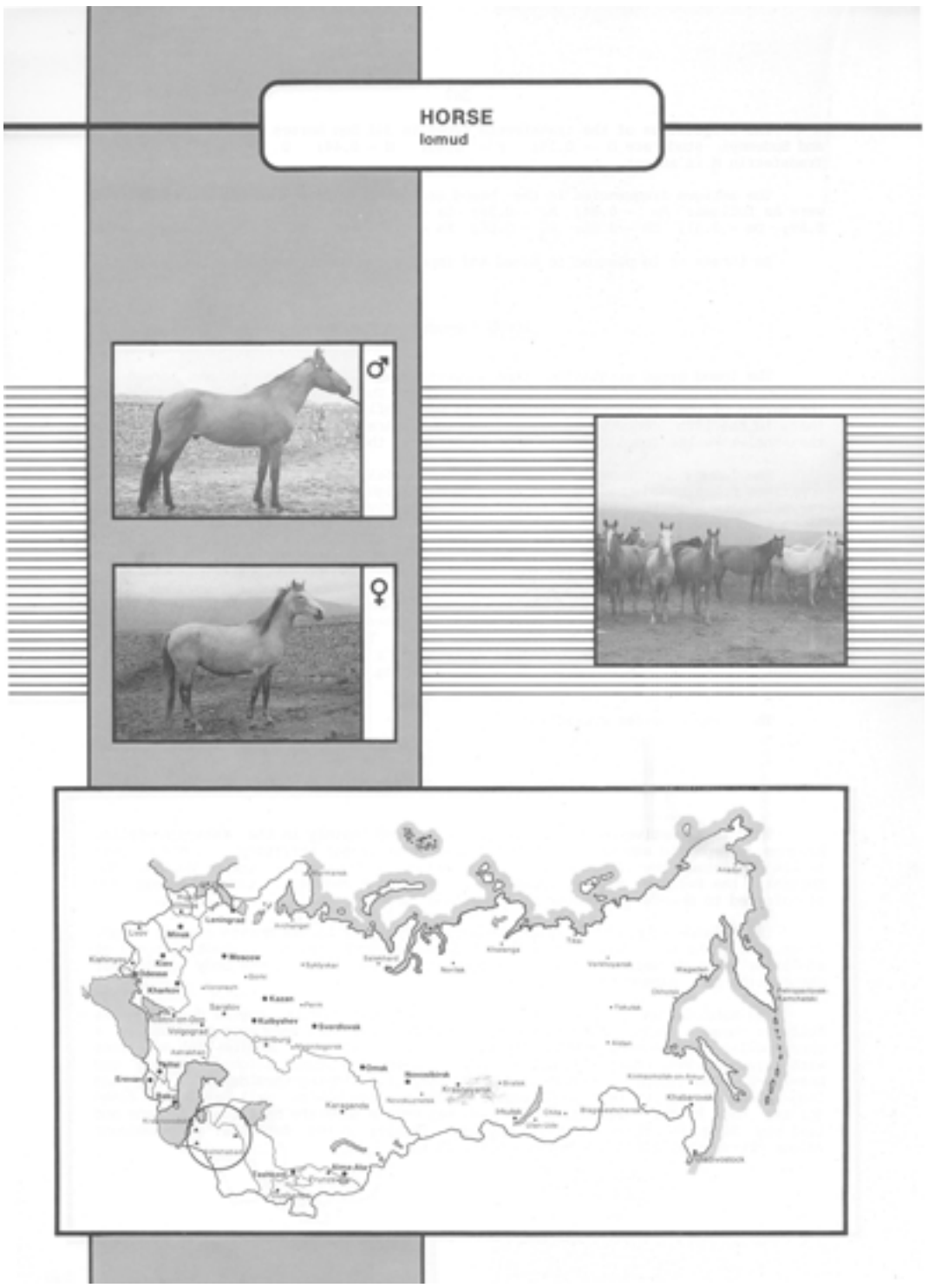
Don horses have versatile working qualities. Although they are not very fast they possess remarkable endurance and rather high jumping abilities. They are of interest for mounted tourism and have high food efficiency.

The breed record in flat races is 2 min 43 sec for 2400 m distance set by Mig (born 1971).

The frequencies of the transferrin types in 341 Don horses at the Zimovnikovski and Budennyi studs are D - 0.16; F - 0.49; H - 0.44; 0 - 0.21; R - 0.08. Transferrin M is absent.

The antigen frequencies in the blood groups of 200 mares at the Budennyi stud were as follows: Aa - 0.84; Ac - 0.36; Ca - 0.78; Da - 0.07; Db - 0.34; Dd -0.69; De - 0.41; Dh - 0.05; R_3 - 0.86; Ka - 0.10; Pa - 0.03; Qa - 0.22.

In future it is planned to breed and improve the Don by pure breeding.



IOMUD (Iomudskaya)

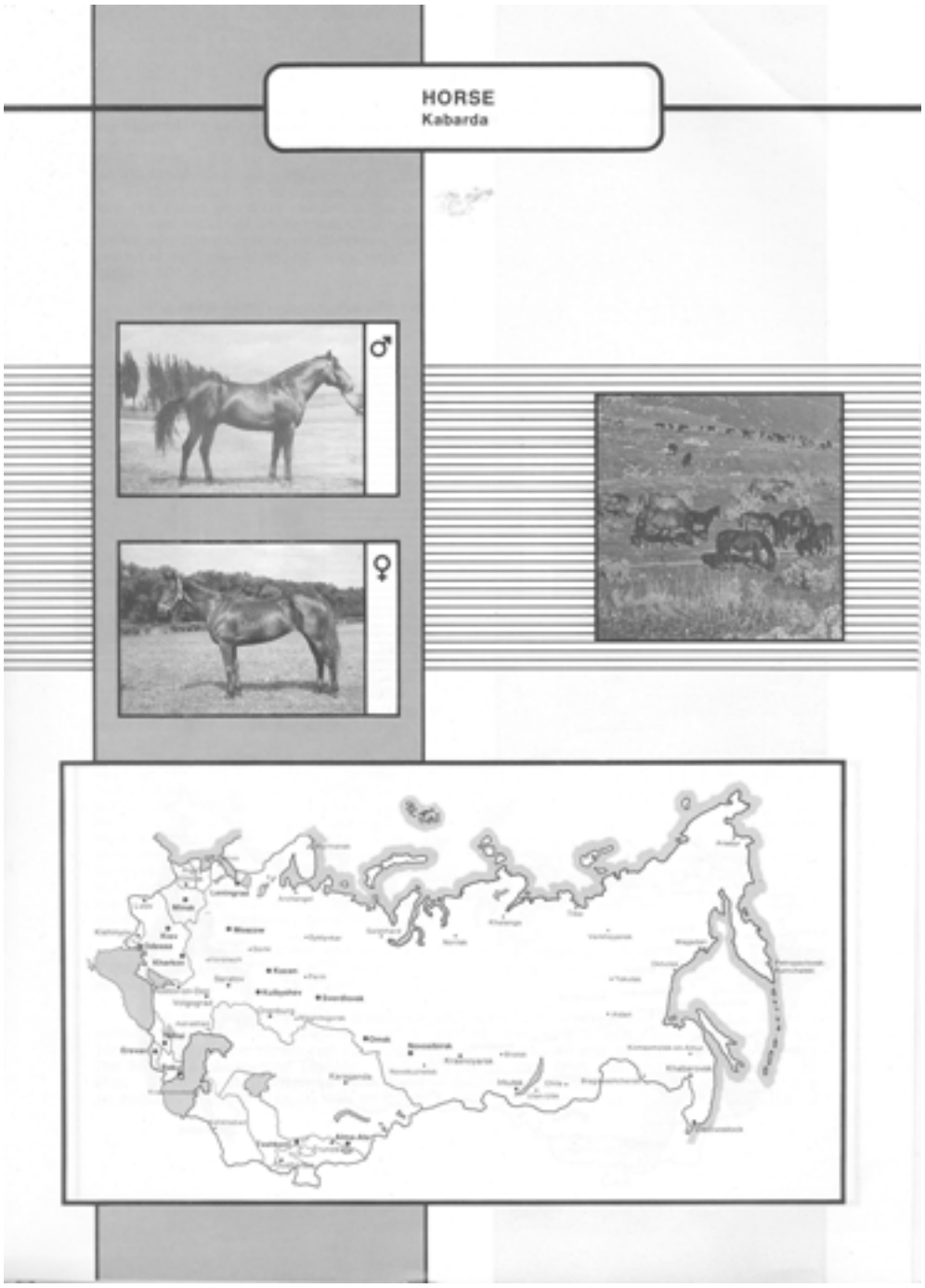
The Iomud breed originates from ancient Turkmenian horses. It was formed by the Iomud tribe in the Tashauz oasis in southern Turkmenia. As the breed occupied the margin of the Turkmenian breed area it was influenced by steppe breeds. After that, in the 14th century, it was influenced by Arabian stallions. In contrast to the Akhal-Teke the Iomud breed is kept in herds in the desert and semi-desert.

The Iomud conformation has the following features: large clean-cut head, sometimes Roman-

nosed, medium-long neck; medium-high withers, solid back with small curve to the withers, nicely turned and regularly sloping croup, shallow chest; clean fine legs, often bowed; sparse mane and tail; delicate skin. Colour is grey or chestnut, rarely golden chestnut or black. The measurements (in cm) of stallions are: height at withers 152, oblique body length 151, chest girth 168, cannon bone girth 19; mares: 149, 150, 167 and 18.3 respectively.

The Iomud is a long-lived healthy horse. It shows soft "floating" action. The purebred population has declined substantially. Therefore stud farms to preserve the Iomud genotype were set up in Turkmenia in 1983. They are charged with protecting the breed and restoring the breeding nucleus to a size of 240-250 mares from the present 140 mares. A conservation farm is being established in the Kyzyl-Atrek district.

The breed requires protection.



KABARDA (Kabardinskaya)

This is a native North Caucasian breed found mainly in the Kabardino-Balkar Autonomous Republic and in the foothills area of Stavropol territory. In the process of its formation the Kabarda was influenced by many breeds - steppe horses, the Karabakh, the Persian and the Turkmenian. Kabarda horses are kept in taboons and transferred to mountain pastures in summer and to the foothill area in winter.

The Kabarda is primarily a saddle horse. The bulk of the horses are not large. Their average

height ranges from 145 to 152 cm. However, the measurements (in cm) of stallions at studs were as follows: height at withers 155, oblique body length 153, chest girth 180, cannon bone girth 20.

The Kabarda has a solid clean build. Its conformation may be described as follows: head - clean, sometimes coarse, ram profile, with long ears and usually a short poll; neck - medium-long, straight and well muscled; medium-high and long withers; straight, short and solid back; well-muscled loin; slightly sloping and heavily-muscled croup; medium-long and correctly-sloping shoulders; deep and long-ribbed chest; correctly-set legs, hindlegs often bowed; well-developed clean joints; hard hoofs. Although the Kabarda has only a moderate hair coat its mane and tail may be quite thick and legs may have feather on the fetlocks. Predominant colour cherry bay, often bay brown; black is rare.

The Kabarda horse is well fitted for mountainous and stony terrain. It is considered to be the best mountain horse. It can show a fair speed and remarkable endurance. The breed's speed record is 1 min 54 sec for 1600 m and 2 min 44.2 sec for 2400 m. The record for the 50 km long di0stance is 1 hour 41 min 25 sec.

The purebred population recorded in volumes I-III (1935-53) of the studbook was 446 stallions and 3272 mares. The breed's breeding nucleus has dropped to 400-450 mares concentrated at Malokarachaevski and Malkinski studs and at the horse breeding farms of the Karachaevo-Cherkess Autonomous Region. The sharp decline of the pedigree nucleus stock is explained by the insufficient speed of Kabarda horses in hippodrome tests.

The main breeding centres are Malkinski stud in the Kabardino-Balkar Autonomous Republic, and Malokarachaevski stud and the breeding farm of Krasny Partizan collective farm in Stavropol territory.

There are 4 blood lines in the breed. A new breed group has been formed by crossing the Kabarda with the Thoroughbred, the blood of the latter being from 5/8 to 3/4. Anglo-Kabarda horses are noted for their strong constitution, high speed and vigour. They combine perfectly the advantages of the foundation breeds and are of a very special type. In 1966 this breed group was recognized. The breeding farms of Kabardino-Balkar and Stavropol regions breed both purebred Kabarda and Anglo-Kabarda horses.

The breed needs protection.

HORSE
Karabair

KARABAIR (Karabairskaya)

The Karabair is one of the most ancient breeds of Central Asia. Developed in Uzbekistan and northern Tajikistan the breed was established under the influence of southern and steppe breeds. It is well adapted to use under saddle and in harness (arba cart). It has the typical build of a saddle and harness horse.

The Karabair purebred population recorded in volumes I-IV of the studbook was 1537 stallions and 3871 mares. The Karabair breed is zoned for breeding in all regions of the Uzbek Republic.

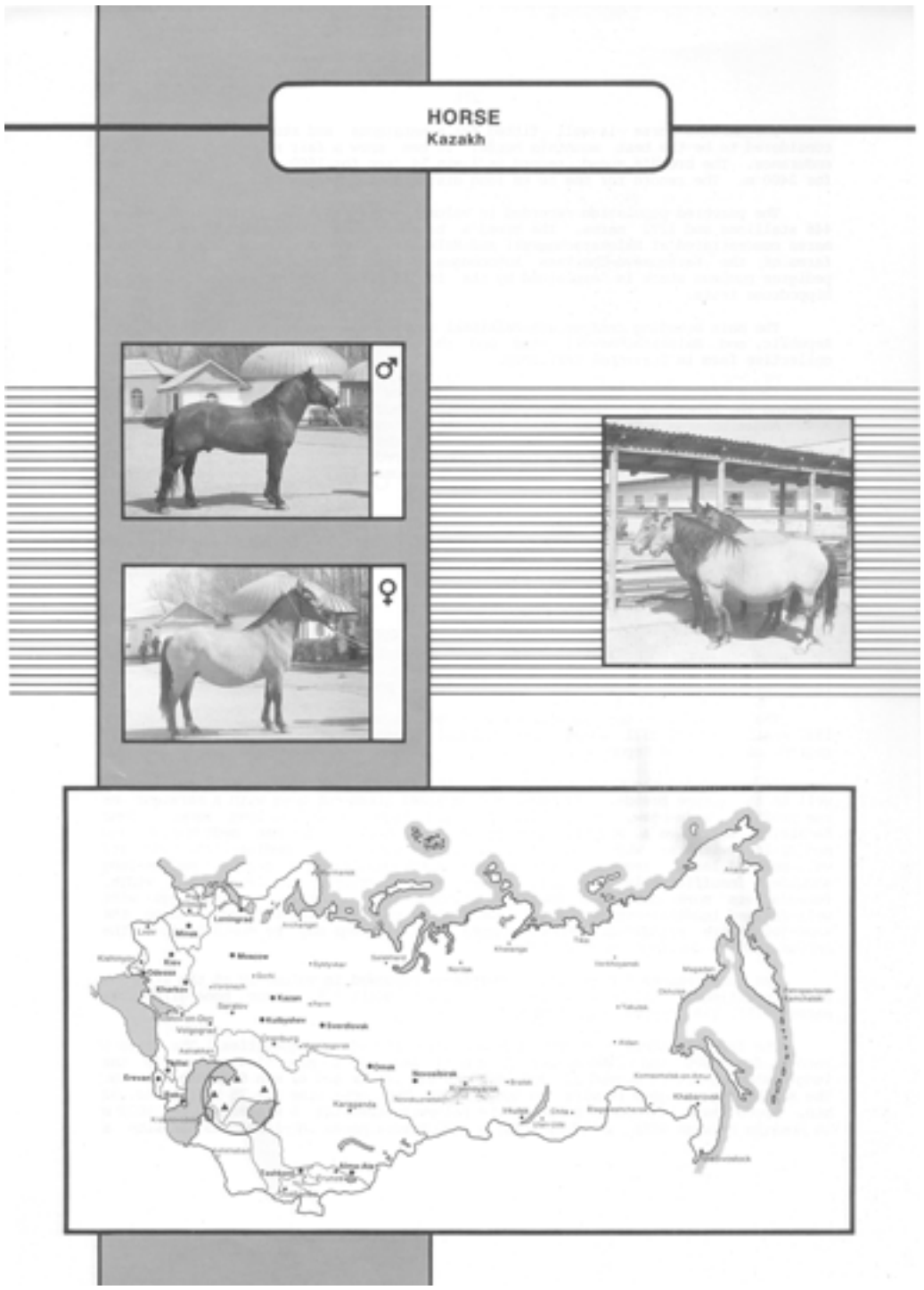
In appearance the Karabair resembles the Arabian, Persian, and Turkmenian as well as the steppe breeds. It has a medium-sized clean-cut head with a straight or ram profile, wide jaw, medium-long poll and high set medium-long neck. Some Karabairs may have a shorter heavily muscled neck. It has medium-high and medium-long withers; wide and short, sometimes soft, back; medium-long, wide and well-muscled loin; regularly sloping and sometimes dropping croup; medium-long shoulders insufficiently sloping; chest well developed in length and width, forequarters more developed than the hindquarters; clean, strong legs with well-defined tendons; correctly-set legs. As a result of insufficient feeding the knee-joints are occasionaly underdeveloped and hindlegs may be cow-hocked. The colour is bay, chestnut, grey or black.

The measurements (in cm) of the purebreds recorded in volume IV of the studbook are: stallions: height at withers 156, chest girth 175, cannon bone girth 20; mares: 151, 178, and 19 respectively.

The Karabair shows good endurance and versatile working qualities. The breed's records for 1600 and 2400 m are 1 min 54 sec and 2 min 51.4 sec. In the long-distance race it scored 22 min 34.6 sec for 14 km and 42 min 6 sec for 25 km. The Karabair gives good results in long rides. The best time for 75 km is 3 hr 32 min. Speed tests in harness produced the following results: 5 min 51 sec for 1600 m in Russian harness with a 600 kg load; 1600 m were paced in 14 min 45 sec with a 2000 kg load. The Karabair performs very well in national types of equestrian sports, mainly in kok-par. The Karabair is distinguished by sound health, average longevity and normal fertility, i.e. 75 to 85 foals per 100 mares.

The breed consists of three intra-breed types, basic, heavy and saddle, as well as 8 sire lines and 5 mare families.

The main studs are Jizak stud, the horse breeding farm of Gallyaaral state farm and Navoi stud in Jizak region. The breed is improved through pure breeding.



KAZAKH (Kazakhskaya)

This group of steppe horses was numerous as early as the 5th century B.C. Since then Kazakh horses were influenced by many breeds - Mongolian, Karabair, Arabian and Akhal-Teke. In the late 20th century Kazakh horses have been improved by the Thoroughbred, Orlov Trotter and Don.

Kazakh horses are kept on pastures the year round. They are concentrated in western Kazakhstan. In this vast territory they have become differentiated into various ecological types and varieties. The most widespread are: the Jabe and the Adaev.

Jabe horses were formed in southern districts of Aktubinsk regions and then spread all over Kazakhstan. Their most important characteristics are: rugged head, thick neck, wide body and deep chest. The back is straight and the croup well muscled. Legs are set correctly and are sufficiently strong. The skin is thick and dense; hair covering is rather good. Colour is bay, dark bay or red, occasionally greyish or grey.

The measurements of stallions (in cm) are: height at withers 144, chest girth 180, cannon bone girth 19; those of mares are lower 142, 178, and 18.8 respectively. Considering their small measurements, Kazakh horses of the Jabe type have a high live weight - 400-500 kg.

Meat and milk performance of Jabe horses are very high - some mares yield up to 20 kg of milk at hand-milking and they fatten quickly.

Horses of the Adaev type have a more pronounced saddle character; they have a more clean-cut conformation, ligh head, long neck, well-defined withers, and straight back. However, horses with narrow chest and too light bone occur because of the primitive management conditions.

All in all, Kazakh horses fall short in performance. Their gaits are poor: short stride, jolting and not strong trot. At the same time they are very hardy. Thus the stallion Zolotnik covered 264 km per day and Adaev horses did 297 km during a daily run. Jabe horses are noted for their good meat characteristics - the meat yield at slaughter is 57-60%. The Kazakh breed numbers over 300 000. The best farm is the Mugojar stud.

HORSE
Kustanai

KUSTANAI (Kustanaiskaya)

The Kustanai was developed in the steppes of western Kazakhstan at the collective-farm and state-farm studs. The breeding nucleus is concentrated at Kustanai and Maikulski studs. Its development dates from 1887 to 1951. The first date is the year of establishment of the state-owned stud, the Turgai; it was followed by the Kustanai in 1888 and the Orenburg in 1890. The last is the date of official recognition of the Kustanai breed. The new breed was developed by crossing native Kazakh steppe horses with Don, Strelets, Astrakhan (improved Kalmyk) and halfbred Thoroughbred stallions. Nevertheless, at the onset the crossbreeding was unsuccessful. Only after the nucleus of local brood mares, improved by pure breeding and regular creep-feeding, was formed at Kustanai stud did crossbreeding with Thoroughbreds yield a positive result. In the 1920s they began to develop a new breed at Kustanai stud. The work was continued in the 1930s with two systems of management. The first involved keeping in stables and on pastures, winter grazing in good weather, abundant hay and concentrate feeding, hand mating and weaning of the foals at 6-8 months. The other involved improved taboon keeping, year-round grazing and keeping in sheds in bad weather, free mating, hay and concentrate creep-feeding. The first method was employed at Kustanai and Troitski studs and the second at the Maikulski and other studs.

The breeding work was directed at developing simultaneously two types - saddle and steppe. The

saddle type included horses with a high proportion of Thoroughbred blood, while the steppe type consisted of Thoroughbred-Don-Kazakh and other crossbreds bred inter se. All saddlers were put to speed tests at the hippodrome. The Kustanai is found in Kustanai region, in the south of Chelyabinsk region and in southern Kazakhstan. The breeding nucleus varied little. In 1930 the breeding herd at the Kustanai stud numbered 1000 mares. In 1981 the Kustanai and Krasnodon studs had 726 purebred mares. Seven-hundred and forty-six Kustanai pedigree stallions were used in pure breeding and general improvement. In 1980 the total Kustanai horse population numbered 40 200.

The modern Kustanai is a massive horse combining the best characters of a saddler and the pronounced basic steppe lineage. Its features include a straight medium-sized head, wide jaws, medium-long and occasionally short poll; medium-long, straight and low-set neck; wide and well-muscled medium-high withers; straight, wide and short back; flat, solid and well-muscled loin; medium-long, occasionally short, nicely-rounded croup; long and high-set shoulders; wide and deep chest; correctly-set legs, well-developed joints, hard hoofs; strong tendons and ligaments; clean and hardy build. The Kustanai shows remarkable fitness in a continental climate. The measurements (in cm) of stallions at studs in 1980 were: height at withers 163, oblique body length 161, chest girth 188, cannon bone girth 20.3; mares: 160, 159, 189 and 19.9 respectively. The largest horses are at the Kustanai stud. The measurements of animals kept in taboons were much lower. At the Saryturgai stud the mares measured 152, 156, 185, 19.2. Colour: bay, chestnut, reddish-grey, brown.

The Kustanai shows remarkable speed. Its records are 1 min 40.7 sec for 1600 m, 2 min 34.7 sec for 2400 m. Horses of the basic type show good action in the Russian harness. The record of maximum draught power is 456 kg; the average time with a 22-kg load at the trot for 2000 m is 6 min. The Kustanai also has admirable endurance. For instance, the stallion-Storm covered 178 km in 15 hours; Chervonets covered 100 km in 4 hours 1 min 5 sec. The best result of a 24-hour ride is 286.1 km. The record of a 6-day 420-km ride is 22 hours 32 min 31 sec. The fertility of Kustanai mares at some studs reaches 90%. Irrespective of the management system employed, the Kustanai longevity often exceeds 20 years.

The breed consists of 3 intra-breed types, 5 sire lines and 6 mare families.

Three volumes of the studbook have been published. The main breeding centres are the Kustanai regional experiment station (formerly a horse stud) and Krasnodon and Saryturgai studs. The breed has good prospects for pure breeding with limited corrective crossbreeding by the Thoroughbred.

HORSE
Lokai

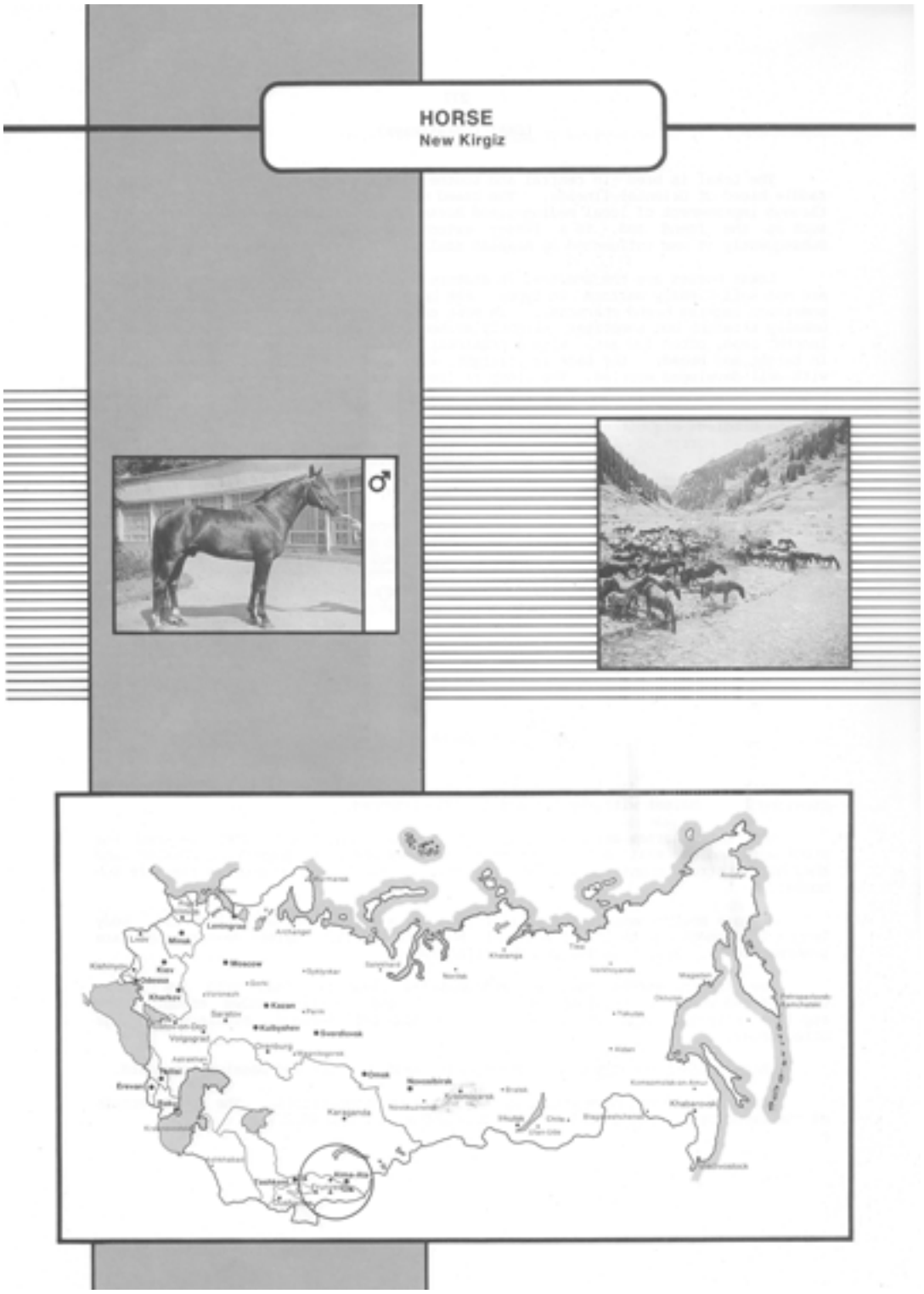
LOKAI (Lokaiskaya)

The Lokai is bred in central and southern Tajikistan; it is classified as a saddle breed of Oriental lineage. The breed was developed by the Uzbek Lokai tribe through improvement of local medium-sized horses using various Central Asian breeds, such as the Iomud and, to a lesser extent, the Akhal-Teke and the Karabair. Subsequently it was influenced by Arabian stallions brought from Bukhara.

Lokai horses are the shortest in stature among the Central Asian breeds. They are not sufficiently uniform in type; the head is sometimes coarse and bulky and sometimes lacking breed character. In most cases the head is short, the profile is usually straight but sometimes slightly arched, the poll short, the neck medium in length, lean, often low set, with a prominent throat-latch. The withers are medium in height and broad; the back is straight, wide and short; the loin is prominent with well-developed muscles. The croup is long, often sloping and well muscled. The chest is deep and broad, the ribs rounded, the groin short. The legs are solid with hard hoofs. The legs are not always properly set; the forelegs are often splayed and the hindlegs are often cow-hocked or bowed. Coarse joints and general flabbiness are found in horses of large size. Bay, grey and chestnut are the most widespread colours. The surface hairs are characteristically S-shaped. The average measurements (in cm) of Lokais are: stallions - height at withers 145, oblique body length 145, chest girth 162, cannon bone girth 19; mares: 142, 144, 162 and 18 respectively.

Lokai horses are characterized by good action and extreme hardiness. They have great endurance under saddle and pack and in national games, particularly in kok-par. They reach maturity late, but respond well to improved feeding and management. When purebred Lokais were reared in good stable conditions, by the age of 2 1/2 years they surpassed their contemporaries reared in taboons by 6 cm in height at withers.

A new breed of saddlers is now being bred in Tajikistan by mating Lokai mares to Arabian and Thoroughbred stallions.



NEW KIRGIZ (Novokirgizskaya)

This breed was developed in the state and collective farms of Kirgizia by crossing local horses with the Don and the Thoroughbred.

New Kirgiz horses are well adapted to highland conditions. They are used for stock work and for meat and milk production. They are short-legged and massive and they have a strong constitution. In type and conformation they closely resemble Don horses.

Average measurements of stallions (in cm) are: height at withers 156, body length 158, chest

girth 188, the cannon bone girth 20.5. Mares' measurements are somewhat lower: 151, 155, 180 and 19 respectively.

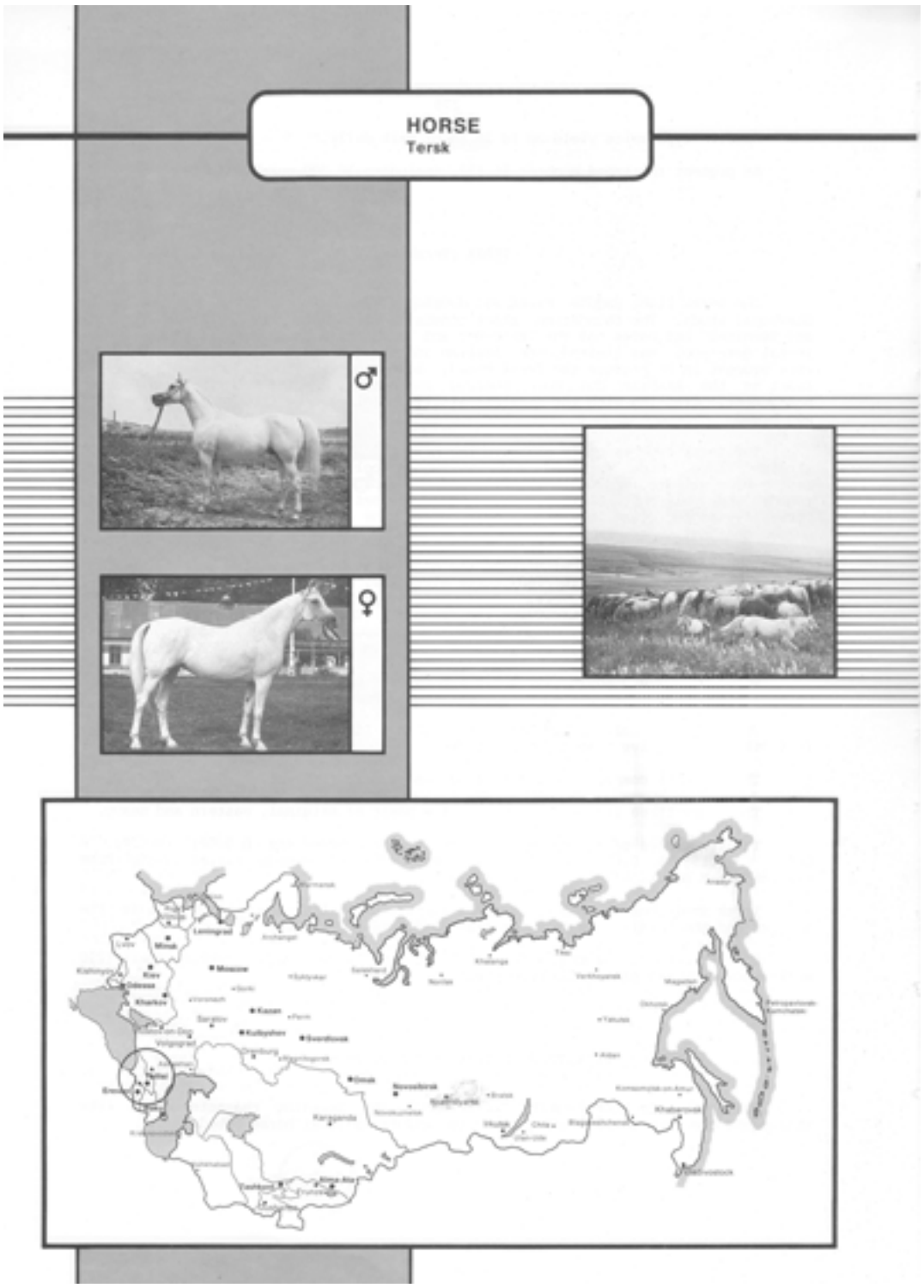
New Kirgiz horses have a medium-sized clean-cut head with low neck, well-defined withers, straight and level back and heavily muscled croup. The top-line is level. Legs are clean-cut with tendons well defined. Sickle-hocked legs often occur.

Three intra-breed types are recognized: saddle, thick and massive, standard.

New Kirgiz horses have performed well on hippodrome trials. The speed records of the breed are: 1600 m in 1 min 48 sec, 2400 m in 2 min 44.2 sec.

Massive type mares yield up to 20 kg of milk daily.

At present the breed numbers 56 650, including 10 700 purebreds.



TERSK (Terskaya)

The Tersk light saddle breed was developed during the 1920-40's at Tersk and Stavropol studs. The foundation stock consisted of the Strelets stallions Tsilindr and Tsenitel and mares of the

Arab-Don and Strelets-Kabarda complex. Since the inital gene pool was limited, the Arabian stallions Koheilan IV, Marosh and Nasim were brought in to produce the Tersk breed. Selection was directed toward a breed as smart as the Arabian but more massive and better adapted to improved taboon management. Crossing with the Strelets stallions followed by inbreeding produced the new breed.

The Tersk type is quite close to the Arabian. Typical are the light head with straight face, wide forehead and jaw, long poll, medium-long high-set neck, medium-high withers, medium-long, flat and wide back, short and wide loin, nicely rounded and well-muscled croup, deep and wide chest, long and sloping shoulders, correctly-stanced clean legs, thin hair cover, mane and tail. Colour: grey, bay, golden chestnut.

The measurements (in cm) of breeding animals at Stavropol stud are as follows: stallions - height at withers 160, chest girth 187, cannon bone girth 19.9; mares: 157, 182 and 19.3 respectively. Tersk horses perform well both in flat racing, classic events and, particularly, in the dressage. They are widely used in circuses. The breed has scored the following records for various standard distances 1600 m - 1 min 48 sec, 2400 m - 2 min 46 sec and 3200 m - 3 min 47 sec.

Tersk horses are known for their remarkable endurance. All the horses which participated in a 310-km distance race easily reached the finish.

The Tersk has solid build and sound health. It is a long-lived horse. Average fertility: 70-75 live births per 100 mares.

The breed is composed of 5 sire lines and 5 mare families.

There are three intra-breed types: the basic or original, eastern and heavy.

The frequences of the transferrin types in the breed are D 0.52; F 0.24; H 0.67; O 0.15; R 0.01; M 0.03. Among the 13 saddle breeds raised in the USSR transferrin M occurs only in the Tersk breed.

Tersk stallions are widely used to improve native mountain breeds such as the Deliboz and the Lokai. The Tersk is also in demand for export.

Concentrated at one stud - Stavropol - the pedigree nucleus is very small (250 mares) and requires protective management.

HORSE
Thoroughbred

THOROUGHBRED (Chistokrovnaya verkhovaya)

Owing to its outstanding performance and breeding characteristics the Thoroughbred occupies the leading position in international horse breeding.

It was developed in England by crossing native mares with Oriental stallions. It was the world's first example of animal breeding aided by a government effort to improve a horse breed and supported by the performance test system and centralized pedigree records.

Thoroughbreds were imported into Russia in the late 18th century. They were first used by Orlov-Chesmenski in developing the Orlov Riding horse. After that Mosolov and Muraviev-Apostol set up their purebred Thoroughbred studs.

During 1772-1808 races were held in Moscow. The first Russian horse racing society was instituted in 1825 in the town of Lebedyan. Volume II of the English studbook was published in Russia in 1826 and the Moscow horse racing society was organized in 1834. In 1836 Volume I of the studbook, which recorded Thoroughbreds born and used in Russia, was published.

Until the 1880s Thoroughbred breeding was quite limited; however it quickly began to develop following the introduction of the totalizator. The All-Russian Derby race for 2 versts 133 sazhens was established in Moscow in 1886; in 1900 the range was extended to 2 versts 144 sazhens.

Other traditional races were also introduced. This resulted in an increase in the stock of breeding mares. The studbook recorded 432 mares in 1882; 1688 in 1900 and 2800 in 1914. Breeding of Thoroughbreds spread to remote parts of Russia such as Central Asia and the Far East. During World War One and the Civil War, Russian Thoroughbred breeding was almost destroyed.

Restoration of Thoroughbred populations began after the 1917 revolution. The state studs, including the Kuban-Chernomorski (later renamed "Voskhod"), were established in 1921. By 1925 the studs managed to gather 206 mares which were entered into the studbook in 1926. In 1940 the mare population at studs numbered 800.

In 1924 the races and competitions for the main traditional prizes including the M.I. Kalinin prize - the most prestigous prize for two-year-olds over a distance of 1600 m - were resumed. Competitions were also held for the All-Union Grand Prize for three-year-olds over 2400 m (equivalent to the English Derby) and for four-year-olds and older over a distance of 3200 m.

The Thoroughbred was used in developing other breeds such as the Russian Saddle horse, Budyonny, Kustanai, New Kirgiz, Anglo-Kabarda and Ukrainian. It is used in corrective crossbreeding to improve the performance of various breeds. In the USSR there are 1400 mares and 110 stallions bred at 12 studs and at 10 horse breeding farms.

The modern Thoroughbred in the USSR is a proportionally built large and strong-boned riding horse. The average measurements (in cm) of mares at studs are as follows: height at withers 161; oblique body length 160; chest girth 185; cannon bone girth 19.5; stallions: 163, 163, 188 and 20.25 respectively. The Thoroughbred has a well-proportioned, clean-cut head, medium-long poll, wide jaw and long neck; prominent withers, short sloping shoulders, long forearm, short cannon; medium-long and normally sloping pasterns, hard, coloured hoofs; long thigh and cannon; wide and deep chest, well-sprung ribs; well-muscled, medium-long back and loin; long, wide and normally sloping croup. All joints are well developed. The Thoroughbred is generally a clean horse with well-defined musculature. However, there is a marked variation within the breed from the standard type both to the "noble" Thoroughbred type and to a simple horse. Common colours: bay, bay-brown, light chestnut, brown, black; grey is rare.

Thanks to its endurance which is the highest among saddle breeds the Thoroughbred scores speed records at various distances and wins top class competitions. Its absolute record for 1000 m is 58.9 sec; 1200 m - 1 min 10.8 sec; 1600 m - 1 min 36 sec; 2400 m - 2 min 27.2 sec; 3200 m 3 min 22 sec.

Genetic parameters of speed are: the average speed of two-year-olds was 12.75 sec for 200 m; standard deviation 0.4 sec; coefficient of variation 3%; heritability 0.25-0.35; age repeatability 0.65 for the two and three year olds, 0.50 for the two and four year olds, 0.7-0.8 for the three and four year olds; environmental repeatability coefficient - 0.7-0.9. The potential maximum speed in the modern breeder population (calculated from the record speed corrected by the heritability and repeatability) is 56 sec for 1000 m.

Although the Thoroughbred speed records made in the USSR are lower than the European records many USSR-born horses have won important international prizes. Since 1953 USSR Thoroughbreds have won the main prize of the International Congress of Socialist Countries 19 times, the European prize in the FRG 4 times and the great Pardubice steeplechase 8 times.

The Thoroughbred is particularly sensitive to proper management and breeding conditions. It can be kept only in stables and on improved pastures. Because of their extremely high growth rate Thoroughbreds suffer from insufficient feeding more than other breeds and may quickly develop irreversible retardation of growth and bone formation. Even minor faults in the management of mares may cause decline of fertility. It is considered by many that normally the Thoroughbred has low fertility. This may not be quite true because a number of studs manage to achieve 88-90% of

live births.

The high requirements of the Thoroughbred in management and feeding imply low disease resistance. It is susceptible to infectious rhinopneumonia which provokes abortions, to bronchial pneumonia in foals which may be fatal, to various stresses, and, particularly, to "transportation stress" which may cause colds during transport to a competition site.

Thoroughbreds are very sensitive to inbreeding. Even low inbreeding coefficients (3.12% or more) may result in a reduction in endurance and fertility.

At the same time Thoroughbreds are long lived. Up to 10% of mares at studs retain their reproductive capacites for 20 years or more. The stallion Budynok lived 34 years; the mare Sosna III lived 31 years and founded a most valuable family by producing 17 foals.

The Thoroughbred shows remarkable adaptability. It is bred in Lithuania, Ukraine, North Caucasus, Central Asia and Kazakhstan. It has acclimatized admirably in mid-mountain areas and spread to mountain ranges.

The physiological adaptability of Thoroughbreds is vividly demonstrated by high and versatile working qualities. The breed shows the highest gas-energy exchange ratio. The Thoroughbred has 20% more blood than the Don and its blood contains 25% more haemoglobin. As its blood flow rate and the heart's systolic volume are higher, the oxygen supply to the organism is double.

During intensive training and race testing Thoroughbreds display excellent adaptability to oxygen deficiency represented by a high rate of the venous blood oxidation - 86%, and an admirable ability to sustain the impact of low oxygen (5%) gas mixtures during artificial hypoxia.

The allele pool of blood groups by loci is as follows:-, A with the Aa antigen 0.91; A 0.Q8; C with the Ca antigen - 0.64; C 0.35; D- D^{r3-5} 0.29; $D^{Br\ 3-5}$ 0.21; D^{e} 0.07; D^{d} Q.06; D^{de} 0.11; D^{dr} 0.27; D^{dh} 0.01; K - K^{a} 0.05; K 0.94. In the D system the D^{ad} is absent. There is a high polymorphism in the serum protein system. The transferrin system has practically equal concentrations of alleles F, D and 0. Transferrins H and P are rare and M is absent.

The breed is made up of home-bred lines, international lines and mare families. The home-bred Granit II, Duglas and Brimston lines are distinguished by remarkable endurance and high adaptability. Among the mare families the most important are three at Voskhod stud in Krasnodar territory, one at Onufriev stud in Kirovograd region of the Ukraine and one at Kabardin stud in the Kabardino-Balkar Autonomous Republic. These are the three best studs.

The breeding system used combines line breeding with selection and pair matings. The international exchange of breeding material is used to increase heterozygosity. Breeding animals are continually being exported and imported.

HORSE
Trakehner

TRAKEHNER (Trakenenskaya)

The Trakehner saddle breed was developed in East Prussia from 1786 to 1878. The first date refers to the transfer of Trakehnen stud to state ownership and to the appearance of Lindenau who set forth clear-cut breeding objectives and began practical work on the improvement of the local horse population. The second date refers to starting the Trakehner studbook.

At Trakehnen stud the aim was the development of a large cavalry ho<rse to be used for the improvement of working and saddle characteristics in utility horses. After this the Trakehner became the improver of the East Prussian, Hanoverian and Mecklenburg breeds.

The basis for the Trakehner breed was the native Lithuanian horses which had been improved by stallions of various breeds, including the Thoroughbred, Mecklenburg, Danish and Turkish. The final stage of breed formation was strongly influenced by a Turkmenian stallion and by three of his sons.

Later the emerging Trakehner was profoundly influenced by Thoroughbred stallions. By the late 19th century the Trakehner became one of the best high-grade saddle horses well adapted to keeping in stables or on pasture. It became a leading improver in the vast region of Lithuania, Brandenburg, Poznan and Pomerania. By the early 20th century the Trakehner's influence

reached the north Baltic area but was cut short by World War One.

Breeding of the Trakehner was resumed in the USSR in 1945 at S.M. Kirov stud in Rostov region. The Trakehner admirably acclimatized to new climatic conditions and its improvement has progressed ever since.

At present the Trakehner is used in classic sports events and in initial crossbreeding with such breeds as the Ukrainian Saddle, Hanoverian and the riding type of Latvian. It is also employed in crossbreeding with other breeds to produce racehorses.

There are approximately 2000 Trakehner horses in the USSR as well as 700 mares which constitute the breeding nucleus at the studs in Rostov, Ryazan, Kaliningrad regions and in Byelorussia, Lithuania, Latvia and Estonia.

It is a large, heavily-muscled and boned horse of classic saddle build. The measurements (in cm) of stallions at stud were: height at withers 165; oblique body length 168; chest girth 196; cannon bone girth 21.7; mares: 162, 165, 193 and 20.7 respectively. It has a large clean-cut head, long or medium-long highly-set neck, high and long withers, back slightly dipped to withers, flat and wide loin, nicely rounded and heavily-muscled croup, sometimes sloping with short sacrum, correctly sloping long shoulders, legs properly set, dry, with well-defined tendons, short cannon with longer forearm, regularly sloping medium-sized pasterns, hard hoofs. The disposition is kind and energetic. Colour: chestnut, bay, black or dark bay; grey is rare.

The performance of the Trakehner is good. It combines speed, strength, endurance and elegance of action. In the USSR the Trakehner is tested in flat and obstacle races, steeplechase and classic events. In speed it is second to Thoroughbreds but may compete with the Budyonny. It has scored quite high records in various races: 1 min 42 sec for 1600 m, 2 min 11 sec for 2000 m 2 min 34 sec for 2400 m. The Trakehner stallion Kover is the holder of the absolute stadium jump record - 225 cm. Trakehner horses have repeatedly won the USSR national obstacle race, three-day events and the dressage. The Trakehner stallion Pepel was the winner of several USSR cups and at the Olympics.

The Trakehner is inferior to other saddle horses in adaptability. Although it requires excellent feeding and thorough management, its fertility is lower; the average foal crop is 70-72 foals per 100 mares. The Trakehner is less resistant to colds and infectious diseases but its physiological adaptibility to heavy work is quite high.

In haemodynamic characteristics the Trakehner is second only to the Thoroughbred. In the volume of blood per kg of live weight it is 11 ml inferior to Thoroughbreds (97 vs 108), in haemoglobin - 1.6 g (16.8 vs 18.4) but almost equal in the number of erythrocytes per kg of live weight. The heart's systolic volume is 1.25 litres.

In spite of the small numbers of the breed, owing to the combination of inbreeding with crossing with Thoroughbred and Arabian stallions no marked inbreeding depression has been observed.

Two intra-breed types have been segregated - typical and heavy. The most popular stallion lines are 6.

The International Congress of Socialist Countries on Horse Breeding has developed a uniform selection programme and exchange of breeding material between Poland, the GDR and the USSR. The Trakehner population has been steadily growing and the breed has good grounds for further increase.

The best breeding centres are S.M. Kirov stud in Rostov region and Nyamun stud in Lithuania.

HORSE
Ukrainian Saddle

UKRAINIAN SADDLE HORSE (Ukrainskaya verkhovaya porodnaya gruppa)

This breed group was developed in the studs of the Ukraine since the war by crossing Hungarian mares (Nonius, Furioso-Northstar and Gidran) with Trakehner, Hanoverian and Thoroughbred stallions. Particular value was attached to individuals with a trace of Russian Saddle horse blood.

At the initial stages of breeding the improved taboon system was used. Now stable and pasture management are used.

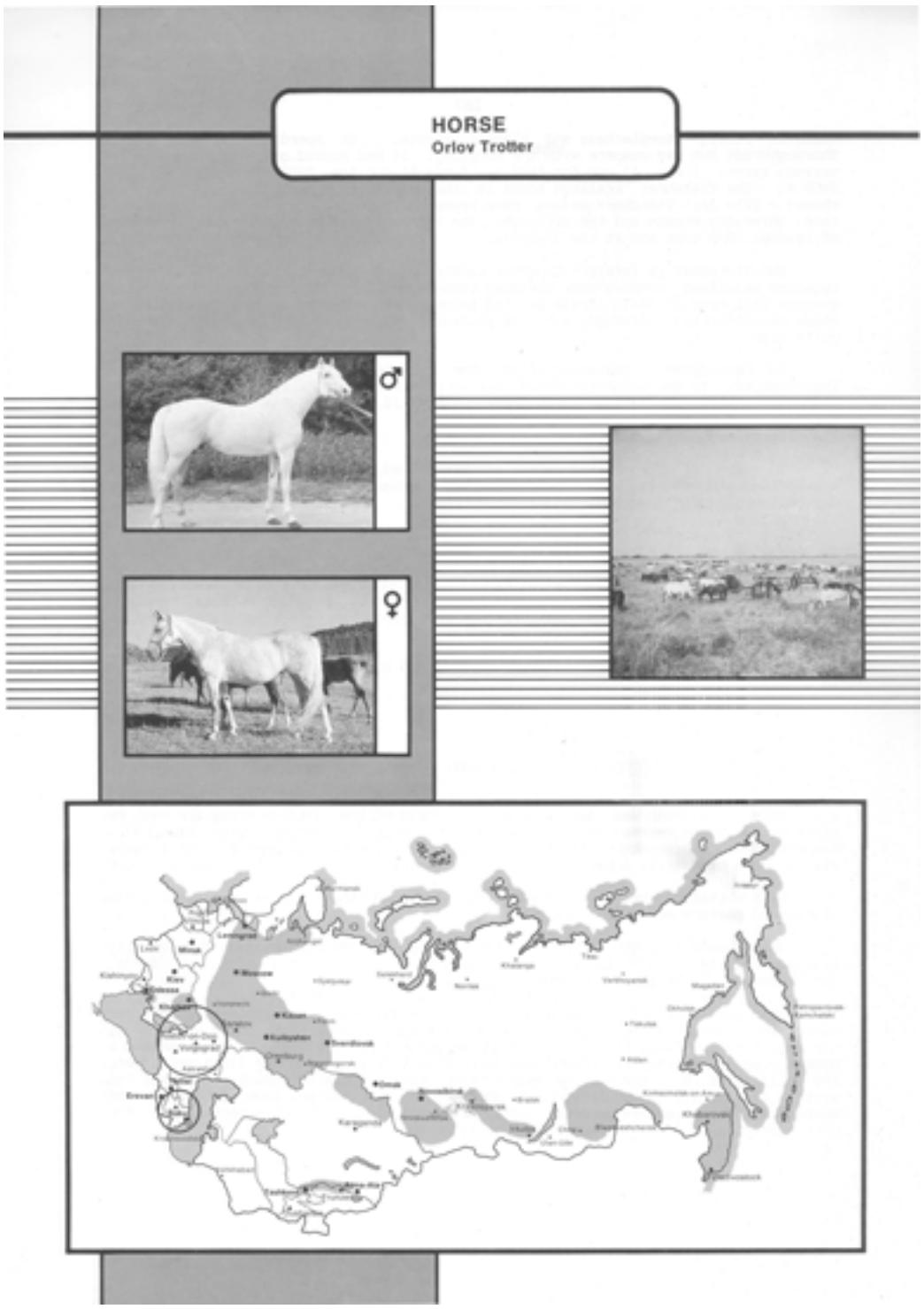
Their breeding began at Ukraine stud in Dnepropetrovsk region and subsequently continued mainly at Aleksandriisk, Derkulsk, Dnepropetrovsk and Yagolnitsk studs. The Ukrainian saddlers are now bred mostly for sport.

They are large heavy saddle horses. The head is well proportioned, the eyes expressive; the straight neck is long, as is the poll; the withers are prominent, the back long and flat, the loin broad and well muscled; the croup is long and has a normal slope; the chest is broad and deep, the body heavy and the limbs well set. The build is solid. The average measurements (in cm) of stallions are: height at withers 165, oblique body length 166, chest girth 191, cannon bone girth 21; the measurements of mares are somewhat less: 160, 160, 188 and 19.8 respectively. The most widespread colours are bay, chestnut and brown.

Transferrin alleles have the following frequencies: D 0.30, F 0.43, H 0.02, 0 0.11, R 0.12. Transferrin M is absent.

Ukrainian Saddle horses perform well in classic events, particularly in dressage. The Soviet equestrians riding them have repeatedly won or have been runners-up in the highest-ranking competitions, such as the Olympics and the World and European Championships.

In the long term, the main breeding method is that of pure breeding with corrective crossing with the Thoroughbreds. The Bespechny line of the Ukrainian breed consists of horses derived from the last of the Russian Saddle horse (Orlov-Rostopchin).



HARNESS BREEDS
ORLOV TROTTER (Orlovskaya rysistaya)

The Orlov Trotter was developed by A.G. Orlov at Khrenov stud beginning sometime between 1775 and 1784. The first date is that of the establishment of the Khrenov stud while the latter is that of the birth of Bars I, the progenitor of the modern pedigree Orlov. Arabian horses were crossed with the Dutch, Danish and Mecklenburg harness breeds. The Orlov evolved under the natural conditions of Voronezh region, characteristic of central Russia, and used natural pastures in the flood plain of the Bityug river. The combination of stable and pasture produced a breed with

good action and adaptability to various management conditions. It thus became possible to spread the breed beyond the limits of Voronezh region to different climatic zones of the country, from Poltava to Perm regions, from Pskov to Kurgan regions and from Kirgizia to Altai territory. The Orlov is also taken to the mountain regions east of Lake Baikal as the principal improver of the native breeds.

The Orlov is widely used as a draught horse, as a utility horse for light and medium-heavy agricultural jobs, as a pleasure and competition horse and as the principal improver of small native horses throughout the Soviet Union.

When the breed was being established and Bars I (a stallion of mixed Danish, Dutch and Arab origin) was in use at Khrenov stud, there were 77 mares of various origins there (including 10 Arabs, 2 Persians, 3 Caucasians, 1 Don, 32 English Thoroughbreds, 5 Mecklenburgs and 1 Spanish). Bars' granddaughters, however, played the decisive role in the establishment of the breed. The number of purebred Orlov Trotters changed depending on market conditions as well as social and economic factors. Significiant damage to the breed was caused by uncontrolled crossing with the American Trotter during 1885-1913, as well as by the First World War and the Civil War, following which the breed had to be re-established. The first volume of the Orlov studbook in 1927 recorded 939 stallions and 1120 mares, while in 1954, Volume 8 listed 3228 purebred mares. Subsequently, however, the number of horses in the breeding nucleus began to decline. Volumes 19 and 20 recorded 432 stallions and 652 mares in 1982.

The modern Orlov Trotter is distinctive in its type and conformation. Its head is well proportioned and clean cut, poll long and jaws broad, neck long and muscular and often high-set, withers medium in height and length, back long and flat and sometimes slightly dipped, loin of medium length and flat, croup straight and nicely rounded, chest wide, medium-deep, ribs well sprung, legs properly set and the joints well developed, often somewhat coarse. The forearm, cannon and metatarsus are medium in size, the pasterns often short and straight. The limbs are sometimes hairy. The colours are grey, bay, black and chestnut.

The measurements of stallions (in cm) are withers height 162, oblique body length 164, chest girth 187, and cannon bone girth 20.5; mares: 160, 164, 186 and 20.2, respectively.

The adaptability of the Orlov Trotter to either stable or pasture management has contributed to its spread to various parts of the country as well as to the development of specific lines. For instance, Dubrovski, Khrenov, Novotomnikov and Perm stud types have been formed, with distinctive exterior features. The Khrenov is the most popular standard type of the Orlov described in all textbooks and guides. The Dubrovski type is distinguished by smaller size, somewhat more primitive build, fleshiness and solid build. The Novotomnikov is characterized by its clean build, prominent "Arabian and swan-like" breed features and more rapid maturity. The Perm type is the most fleshy and large type with a somewhat coarse build characteristic of carriage horses.

Serum proteins and blood type antigens have been studied at Khrenov, Novotomnikov and Perm studs. Five transferrin alleles have been found, as have two each of albumin and ceruloplasmin, four of esterase, and three carbonic-anhydrase alleles. The Orlov has a high concentration of H, R and F transferrin alleles. Six blood group systems have been found (A, C, D, K, P, Q); most rarely encountered are Dh (0.07) and Da (0.20); no Pb antigen has been found. The Dd (0.88) and Aa (0.81) antigens are the most widespread.

The average speed of adult trotters is currently 2 min 20 sec for 1600 m; the record is 2 min 1 sec.

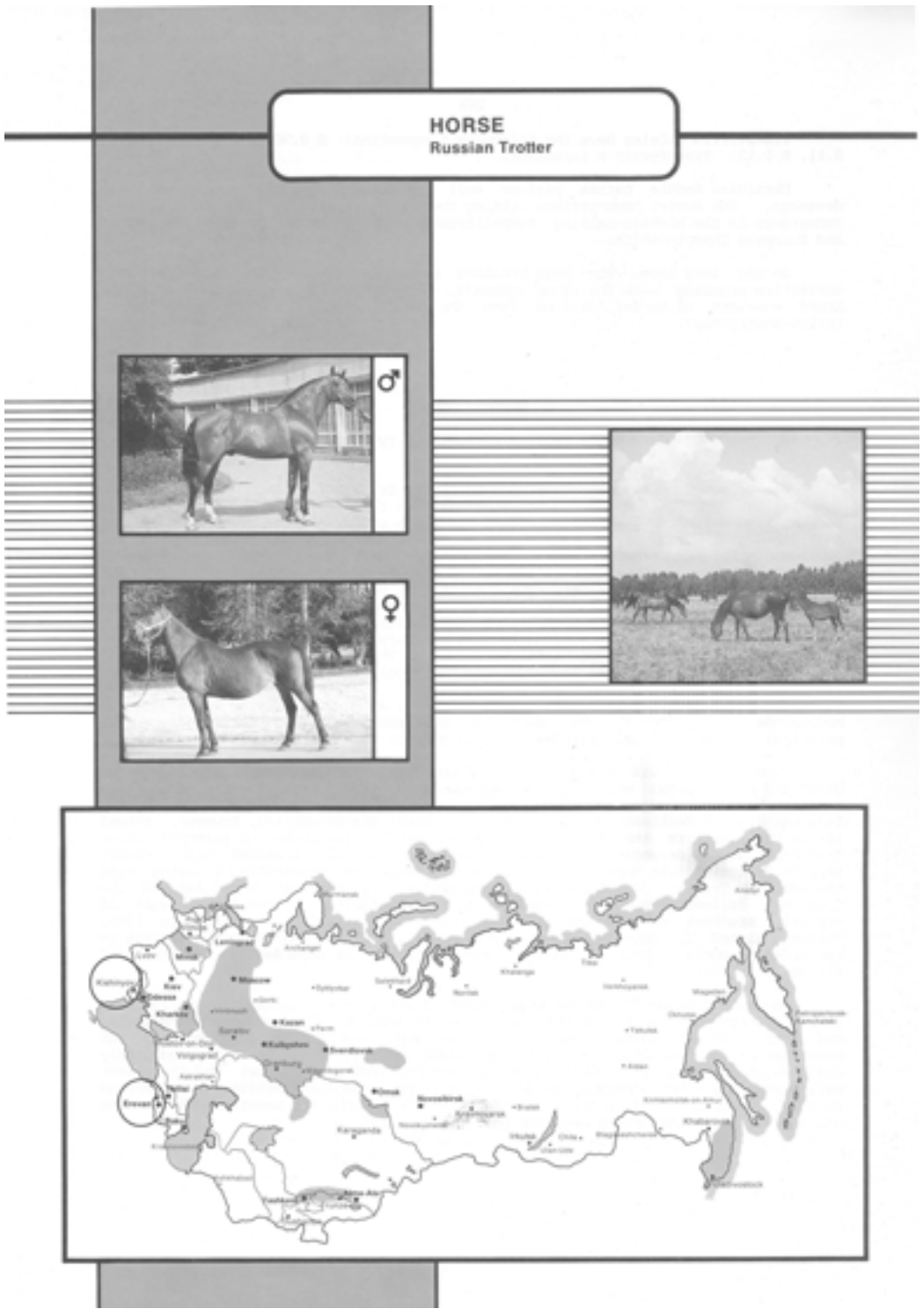
The Orlov is very fertile. At the studs there are 80-85 live births per 100 mares and the survival rate to one year of age is 78-83%. Its robust constitution and high adaptability result in a long life

span. The outstanding stallion Kvadrat was used as a sire up to the age of 32, while the mare Gondola (b. 1933), having won the most prestigious prize at the Bars hippodrome, equivalent to the Derby, lived to the age of 27 years and produced 17 foals.

Pure breeding is the main method of producing the Orlov Trotter. No depression of the main economic characters occurs with up to 5% of inbreeding.

The reduction of the breeding nucleus at studs is mainly attributable to the breed's lower speed potential.

The breed consists of 12 sire lines and 16 mare families. The best studs are Khrenov, Novotomnikov, Perm and Altai.



RUSSIAN TROTTER (Russkaya rysistaya)

The Russian Trotter was developed by crossing the Orlov Trotter with the American Standardbred (American Trotter) and subsequent breeding inter se.

The crossbreeding began in the 1890s. Prior to 1914, 156 stallions and 220 purebred mares were used. After World War One and the Civil War the importation of American Trotters stopped;

systematic activity began so as to improve the speed, conformation and the measurements of the crossbreds. The goal was to find the best combination of these features. By 1950 the breed formation was completed. In 1960, in order to improve the breed's speed, a second crossing of Russian Trotters with American Standardbred stallions was made. The crossing still continues.

The modern Russian Trotter is a typical harness horse. Characteristically, it is generally clean and proportionately built and has well-developed muscles and tendons. The head is light, profile straight, neck long and straight, withers medium in height, back and loin straight and well muscled, croup flat, long and broad. In appearance the Russian Trotter is, however, inferior to the Orlov; it more frequently possesses such defects as bowed legs or close hock-joints, drooping and short croup, exostoses and curb. The commonest colours are bay, black and chestnut; grey horses are less common. The average measurements (in cm) are: stallions -height at withers 161, oblique body length 163, chest girth 185, cannon bone girth 20.5; the mares' measurements are smaller: 159, 162, 184 and 19.8 respectively.

The speed of the Russian Trotter is quite high. The 1600 m trot record is 1 min 56.9 sec.

Twelve lines have been isolated in the breed.

Blood group and transferrin alleles have the following frequencies: blood group antigens - Aa 0.83, Ac 0.03; Ca 0.89; Da 0.28, Db 0.21, Dd 0.77, Dc 0.28, Dh 0.19; Ka 0.19; Pa 0.76; Qa 0.12; transferrins - D 0.26; F 0.39; H 0.08; O 0.08; R 0.17. No M transferrin has been found.

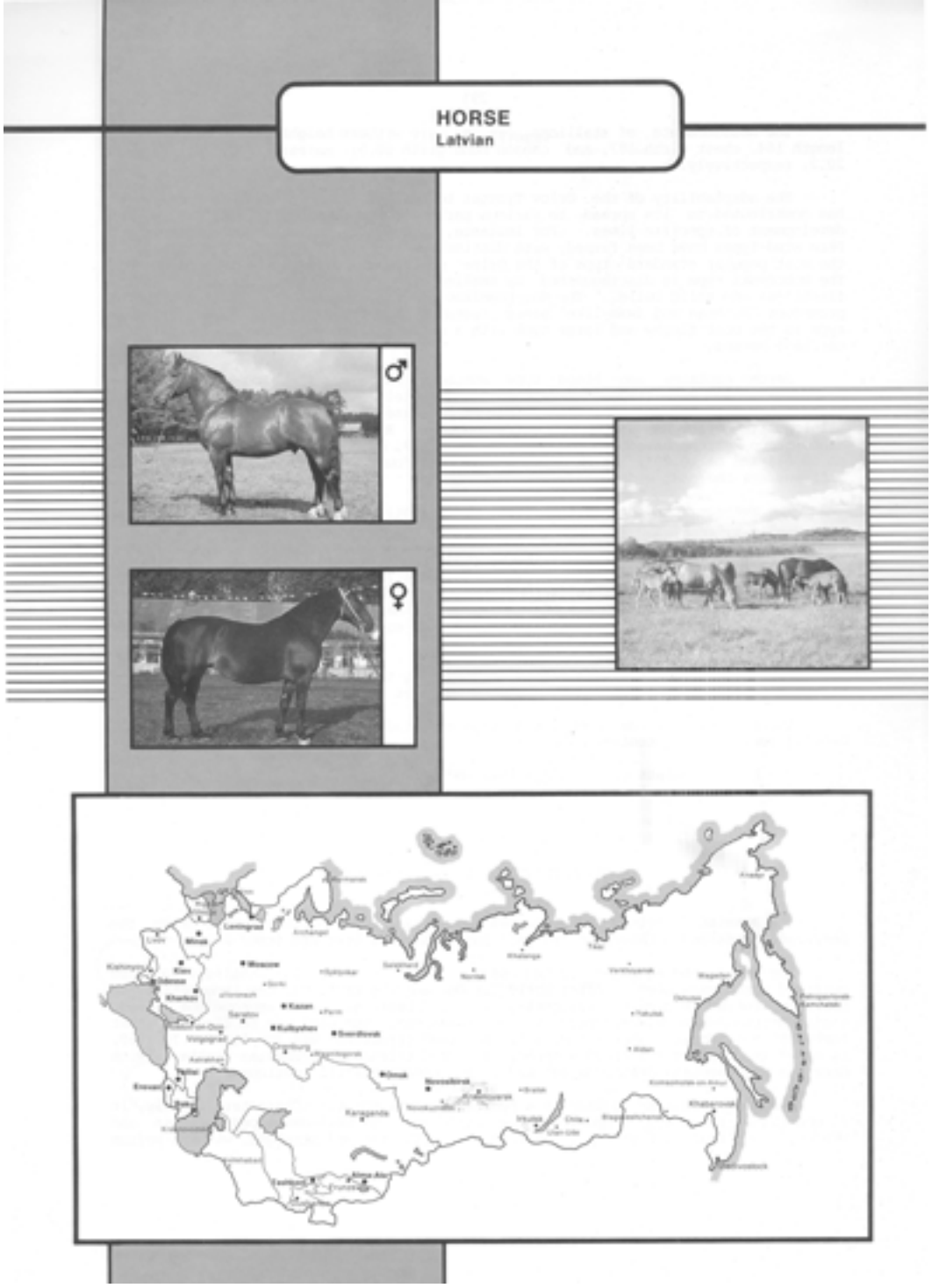
Russian Trotters have adapted well to varied conditions. Their distribution is broad, extending from the Baltic republics to western Siberia.

The breed's fertility is up to 75 foals per 100 mares. The life span averages 15-17 years. The highest longevity was displayed by the stallion Podarok (b. 1935) who founded a line, lived to be 29 and was used in mating up to the age of 28; and the mare Mazurka (b. 1954) who lived until 1980 and produced 16 foals.

As the percentage of the American Standardbred blood increases, three out of every four crossbreds display marked growth retardation, deteriorating conformation and dramatically reduced fertility. At the same time, the use of inbreeding against the background of crossbreeding causes no inbreeding depression even if the inbreeding coefficient is as high as 12%.

There are 1600 stud mares in the pedigree nucleus of the Russian Trotter. The total number of purebreds is as high as 27 000; there are some 290 000 crossbreds of various generations. The breed is bred in 27 studs, the best of them being Elan, Smolensk, Zlynsk, Alexandrov, and Dubrovski.

Studbooks are published regularly, with 23 volumes out so far. In the long term, pure breeding and corrective crossbreeding with the American Trotter are to be used.



LATVIAN (Latviiskaya)

The Latvian breed was developed in Latvia from the beginning of the 20th century up to 1952 by crossing the native horses with west European harness and harness-saddle breeds. Oldenburg, Hanoverian and to a less extent Holstein stallions had most influence. Between 1921 and 1940, 65 Oldenburg stallions and 42 Oldenburg mares were imported from the Netherlands and Germany; they became the core of the breed. Besides the purebred Oldenburgs, Oldenburg crosses and Hanoverian, Norfolk Roadster, Ardennes and East Friesians were widely used. A special role in breed formation was played by the Okte stud in the Talsa region.

Two types, the harness horses and the equestrian sports horses, have been evolved. Prior to 1960, the harness type was emphasized. Subsequently, as mass scale equestrian sports developed in Latvia on a large scale, the number of horses of the sport type was increased through infusion of the Hanoverian and, to a less extent, Thoroughbred blood.

The modern Latvian is a successful combination of the features of the utility and saddle horses. Tall, heavy muscled and bony, in format they are intermediate between saddle and harness horses. Latvians have a well-proportioned and solid build; the joints are sometimes coarse. Muscles are well developed, bone structure solid, chest broad, withers moderately pronounced or high and long, shoulder long, back and loin flat, long and well muscled, croup long and with a

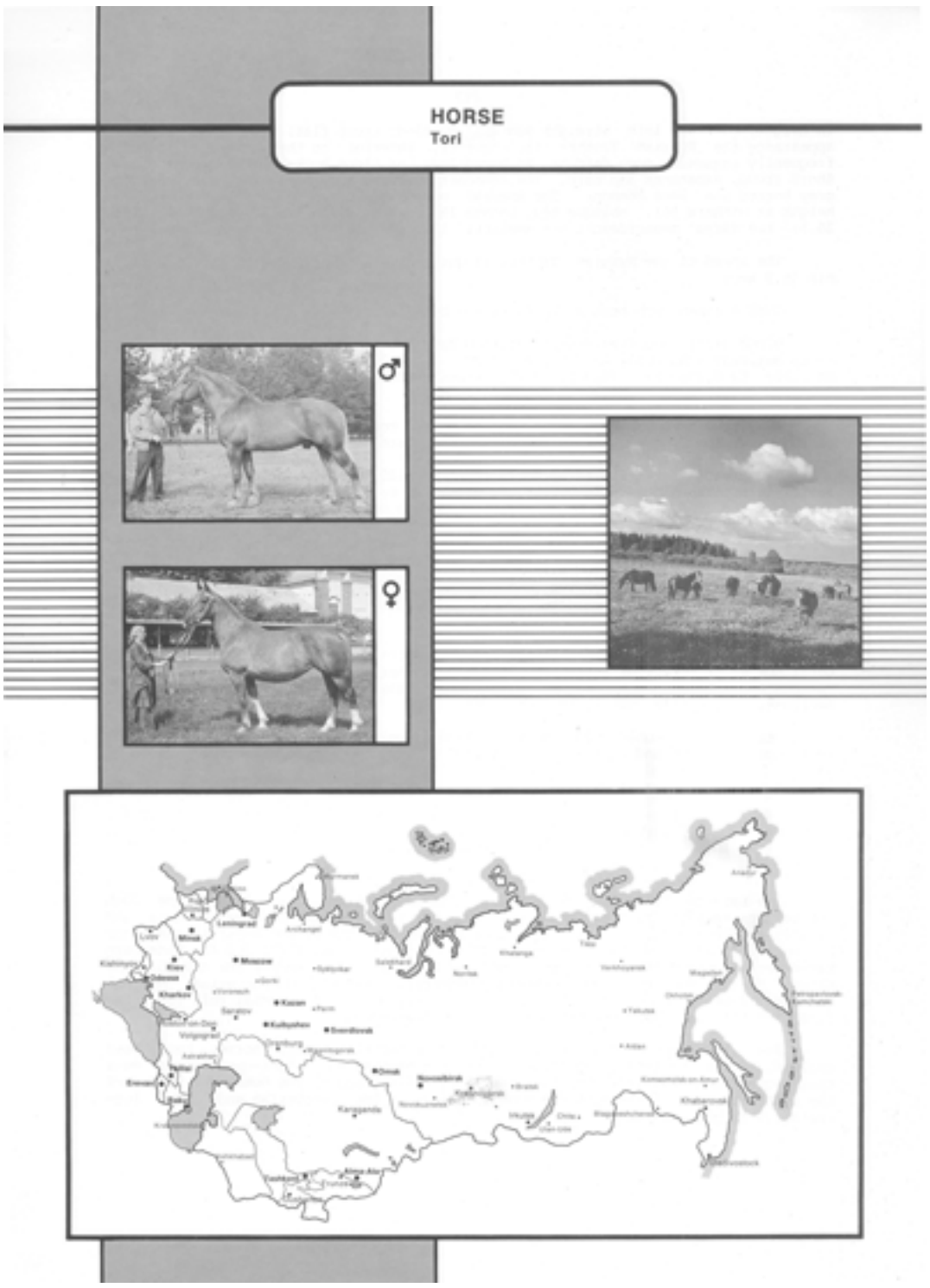
normal slope, legs properly set and with well-developed knee-joints and hocks. Defects include short and ringboned pasterns and cow hocks. The commonest colours are bay, brown and black; chestnut is less frequent.

The average measurements (in cm) of stallions are: height at withers 164, oblique body length 166, chest girth 190, cannon bone girth 23. Taller stallions (168 to 170 cm) are now being used due to the popularity of the riding type. The average measurments (in cm) of the mares are 161, 167, 191 and 22 respectively.

Latvian horses have shown good results in performance tests both in harness and under saddle, particularly in competitions. The records are: 2000 m draught walk with a pull of 150 kg, 13 min 40.6 sec; 2000 draught trot with a pulling effort of 50 kg, 4 min 36.8 sec; draught endurance with a pull of 300 kg, 1537 m and the maximum pull 927 kg.

The breed consists of 2 intra-breed types, harness and sport horses, and of 4 major lines.

Pure breeding and limited crossing with Hanoverian and Oldenburg stallions are the main improvement methods. The best farms are Burnieke state farm, Uzvere and Tervete collective farms and the Sigulda experimental farm of the Institute of Animal Breeding.



TORI (Toriiskaya)

This is an all-purpose utility breed. It was developed in Estonia at Tori stud from 1890 to 1950, by crossing native Estonian mares with European halfbred stallions. The breed was founded by the stallion Hetman, the son of Stewart and an unknown hunter mare. Stewart was a crossbred of a Norfolk Trotter and an Anglo-Norman mare.

The formation of the breed involved extensive use of Hetman and his sons. As a result, a valuable breeding nucleus was rapidly formed. By the end of the 1930s, however, signs of inbreeding depression were found, which manifested themselves in a deterioration of performance and robustness.

Crossing with Breton Post-horse stallions was used to eliminate the inbreeding depression. As a result, the massive type became widespread within the breed and the quality of the gaits began to decline.

A need also arose for a combination of utility and sporting qualities in the horses. To meet this need, a limited experimental new introductory crossing between Tori horses and Hanoverian and Trakehnen stallions was undertaken.

The modern Tori is clearly a harness type and has a very clean and solid build. Its conformational features include a large or medium-sized head, clean-cut and sometimes with a shortened poll. The neck is medium in length and fleshy; withers are average in height, back long and flat, loin medium and broad, croup broad, long and well muscled. The chest is very broad and deep. The limbs are clean and properly set. The average measurements (in cm) of Tori stallions at the studs in 1982 were: height at withers 162, oblique body length 170, chest girth 200 and cannon bone girth 22.3. The colours are chestnut, bay and reddish-bay.

Tori horses have good performance. The breed records are 13 min 21.5 sec in 2000 m draught walk with a pull of 150 kg, 4 min 44.8 sec in 2000 m trot with a pull of 50 kg. The maximum draft endurance with a pull of 300 kg was 1238 m and the maximum pull 880 kg.

The breed consists of 10 lines.

The allele pool of biochemical polymorphism is four types of esterase, the absence of the H allele, six transferrin types and rare M and P alleles.

The breed's fertility is quite high, reaching 86 foals per 100 mares.

The breed has spread throughout Estonia. The main breeding centres are Tori stud and the breeding farms at Pyarivere and Aravete state and collective farms.

HORSE
Byelorussian Harness

BYELORUSSIAN HARNESS (Belorusskaya uprazhnaya)

The Byelorussian Harness breed was formed on the basis of the native northern forest type of horses improved by the Dφle (from Norway), Ardennes and Brabançon breeds. The Dφle influence was the strongest.

Long-term inter se breeding of various generations of crosses created a breed most suitable for the current requirements of Byelorussian agriculture. The horse has adapted well to work in wooded areas with swampy and sandy soils. It can also be used for milk and meat production.

It is a medium-sized horse with the characteristic conformation of a harness horse. The head is not large, the forehead wide, the neck well muscled and average in length, the withers average in height and length, the back long, flat and often slightly dipped, the loin flat and short, the croup wide, nicely rounded and well muscled with a normal slope, the chest wide and deep. The limbs are clean and solid. The mane and tail are thick but the fetlock tufts are small. The stallions' measurements (in cm) are: height at withers 153, oblique body length 163, chest girth 184, cannon bone girth 21.5. Live weight is 540 kg. The mares measure 150, 161, 183 and 21 cm respectively. Their live weight is 490-500 kg. The colours are dun, bay, chestnut and light bay.

The top performance results are: the 2 km walking record with a pull of 150 kg is 14 min 41 sec; the 2 km trotting record with a pull of 50 kg is 5 min 01 sec. The best pulling endurance result with

a pull of 300 kg was 388.8 m. The maximum load capacity has reached 660 kg.

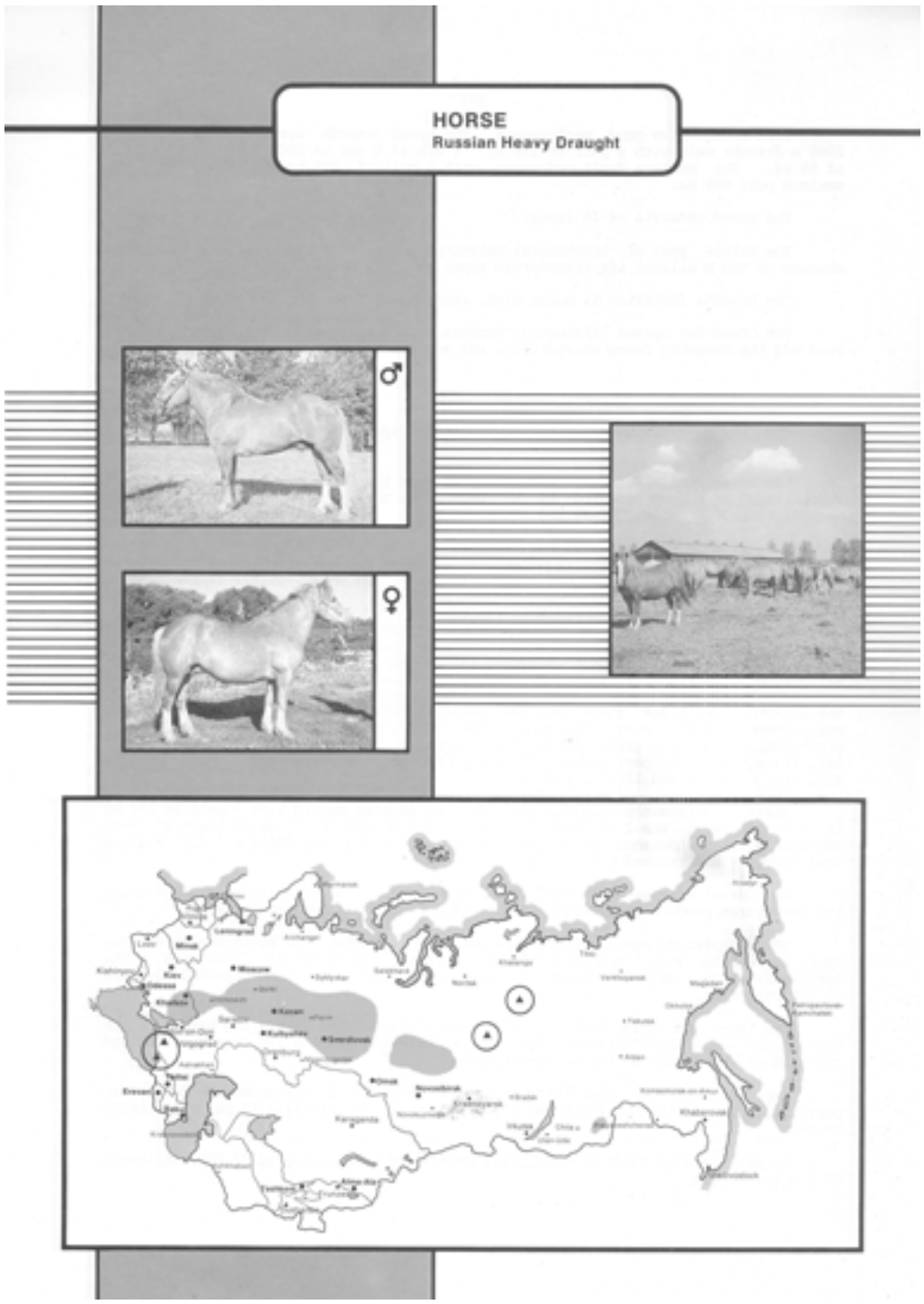
The mares' average daily milk yield is 9 litres. At established koumiss farms the best mares produce 2560 litres of marketable milk in a 6-month lactation.

The dressing percentage is 51. Despite the fact that the Byelorussian matures late, by weaning at 6-7 months the foals reach a live weight of 170-190 kg. The Byelorussian has a high fertility and longevity. Mares have often remained fertile to the age of 26.

Two types, the large and the medium, are distinguished within the breed. There are 6 lines and 4 mare families. The leading breeding centres are Zarechye stud and the stud on Pobeda state farm in Byelorussia.

Improvement is by pure breeding. Two volumes of the studbook have been published, listing 135 stallions and 616 brood mares. A new line is currently being tested.

As at 1 January 1980, the Byelorussian Harness breed numbered 93 040, including 27 560 purebreds.



RUSSIAN HEAVY DRAUGHT (Russkaya tyazhelovoznaya)

The breeding of a small draught horse which was strong, sufficiently fast, easy to keep and economical as regards management and feeding, went on in Russia concurrently with the breeding of a large heavy draught breed. The genetic material for the breed came from native Ukrainian breeds, the mountain Ardennes and, in part, from the Brabanmated with Brabançonson and the Orlov Totter.

Systematic breeding began in the 1860s. The main nucleus of the breed was formed at Peter's Academy (now the K. Timiryazev Moscow Agricultural Academy), Chesma stud in Voronezh region, at Kochubei and Chaplits studs in Poltava region and Derkulski stud in the Ukraine. Meanwhile, grading up of native horses with the Ardennes was taking place. In 1875 there were nine Ardennes stallions in Russia; the number rose to 597 by 1915. By the beginning of the 20th century the Ardennes type became the most popular in Russia. Even in regions where there was a demand for large heavy draughts and where high grade Ardennes were mated with Brabançons, the crosses retained the old denomination of Ardennes. During the breed formation period, a role of particular importance was played by two breeding centres, the Chesma and the Dubrovsk, and subsequently by the Pershino and Khrenov studs. By the beginning of the 20th century, the world's zootechnical public was introduced to the Russian Heavy Draught at the 1900 Paris Exhibition. However, the First World War, followed by the Civil War, just about wiped the breed out. In 1924, only 92 Ardenne stallions were found. In 1923, breeding animals at Dubrovsk stud were moved to Novoalexandrov stud in Voroshilovgrad region, while the Khrenov stud stock was moved first to Pershino and subsequently to Uralsk and Kuedin studs. By the year 1937 the stock of purebreds was reconstituted and isolated as an independent breed.

Due to its high-profit feeding and high adaptability, the Russian heavy draught became quite widespread. It is now bred in the Ukraine and North Caucasus, in Udmurtia and Byelorussia, in Kirov, Sverdlovsk, Perm, Vologda and Archangel regions and in western Siberia.

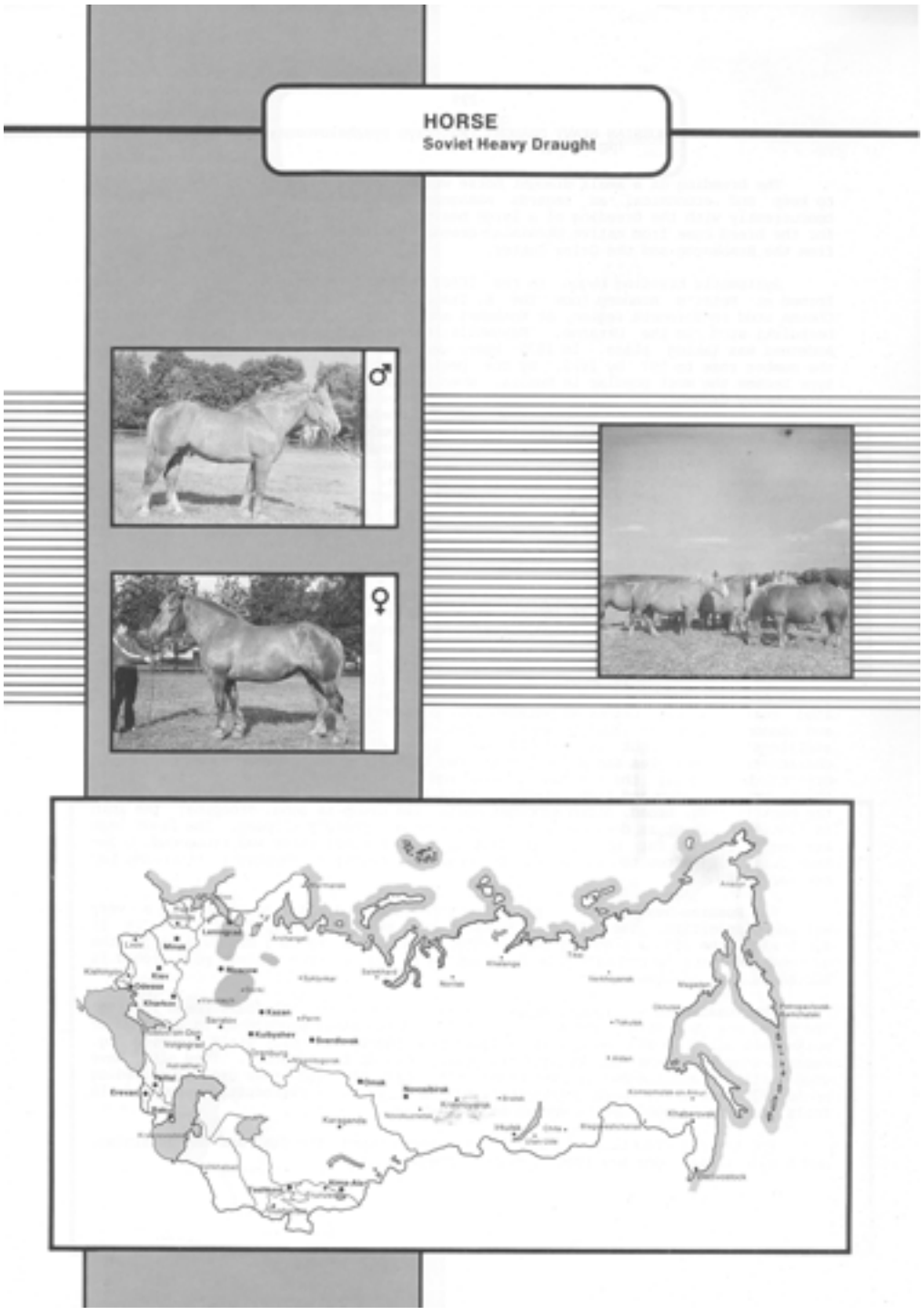
The horse is not large yet heavily muscled; its trunk is long and broad; the joints are well developed and the limbs solid. The average measurements (in cm) of stud stallions are: height at withers 152, oblique body length 161, chest girth 200 and cannon bone girth 22.5; mares: 149, 158, 192 and 21.2 respectively. The stallions' live weight is 600-700 kg; that of mares is 550-600 kg. The characteristic features are as follows: the head is average size, clean cut, with Oriental breediness; the forehead is wide and the profile is straight. The neck is short, broad, fleshy and high crested in stallions. The withers are low and broad; the back is long, broad, often somewhat soft; the croup is long, drooping; the loin is flat. The chest is deep and broad; the ribs are steeply sloping. The front legs are short, set too far apart; the pasterns are sometimes short and ringboned. The knee-joints are often too far back. The commonest colour is chestnut; brown and bay are rarer.

The Russian Heavy Draught horse is strong, shows a fair speed and has a very willing disposition. The 2000 m draught walking record with a pull of 150 kg is 15 min 5 sec; the 2000 m trotting record with a pull of 50 kg is 5 min 20.4 sec; the draught endurance record with a pull of 300 kg is 1091 m. The maximum pull record is 820 kg or 117% of live weight.

The Russian Heavy Draught matures early; by weaning, the foals reach 250 kg. The mares are good milk producers. At koumiss farms mares produce up to 2500 kg of marketable milk in 6-7 months of lactation. The record milk yield is 5540 kg. Russian Draught horses can be used for periods of up to 25 years. They also have good fertility and longevity. The stallion Kolodnik (b. 1952) was used for breeding up to 1978, while the mare Logika (b. 1962) in 18 years of reproduction produced 18 foals, remains in good health and is still fertile.

The breed's structure includes 2 intra-breed types, the Ural and the Ukrainian, and 6 male lines. One new line is being formed.

The transferrin polymorphism has been studied in 862 horses and the allele frequency is as follows: D 0.33, F 0.31, H 0.06, 0 0.01, R 0.27.



SOVIET HEAVY DRAUGHT (Sovetskaya tyazhelovoznaya)

This breed was developed during the period from the '80s and the '90s of the last century up to 1952 when it was recognized as a new heavy draught breed. The breeding zone was quite extensive, including Yaroslavl, Vladimir, Gorki, Penza, Ryazan, Tula, Tambov, Voronezh and Orel regions and Mordovia. This was a zone with a developed industry and intensive agriculture, requiring strong and sufficiently fast horses of ample size. Success in the breeding of this type of horse was guaranteed by a stable supply of fodder.

Initially, native horses were improved by stallions of the Belgian Brabançon draught breed. In 1885, three Brabançon stallions were recorded in stud use in the above zone; in 1895 they numbered 58, in 1905 - 394 and in 1945 - 891. The breed nucleus was initially at Khrenov stud and subsequently at Pochinkovsk stud. Mares of multibreed origin (Percheron-Ardennes-Suffolk-Danish and different varieties of saddle horse) were mated with Brabançon stallions for three to four generations and the progeny were bred inter se. At the same time grading up was taking place on a large scale and crossbred stallions were widely used.

In 1936, three state breeding centres, Pochinkovsk, Mordovian and Gavrilovo-Posad, were

established. Alexandrov farm in Vladimir region and Yaroslavl farm branched off from the latter. Subsequently, the Pochinkovsk and the Mqrdovian facilities were transformed into studs.

As the intensification of agricultural production proceeded, demand for massive heavy draughters was growing. The influence of Brabançons began to spread. In the Baltic zone, new breeds, the Lithuanian and the Estonian Heavy Draught, began to be formed on a different local mare basis.

Modern purebred Soviet Heavy Draughts are distinguished by ample height and clearly expressed harness type. They are heavily muscled and boned. The average measurements of breeding stallions at the studs (in cm) are: height withers 163, oblique body length 172, chest girth 215, cannon bone girth 25; mares: 160, 168, 205 and 22.75 respectively. The live weight of stallions is 850 kg and sometimes reaches 1 000 kg; the mares' weight is 650-750. The Soviet Draught has the following characteristics: the head is average in size and clean-cut, the neck is average in length, often on the short side and well muscled; the withers are low; the back is long, often slightly dipped, the loin is average in length, the croup is broad, furrowed, drooping and heavily muscled, the chest is broad, average in depth, the ribs are well sprung. The forelegs are often pigeon-toed and the hind ones are sickle-hocked. The build is quite coarse, soft and yet much cleaner and more solid than that of the Brabançon. The predominant colours are chestnut, brown and bay.

The Soviet Heavy Draughts are good utility horses and breeders. The established records are: 2000 m draught walk with a pull of 150 kg in 11 min 51.8 sec; 2000 m trot with a pull of 50 kg in 4 min 50 sec; draught endurance with a pull of 300 kg - 1138 m; maximum pull, 851 kg.

The Soviet Heavy Draughts mature extremely early and are good milk and meat producers. With normal feeding and management the foals at weaning attain a live weight of 360-400 kg. The breed's record milk yield is 6320 kg. They have a good weight gain per fodder unit but demand good management. They are ins3ufficiently disease resistant and adapt to extreme management conditions worse than other breeds do. The mares' fertility varies from 65 to 76%.

The breed comprises 2 lines and 3 mare families. A new line is now being developed.

The leading breeding centres are Pochinkovsk stud in Gorki region and the Mordovian stud farm.

HORSE
Vladimir Heavy Draught

VLADIMIR HEAVY DRAUGHT (Vladimirskaya tyazhelovoznaya)

This breed was developed in Ivanovo and Vladimir regions on the basis of large native horses through crossbreeding with various draught breeds, such as the Percheron and the Suffolk, and later with the Clydesdale and, to a lesser extent, with the Shire. The latter was in wide use only from 1919 through 1929. The aim was a horse of medium draught power or less which would have rather high speed. In the formation of the breed, a particular role was played for more than a hundred years by Gavrilovo-Posad breeding station, previously a stud farm and a state breeding stable. Its experts invested no small effort in the creation of horses of uniform type in the region. In 1946 the new heavy draught breed was recognized.

Vladimir Draughts combine ample size, stout build, speed and an energetic temperament. Compared to the Clydesdale, the Vladimir has a more developed chest and cleaner and more solid build. The average measurements (in cm) of the stallions are: height at withers 160, oblique body length 165, chest girth 196, cannon bone girth 24. The stallions' live weight is 750-800 kg. The mares' measurements (in cm) are 157, 162, 188 and 23.0 respectively. The inadequate size of Vladimir Draughts is due to their being reared in simple management conditions at collective farm studs.

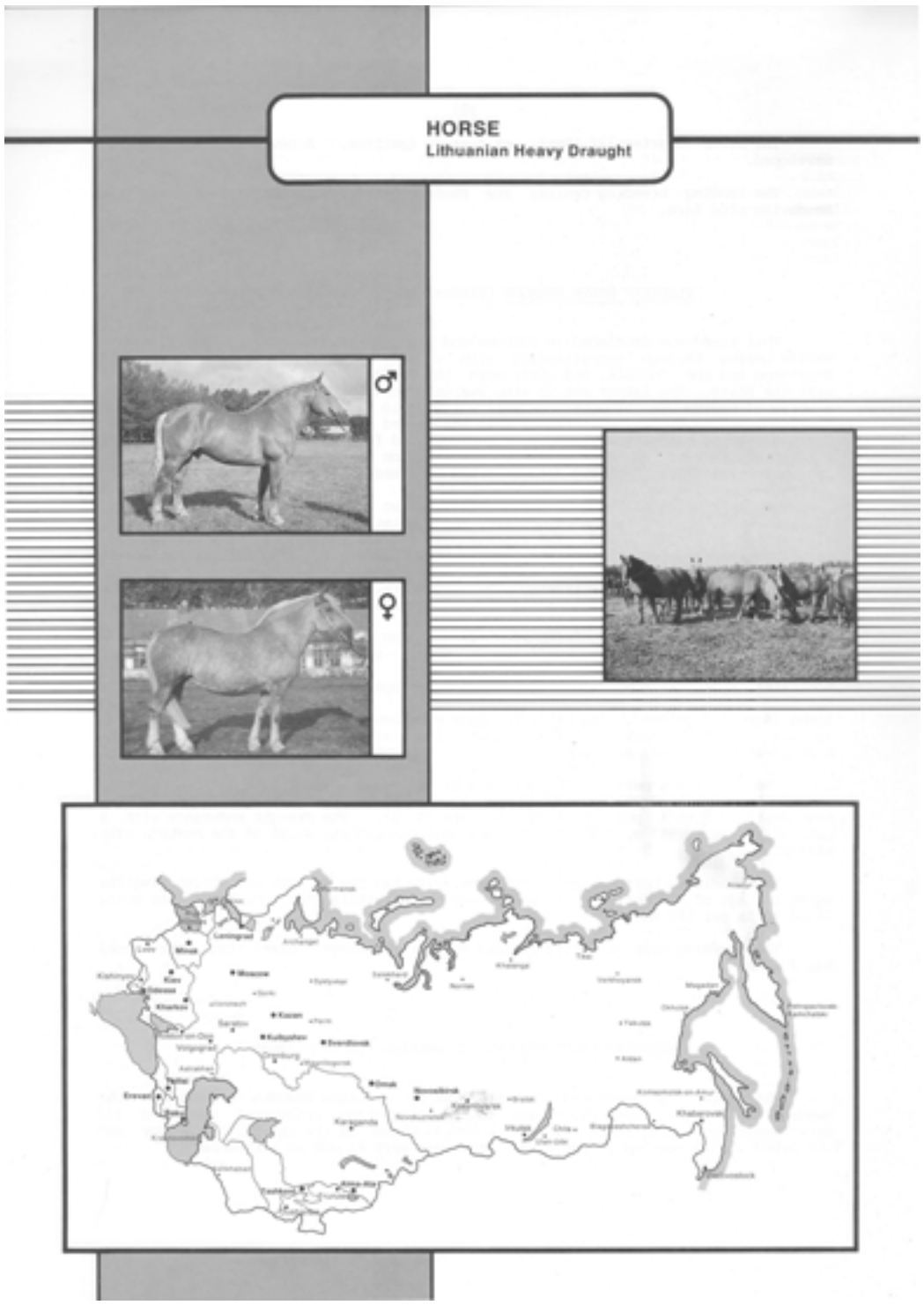
The features of the conformation are: a long clean-cut head with the profile often arched; elongated and well-muscled neck; sufficiently pronounced and long withers; back somewhat long,

a little dipped; short and broad loin; long, moderately sloping croup; long legs, clean and properly set. The chest is broad but not deep and the ribs are insufficiently sprung. The hair of the mane, tail and limbs is well developed. The Valdimirs have excellent gaits. The predominant colour is bay; brown and black are less frequent. There are characteristic markings on the head (a star or blaze) and legs.

The Vladimir's performance test results are good. The 2000 m walking draught record with a pull of 150 kg is 12 min 34.2 sec; the trotting draught record for the same distance with a pull of 50 kg is 4 min 34 sec. The draught endurance with a pull of 300 kg is 987 m, while the maximum pull was 820 kg, 94.3% of the horse's live weight.

The Vladimirs have a high growth rate, with the foals' live weight reaching 200 kg by the age of six months. The mares are quite fertile, the live birth rate being 75-80 foals per 100 mares.

The breeding work is being carried out at the Yuryev-Polski stud. The breed has 4 lines.



LITHUANIAN HEAVY DRAUGHT (Litovskaya tyazhelovoznaya)

This breed was developed in Lithuania by crossing Zhmudka horses with the Swedish Ardennes. The third and fourth generation crossbreds (2nd and 3rd backcrosses) were bred inter se. The breeding began in the early 20th century and the breed was recognized in 1963. In 1964

there were 62 000 in Lithuania.

The breed has a solid build, large size and harmonious body proportions. The head is coarse, clean cut and large; the neck is short and well muscled; the back is long and sometimes a little dipped; the loin is flat and broad; the croup is broad, long and well muscled; the limbs are solid and properly set. Defects include coarse head, dipped back, pin-toes and sickle-hocked hindlegs. The average measurements (in cm) of breeding stallions are: height at withers 160, oblique body length 166, chest girth 205, cannon bone girth 24; mares: 157, 165, 200 and 23 respectively. The commonest colours are chestnut and bay. The stallions' live weight varies from 850 to 920 kg.

The performance records are as follows. The 2000 m walking draught record with a pull of 150 kg is 13 min 20 sec; the trotting draught record for the same distance and a pull of 50 kg is 4 min 45 sec. The draught endurance with a pull of 300 kg is 1397 m with a maximum pull of 860 kg.

The Lithuanian Heavy Draught has good longevity and fairly high fertility. The foal crop at the best studs is 80%; survival rate up to one year of age is 76-79%.

Their solid build enables Lithuanian Heavy Draughts to display good adaptability to extreme and harsh conditions. When used to improve meat and milk yield in native Altai horses, first crosses and backcrosses had better live weight indices and higher growth rate; they better withstood the conditions of year-round grazing. Crossbreeding of the native Altai and improved horses with the Lithuanian Heavy Draught is being used to develop a new breed.

The breed comprises 9 lines. It is bred at Nyamun, Sudav and Zhagar studs and at horse breeding units of collective and state farms.

HORSE
Kushum

KUSHUM (Kushumskaya)

The Kushum breed was developed at Pyatimarsk and Furman studs in Urals region of Kazakhstan from 1931 to 1976.

Originally, the goal was to develop, on the basis of the native Kazakh horses, a good army mount suitable for keeping in taboons all the year round. Kazakh mares were crossed with Thoroughbreds and halfbreds, as well as with trotters, to obtain larger size and to improve gaits.

To retain the Kazakhs' high adaptability to taboon management while maintaining and improving the size and action, the crossbreds were mated with Don stallions. The three-way crosses were subsequently bred inter se. As a result, a new breed was developed, characterized by high adaptability, large size and good versatile working qualities.

Its high adaptability to local conditions, reflected in increased weight gain in spring and autumn, renders the Kushum suitable for meat and milk production. Its large size and live weight guarantee a high yield of horse meat.

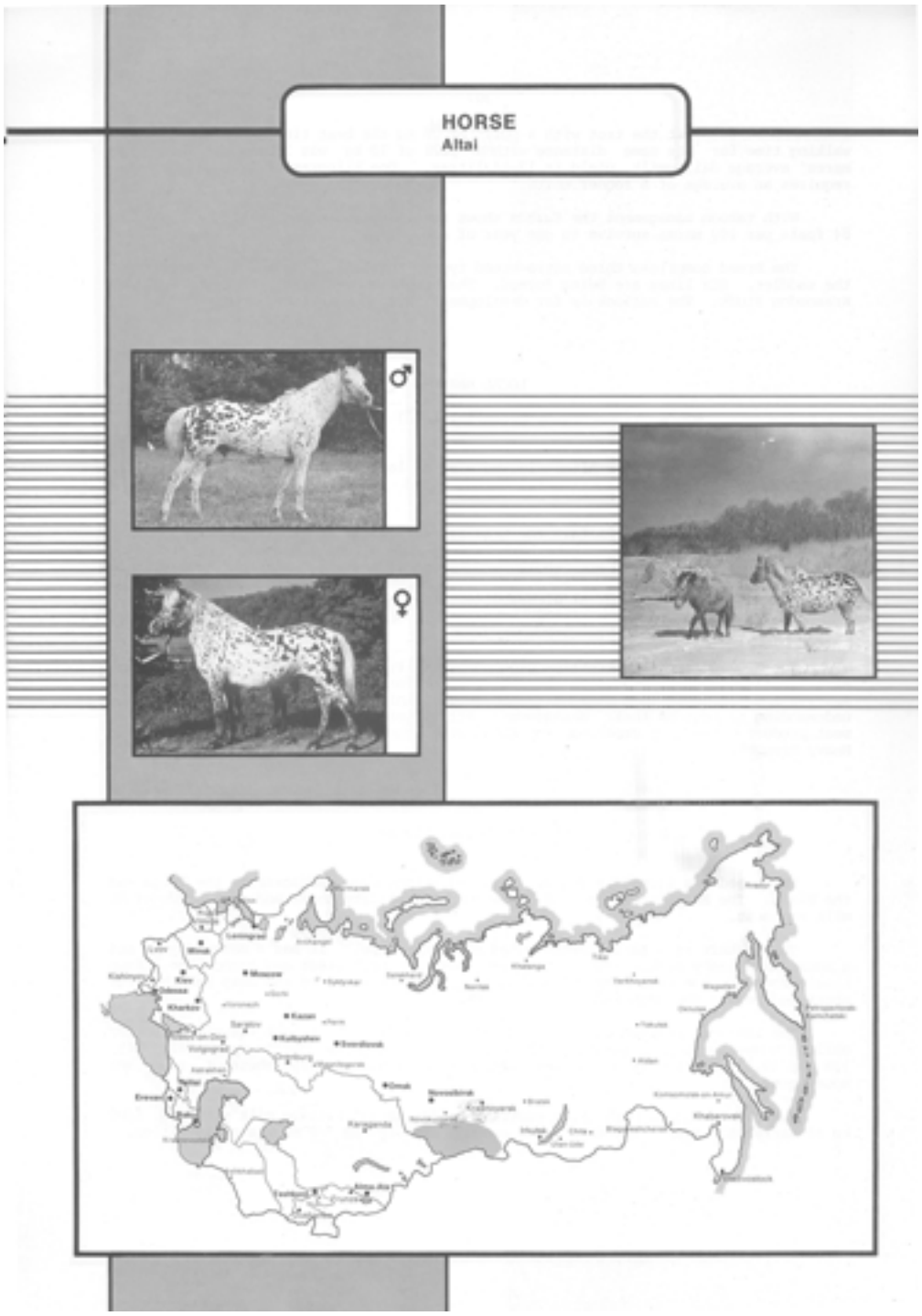
The characteristic features of the Kushum are a solid build of a saddle-harness horse type; the head is large but not coarse; the neck is average in length and fleshy; the withers are pronounced; the back is long and flat; the croup is well muscled but not long enough; the chest is broad and deep; the legs are properly set. The stallions' measurements (in cm) are: height at

withers 159, oblique body length 161, chest girth 187, cannon bone girth 20.5. The live weight is 520-550 kg. The mares measure 154, 157, 182 and 19.2 respectively. The colours are bay and chestnut.

The Kushum is versatile and has high endurance. In all-day tests, the best results were 214 and 280 km. The record horse did 100 kg in 4 hr and 11 min. In 2-km harness tests at the trot with a pull of 28 kg the best time was 5 min 54 sec; walking time for the same distance with a pull of 70 kg was 16 min 44 sec. The mares' average daily milk yield is 13-14 litres. One kilogram of live weight gain requires an average of 8 fodder units.

With taboon management the Kushum shows fertility and sound health. Eighty to 84 foals per 100 mares survive to one year of age.

The breed comprises three intra-breed types, the basic, the heavily muscled and the saddler. Six lines are being formed. The breed is bred mainly at Pyatimarsk and Krasnodon studs. The outlook is for development through pure breeding.



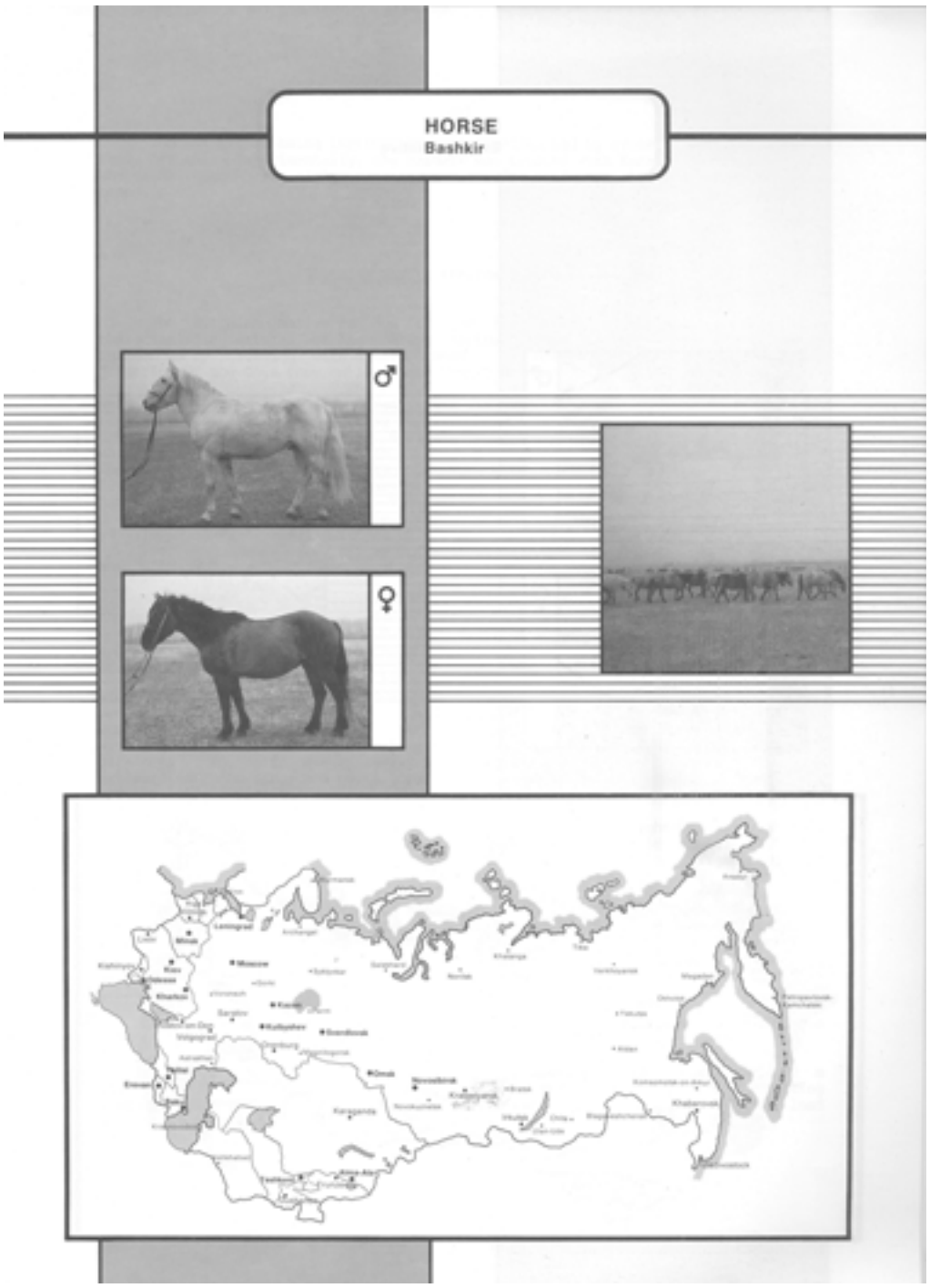
LOCAL BREEDS
ALTAI (Altaiskaya)

The formation of the Altai lasted for a long time and was significantly influenced by the harsh

continental climate and the conditons specific to the mountain taiga.

In the typical native Altai the head is average in length, large and somewhat coarse; the neck is fleshy; the back is long and slightly dipped; the croup is well developed, the legs are short and properly set. Occasional defects in conformation include sloping pasterns and bowed hocks. The average measurements (in cm) are: stallions - height at withers 140, chest girth 170, cannon bone girth 19; mares: 137, 170 and 18 respectively. The colours are chestnut, bay, black and grey, sometimes chubary spotted.

The Altai displays extremely high adaptability to year-round pasture grazing. Altai crosses with pure breeds have a good performance. They are larger, more massive and stronger than the Altai while retaining their sound health and are undemanding as regards their management. Activities are underway to develop a new meat-producing breed by crossing the Altai with the Lithuanian, Russian and Soviet Heavy Draught.



BASHKIR (Bashkirskaya)

The breed was formed in the mountain and steppe zone adjacent to the Volga and the Urals. The Bashkir was used as a draught and utility horse and as a producer of milk and meat.

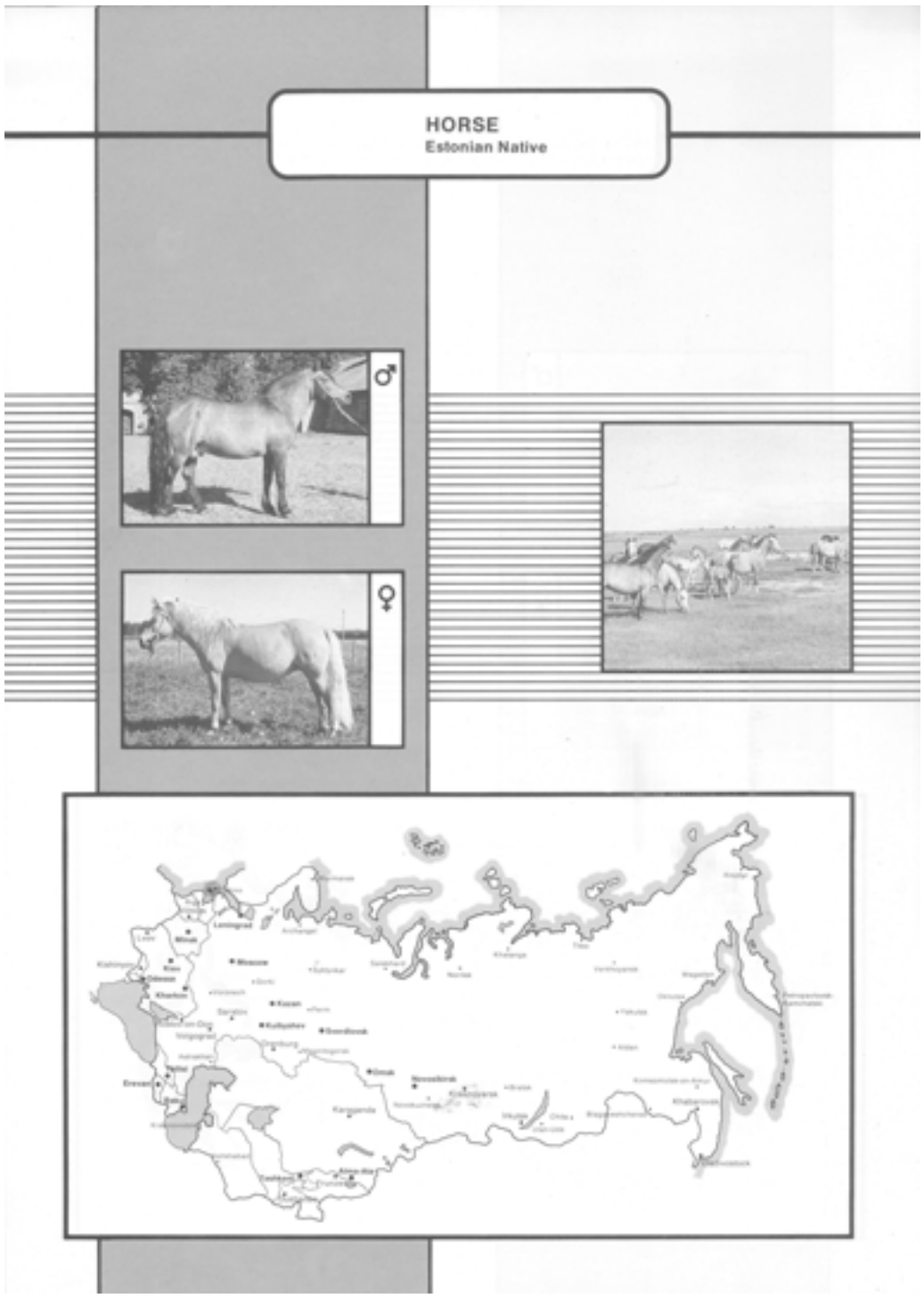
The Bashkir is small, wide-bodied and bony horse. It has a massive head and a short and fleshy neck. The withers are low, the back erect and board, the croup nicely rounded, the ribs long and

well sprung, the chest broad and deep and the legs short and bony. The mane and tail are thick.

The average measurements (in cm) are: stallions – height at withers 143, oblique body length 144, chest girth 180, cannon bone girth 20; mares: 142, 145, 178 and 18.5 respectively. The most widespread colours are bay, chestnut, roan and mouse grey.

The Bashkir has a high work endurance. The mares' average milk yield is 1500 kg of marketable milk. The best mares produce 2700 kg in 7-8 months of lactation.

The Bashkir is being improved by pure breeding and by crossing with the Russian Heavy Draught. Experimentally, the Bashkir was crossed with Kazakh and Yakut horses. The Bashkir stock is mainly concentrated at Ufa stud, the leading centre for the breed.



ESTONIAN NATIVE (Mestnaya estonskaya)

The Estonian Native is one of the few breeds which have retained the characteristic features of the native northern horse and were not significantly influenced by crossing with other breeds. It played an important role in the formation of the Obva (now extinct) and Vyatka breeds.

The Estonian first penetrated Russia via Novgorod as early as the 14th and 15th centuries due to its good working qualities and high adaptability. As agriculture developed and demand for working

horses grew, simultaneously with pure breeding the native horses were crossed with larger breeds. Reliable information on the improvement stages of the Estonian dates back to the origins of the Tori stud in 1856. The stud was engaged in pure breeding of native horses and crossing them with light harness and saddle breeds. The best crossbred mares were subsequently used to develop the Tori. The first pure breeding stage yielded good results; the purebred stallion Vansikasa, distinguished by extraordinary strength and pulling endurance, was produced. He won many prizes in tests at Paris, Riga and Moscow exhibitions in the native horses group. His daughters were foundation mares of the Tori.

Nonetheless, as agriculture became more intensive and the road network and transportation needs developed, the Estonian Native lost the competition to the new breed and is no longer used in mainland Estonia, surviving only on the islands of Saarema, Hiyumaa and Mukhu. The total purebred herd is 1000 head.

The modern Estonian is not large in size; the head is well proportioned, has a wide forehead and is sometimes somewhat coarse; the neck is on the short side or medium in length and fleshy; the withers are low and wide; the loin is well muscled; the croup is average in length and has a normal slope. The chest is very wide and deep; the legs are short, properly set and distinguished by firmness and cleanness. The hoofs are extremely solid. The animal is undemanding; it has extraordinary endurance and quite good action. The fodder utilization is good. It has a willing disposition.

The average measurements (in cm) are: stallions - height at withers 142, oblique body length 147, chest girth 178, cannon bone girth 19.5; mares: 141, 149, 182 and 19 respectively. The predominant colours are chestnut, bay, light bay, dun and grey.

Inbreeding has become widespread due to the limited size of the breeding stock. The average inbreeding coefficient is 3.12%. Practically no inbreeding depression as regards work performance, measurements or conformation has been found, but closely inbred individuals take more time to mature. The breed's champion stallion at the USSR Exhibition of Economic Achievements in 1984, Askar, had an inbreeding coefficient of 18%.

The Estonian is long lived; the mare Tenki, born in 1946, was still alive in 1983 at Syrve state farm in Kingisepp region.

Work performance records of the Native Estonian are quite high. The 2000 m walking draught record with a pull of 150 kg is 17 min 26 sec; the 2000 m trotting draught record with a pull of 50 kg is 6 min 25 sec; draught endurance with a load of 9 tons was 208 m.

At present the local Estonian is used for light agricultural work, as a saddle horse for children and in tourism. It represents good breeding material for the production of ponies in various crosses. It is also being used to cross with disappearing Ob (Priobskaya) breed.

The Estonian Native studbooks are published regularly. The semen of Ampel, the best stud stallion, is stored for the preservation of the genotype. The leading breeding centres are the collective and state farms Kyarla, Kylyala and Oriesaare.

HORSE
Karabakh

KARABAKH (Karabakhskaya)

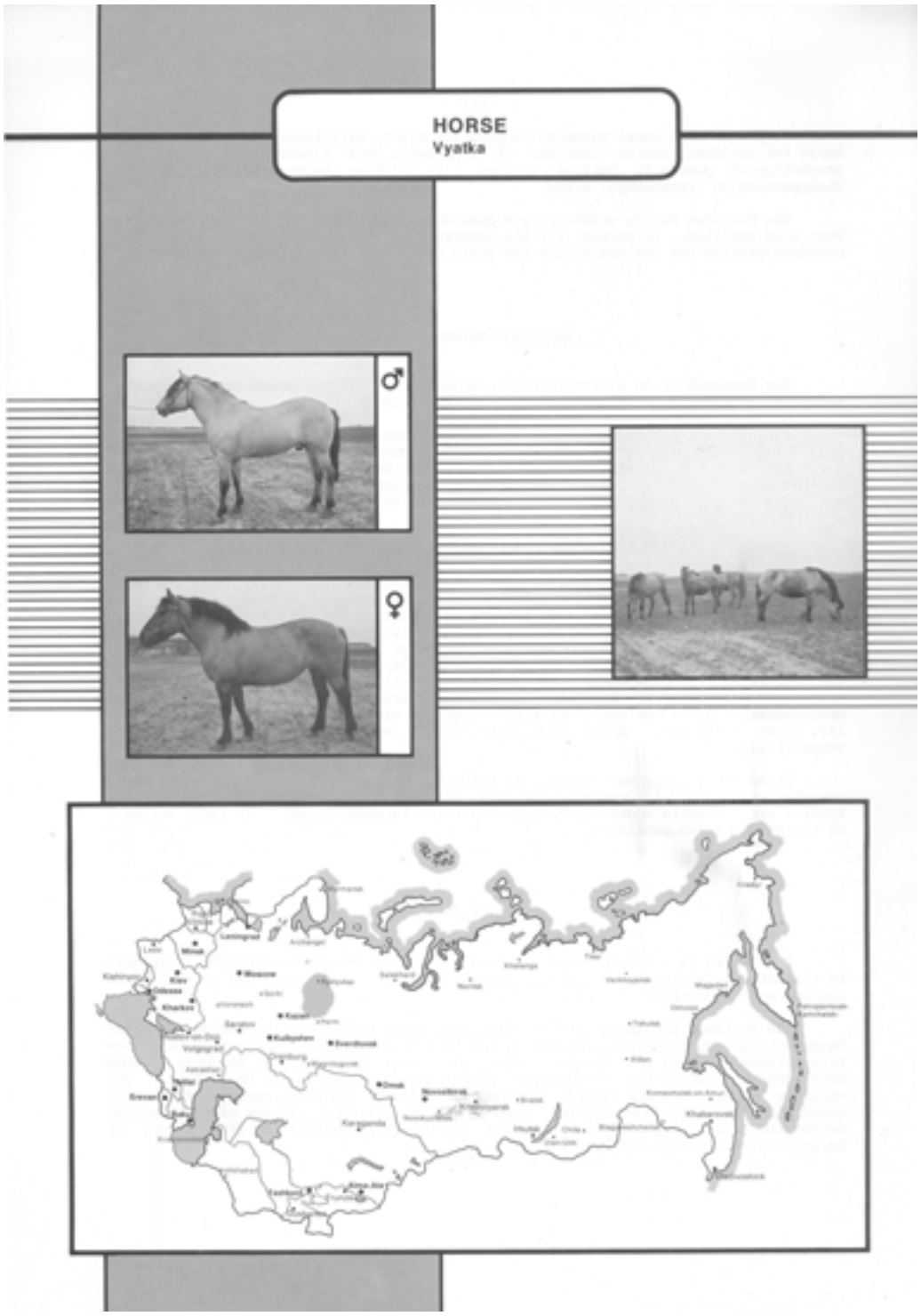
The Karabakh is an ancient mountain saddle breed. It was developed in Nagorny Karabakh in Azerbaijan between the Araks and Kura rivers.

Prior to the 19th century the Karabakh khanate was the breeding centre of the best horses in Transcaucasia; the Karabakh had a substantial influence in improving horse breeds in the neighbouring countries. It was developed by crossing the native Azerbaijan horses with Persians, Arabs and Turkmenians. The Arabian influence was most pronounded; there are important similarities in appearance between the Karabakh and the Arabian.

Long-term breeding based on taboon management in the mountains has led to the evolution of specific features in the breed. The horse is not large; its build is clean and thick-set; the muscles are well developed and the tendons are well defined. The head is small and clean cut; the profile is straight and the eyes alert. The neck is set high and average in length; the withers are average in height; the back is average in length; the loin is flat, short and wide; the croup is average in length, wide and well muscled; the chest is deep. The limbs are properly set, sometimes bowed; the hoofs are not large yet solid. The skin is thin; the hair is soft and gleaming; the hair of the forelock, mane and tail is thin. The colour is chestnut, or bay with a characteristic golden tint. The average measurements (in cm) of stallions are: height at withers 150, oblique body length 147, chest girth 169, cannon bone girth 18.6; mares: 146, 145, 164 and 18.5 respectively.

Breed numbers are very small. At present, the Karabakh is bred at Agdam stud, yet the total herd is composed of Arab Karabakh crossbreds of various grades. Efforts are currently under way to

regenerate the Karabakh breed. In 1981, Volume 1 of the studbook was published.



VYATKA (Vyatskaya)

The Vyatka is a native northern breed. Its development was strongly influenced by the natural conditions in the territories of what are now Kirov and western Perm regions and in Udmurtia.

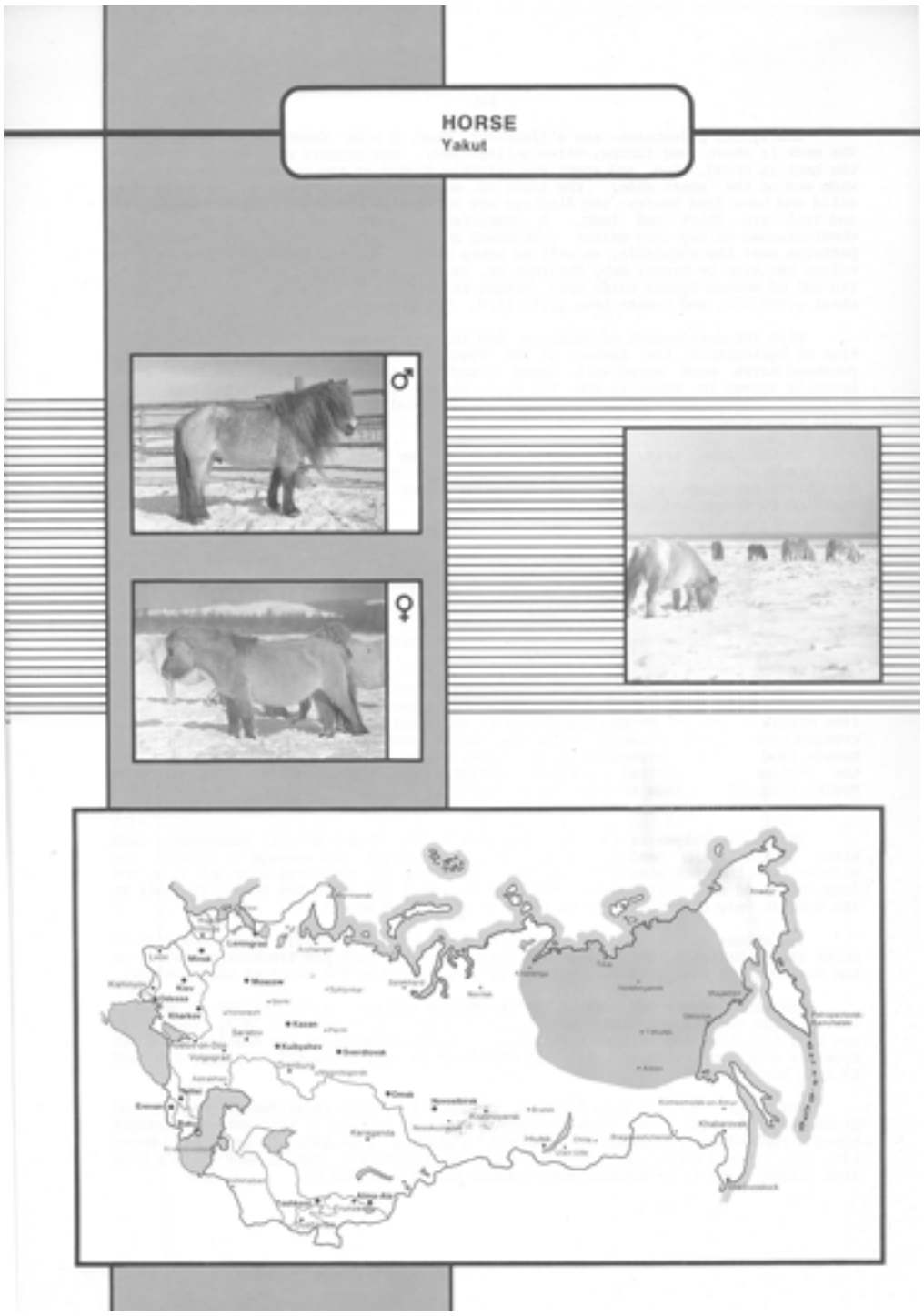
The Vyatka's formation was at different times influenced by native Estonian horses brought by Novgorod colonists in the 14th century and by edicts from the state horse breeders during the reign of Peter the Great. Subsequently, Estonian horses were imported during the development of the mining industry in the Urals. The valuable features of the Vyatka included good draught ability, such as sufficient speed, extraordinary endurance and good fodder utilization. It was often exported beyond the limits of the Vyatka province. By the first half of the 19th century it became the best troika horse in Russia.

The Vyatka's features are a clean-cut head, a wide forehead and broad jaws. The neck is short and fleshy, often well-arched; the withers are average in size; the back is broad, long and sometimes slightly dipped at the withers; the croup is wide and on the short side; the trunk is wide and deep; the legs are short and solid and have good hoofs; the hindlegs are often sickle-hocked. The forelock, mane and tail are thick and long. A characteristic feature of the breed is its

chestnut-roan or bay-roan colour with black stripe along the spine and wing-shaped patterns over the shoulders, as well as zebra stripes on the forelegs. However, the colour can also be brown, bay, chestnut or, rarely, black. The average measurements (in cm) of modern Vyatka mares are: height at withers 140, oblique body length 150, chest girth 172, and cannon bone girth 18.9. The live weight is 400 kg.

With the development of industry and transportation and with the intensification of agriculture, the numbers of the Vyatka were sharply reduced; most of the purebred mares were mated with heavy draughters and trotters. The 1980 horse breeding survey in Udmurtia and the Kirov region showed that the total number of horses classified as Vyatka was about 2000. No stud breeds the Vyatka. The breed needs protection.

In the long term, the breed could become quite competitive due to the development of tourism. As draught horses, the crosses of the Vyatka and heavy draughters are quite strong, have very good fodder utilization and practically no reaction to midges and blood-sucking insects.



YAKUT (Yakutskaya)

The Yakut was developed in Yakutia by unconscious and natural selection in the harsh conditions of northern and central Siberia.

Compared to horses of similar type and Mongolian origin, the Yakut is larger and more massive. Three Yakut types have been formed: the Northern original Yakut (the Middle Kolyma or Verkhoyansk horse); the smaller southern type which was not crossed with improved breeds; and the larger southern type tending towards the breeds used for the improvement of the local Yakut. The last type is widespread in the regions of central Yakutia, including Yakutsk, Namtsi, Orjonikidze, Megino-Kanglass and Amga regions, where trotters and heavy draughters were used for improvement.

The Middle Kolyma is the most valuable horse. It has greater homogeneity and size. Typically the head is coarse, the neck straight and average in length, the withers low, the back wide and long, the croup drooping, the chest wide and deep, the legs short and with solid hoofs. The mane and tail are thick and long. The hair on the body is very thick; in winter it is up to 8 cm in length.

The colour of the Yakut is usually bay, grey-brown or grey; less often roan or mouse grey. Native horses have a dark stripe down the back and transverse stripes on the forelegs. A dark grid-like pattern is often found on the point of the shoulder.

The measurements (in cm) of Middle Kolyma stallions are: height at withers 139, oblique body length 148, chest girth 173, cannnon bone girth 19.7; the mares are 137, 145, 171 and 18.1 respectively. The measurements of the smaller southern type are much less with 135, 141, 163 and 18.4 in stallions and 132, 138, 158 and 17.2 in mares.

The larger southern type includes descendants of the local Suntar, Megezh and Olekminsk varieties. They show traces of trotter and, to a less extent, draught blood. The body measurements are (in cm): stallions 141, 149, 182 and 18.4; mares 136, 150, 176 and 18.4. Considering these measurements the Yakuts have quite a high live weight - 450 kg on average with a range from 430 to 470 kg.

The Yakut is a good meat producer; the caracass weight of 6-month-olds is 105 kg, reaching 165 kg by 2.5 years of age and 228 kg in adults. The high milk yield of the Yakut is also worthy of note. At the experimental farm of the Yakut Institute of Agriculture the mares produce 1200-1700 kg of marketable milk in a 6-month lactation.

The outlook suggests pure breeding since with extensive husbandry and primitive management crossbreeding fails to yield the desired result. The leading Yakut breeding facilities are Leninski state farm and Karl Marx collective farm in the Yakut ASSR.

HORSE
Zhemaichu or Zhmudka

ZHEMAICHU or ZHMUDKA (Zhemaichu or Zhmudskaya)

This is a native Lithuanian breed of the forest type, known since the 16th Century. Despite repeated crossing with various breeds, it has retained its type and suitability for work on small farms. Undemanding as regards management conditions and highly adaptable, the Zhemaichu has long been exported to western Europe.

The old Zhemaichu type was small in size (up to 144 cm in height); it had a small straight or somewhat dished face head with a wide forehead. The neck was well muscled, the trunk undersized, the withers not too high, the back flat and solid, and the legs clean and firm. Their small height and consequently insufficient strength were the main deficiencies.

The modern Zhemaichu formed in the post-war years by pure breeding and the selection of large individuals with high work endurance, and thrdugh limited crossbreeding with North Swedish stallions, is taller (152-154 cm), has a somewhat extended trunk (157-160 cm) and a very massive body with a girth of 188-190 cm, as well as clean legs with a cannon bone girth of 10-20 cm. The new intra-breed type has retained the characteristic exterior features of the old zhmudka.

The Zhemaichu is a very good combination of utility and sporting horse features. It is quite strong and has good endurance and agility. The best time shown in 2 km trotting draught tests with a pull of 50 kg is 4 min 42.6 sec. The Zhemaichu has also shown good results in steeplechases of

average difficulty. It is not accidental therefore that in their time Lithuanian horses were the foundation for breeding the Trakehnen.

Their massive and clean build combined with their high sporting potential make the breed valuable material for breeding medium-sized horses for large-scale equestrian sports and tourism.

Their massive and solid build and high adaptability also make Zhemaichu stallions suitable for use in the development of a new meat-producing breed in the Altai.

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