

The influence of flax production in the giant mountains region upon the textile location in Bohemia

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The textile industry once played a very important role in the development of European economy. The hilly landscape of Bohemia, Silesia, Lusatia, Saxony and the neighbouring countries with a long snowy winter and with less favourable natural conditions unsuitable for intensive agriculture became soon known for its well-developed linen production. The manufacturing period in connection with domestic spinning and weaving was an important stage for the location of the later industry. At the end of the 18th century the textile manufactories represented more than 90% of the whole manufactured production in Bohemia, showing already some features of the later factory industry.

The cultivating of flax as the essential raw material for linen products and their local domestic processing was a widespread activity in many less fertile hilly lands of Central Europe. Long before the industrial revolution linen manufacturing found favourable conditions in the mountains and submountains of northern and eastern Bohemia where full employment of labour in agriculture all over the whole year was impossible.

Beside the Bohemian-Moravian and South Bohemian highlands, flax growing became common above all in the area east of the Ore Mountains as far as the Jeseníky Mountains, on the border of Bohemia, Moravia and Silesia. The Giant Mountains — Krkonoše —, the Giant Piedmont — Podkrkonoší — and the western part of Broumov Highland was the stable central region of this area where linen manufacturing and later textile industry has still survived as the leading industrial branch. It is briefly called the **Giant Mountains region** — sometimes also «the Trutnov region» — and the reasons for its delimitation will be shown below.

Let us try, at the same time, to outline the main location factors which participated in the development of this textile industrial region over centuries.

The impact of the raw material base including fuel and power appears as very important among all location factors of any industrial production. But the location impact of textile raw material is not, in general, so immediately decisive as that of raw material for metallurgy, heavy machinery, woodworking, food and other industry. In spite of this fact some textile raw materials played an important role especially in the first stage of industrialization which predestinated the localization of today.

At the end of the 18th up to the middle of the 19th century the convenient local raw material was almost significant in the foundation of textile industry nearly everywhere in Central Europe. In our country it was wool and namely flax connected formerly with wide-spread domestic spinning and weaving. The industrial belt of northern and eastern Bohemia as well as of northern Moravia linked up with broader areas of textile slopes on the Silesian, Lusatian and even Saxonian side, which have been in strong commercially and productive contacts with it since long ago.

The textile manufactories and later industrial factories, too, were, as a rule, established along the rivers and torrents to be able utilize their water. To the production of heat and steam they needed suitable fuel. Sometimes, the consumption of wood, and later, of coal, was even greater than the weight of other raw materials used. Several plants founded in the forest areas were supplied with wood from the precincts. The feudal entrepreneur was often interested in wood supplies from his own forests. But fuel never played a decisive role in the localization of textile factories. It more depended upon water in the streams, used as power or technological water in different working processes. Sometimes, in the hilly landscape and in the narrow valley there was not enough space, but the textile plants were modest as to territorial demands. Many examples of their location in the narrow valleys can be found on the very shore of a river the level of which could vehemently rise.

The main location —factors of the textile industry are, as it is well-known, natural environment— water, relief, air humidity and other climatic components, then energy, transport, capital, manpower, raw materials and markets or the distance between them and the factory itself. In our country, the mainly decisive factor was manpower often already experienced in spinning and weaving flax, being the basic raw material for a long time, intensively grown in the fields of hilly humid lands.

At the end of the 18th and in the first half of the 19th century the linen domestic area stretched from east of the Elbe at Děčín through the Liberec - Trutnov - Broumov - Náchod area to the Svitavy - region and the Bohemian-Moravian Highland as far as to the Jindřichův Hradec - region, and also to the northern Moravia and Czech Silesia, especially the Šumperk - and Bruntál - region. It was based on local raw material - the flax mostly grown both in the domainial and rustical lands.

As mentioned above, the main area of Czech linen manufacturing was a part of the broader Middle-European linen production belt based on domestic raw materials. It comprised also the slopes and mountains of Kladsko, Opavian and Lower Silesia and Upper Lusatia. The Giant Mountains and Giant Pied-

monts were the central area of this large extensive space on the Bohemian side, as to quality and quantity of textile production partly together with the Jeseníky and Orlické hory /Mts./ with its large piedmont on the east, and with the Jizerské hory /Mts./ and Lusatia Mts. on the west.

Yarn and linen were home-made, but the marketing and transportation were rationally organized and directed to the foreign, predominantly overseas markets. The commercial capital was strong enough to establish scattered manufactories where thousands of home-workers were employed either all the year round or in winter at least. Manufactories arose directly in the flax areas, and beside organizing the work of domestic spinners and weavers they were engaged in bleaching, colouring, indigo-printing, in adjustingx and other finishing processes. Big bleaching plants worked particularly in Silesia and Lusatia. The Czech bleaching was concentrated, above all in Krásná Lípa surroundings in the Šluknov-region. From the whole number of 213 Czech bleaching flax yarn and threads plants 193 were located there—in the year 1788—. In the eighties of the 18th century about 63% spinners and more than 69% weavers of the whole Bohemia were counted in the Giant Mountains region. Roughly two thirds of the Bohemian weaving—machines operate there.

In contrary to other textile branches, two fundamental processes - yarn flax spinning and linen weaving were soon organized quite separately and developed independently. The flax yarn business was very active and concentrated in the regular weekly markets at Krásná Lípa, Trutnov, Police-on-Metuje, Broumov and other main marketing centers.

The mass expansion of flax production in the unfertile mountain area, and cheap labour didn't stimulate the entrepreneur to undertake a decisive reconstruction of the flax industry. Exploiting the domestic spinners his profits were high and the financial risk minimal. Only the commercial capital competing with the English textile factory production was able to found the first mechanical **spinning mills** in the middle of the 19th century. The hand-made textile production was drawing to a crisis.

But the influence of raw material and of local linen-processing tradition remained strong enough in the period of industrialization, too. If the spinning-mills were founded out of the traditional flax area they could not keep up for a long time.

Even the first Austrian spinning mill of the famous French inventor of flax machines Girard, founded in Pottendorf near Vienna, soon disappeared, due to the difficulties in raw material supplying and gaining qualified labour, because it didn't lie in the flax area.

Growing of flax and manufacturing of linen was the main profession of most people in northern and north-eastern Bohemia. Thus the first mechanical spinnings arose relatively late. The spinning mills of Giant Mountains region were of main importance, enjoying long prosperity and continuance. The first factory was built by Jan Faltis in Mladé Buky /1836/ and later /1859/ also in Trutnov as the biggest spinning mill at that time on the European continent. The rich successful firm was liquidated only in the big economical crisis /1934/, but some of its works are running till the present day.

TABLE 1.
Flax spinning mills of Bohemia

	Spinning mills				Spindles			
	1856	1860	1866	1900	1856	1860	1866	1900
Bohemia	10	19	44	26	53420	106446	256530	220490
Giant Mts.	9	13	26	22	50920	95590	180070	196696
%	90	68	59	85	95	90	70	89

After V. Lesák: Trutnovská / Krkonošská / Inářská oblast v 2. pol. 19. stol. Trutnov 1985.

In town Trutnov and its suburbs (Upper Old Town, Dawn Old Town, Poříčí) several other important spinning mills (Hease, Kluge, Etrich, Walzel...) arose. Some of them nationalized after World War II are still working. The second mechanical spinning mill was founded at Žacléř (1843) without a water stream, the further at Úpice (1853) in the place of a steam mill, at Vrchlabí (1855), etc. But also newer spinning mills are built in the old linen area on the riverside of Úpa and Elbe and on several influx rich in water. Rare exceptions of the rule are the mentioned spinnies at Žacléř and Malé Svatoňovice (founded 1865). But these both could soon use local coal as fuel. In the sixties of the 19th century, during the cotton crisis (a result of the civil war in the U.S.A.) a lot of spinning mills were founded in different places of Bohemia. Most of them were abolished, only some of these in the Giant Mountains textile region have survived. It has been estimated that at the end of the 19th century about 35-40 per cent of the Giant Mountains population earned their living in the linen industry.

The heir of the linen traditions in the region based on the local textile raw material is today mainly TEXLEN national enterprise Trutnov. Its factories and plants are working in 22 localities here.

The situation in linen weaving was quite different since the hand-made production kept longer up than in spinning. Perhaps because the operation of the mechanical looms in the factories was not so more advantageous as the hand looms for a long time. The exploited home weavers worked with the whole family very hard and cheap and their products were of relatively good quality. Mechanical yarn weaving was the last branch of the Czech textile industry where factory machinery penetrated. Thus, in the weaving of linen the lower organization forms survived concentrated, in particular, around a number of marketing towns and small towns in the hilly areas of northern and north-easterd Bohemia. Liberec, Lomnice-on-Popelka, Jilemnice, Nová Paka, Trutnov and Broumov were the most important of them. But the territorial relationship with the flax raw material base was no more so close. To the dispersed domestic weaving concentrated manufactories were linked ensuring bleaching, adjusting and other finishing and refining operations, as were supplied e.g. by the combined Harrach linen enterprises at Hřabačov near Jilemnice.

Linen manufacturing in Bohemia long depended on the bleaching and finishing plants of Lower Silesia and Upper Lusatia. Crude linen was bleached and finished there and exported by local firms all over the world, or, also back to

Bohemia and to Vienna. This close, mutually advantageous collaboration between Bohemia and Silesia continued to develop in the textile trade and textile production, until the 18th century. The substantial part of the famous Silesian linen on the world markets was of Czech origin and a quantum of the best Czech cloth was made of Silesian wool. The Habsburg monarchy after the unlucky wars against Prussia (1740-1743) and after the definitive loss of Silesia used every effort to destroy the old economic relations between the Czech linen production and Silesian bleaching grounds, and supported the establishing of domestic bleaching plants necessary for the Bohemian linen. Naturally the mass of them arose in the Giant Mountains region, especially in the Vrchlabí and Trutnov area. One of the most famous textile businessmen, count of Chamaré, coming from Svídnice (Silesia), bought the estate of Potštejn on the river Wild Orlice to establish there a big linen manufacturing and finishing center under imperial assistance.

In north-eastern Bohemia, in 1856, about 26.000 linen hand looms were found, about a third of them, in the Giant Mountains region. Mechanical **weaving mills** were established here as late as in the seventies or even more in the eighties of the 19th century. The first was built at Rudník (Kluge 1876), the next ones at Trutnov-Poříčí and its surroundings, further at Úpice and elsewhere. Their importance, and on the other hand consequences for the domestic weavers were very significant. It may be said that only by introducing prosperous mechanical weaving mills the Giant Mountains linen region was definitely constituted. Some spinning and weaving mills later shifted into cotton and other textile raw material processing but their localization, derived from the original linen manufacturing, remained till present.

The linen weaving is preserved in the number of industrial factories till today and their products represents significant export articles. The successors of linen weaving traditions in the Giant Mountains region which still remained most important in all Czechoslovakia is **TEXTLEN** with the works in Trutnov agglomeration, further in Mladé Buky, Úpice, Rthyně, Malé Svatoňovice, etc., and the national enterprise **TECHNOLEN** at Lomniceon-Popelka, at Jilemnice, Hostinné and elsewhere, also in the remote town Svitavy on the rim of the Bohemian Moravian Highland.

TABLE 2.
Oldest mechanical linen weaving mills in the Trutnov area

Foundation	Locality (firm)	Number of looms
1876	Rudník (Kluge)	240
1886	Trutnov-Poříčí (Romann)	157
1887	Úpice (Morawetz P.)	400
1888	Trutnov-Poříčí (Walzel)	150
1890	Úpice (Oberländer)	300
1892	Voletiny-Debrné (Aust)	62
1894	Úpice (Morawetz E.)	200
1896	Trutnov-Poříčí (Knoll)	30
1898	Chvaleč-Petřikovice (Schmidt-Hübner)	45

(Rudník, Trutnov-Poříčí, Úpice: still in operation.)

*According to V. Lesák, Jan Kábrt: Textilní průmysl a dělnictvo na Trutnovsku v XIX. století.
(Trutnov, Lnářský průmysl, 1968)*

The further location factor important especially in the first stage of industrialization was the position of streams. Spinning and weaving mills, bleaching, colouring and other plants were located along the rivers and larger streams. Thus, in the period of coal, steam and electricity were the streams no more important but due to the need of technological water and mainly due to **industrial inertia** the particular plants didn't leave its equipment in the valleys although they were somewhere very close, as in the case of Úpice e.g. Of course, the water rights along the streams were divided sooner among the mills, papeteries, sawmills and other enterprises. Therefore the mill owners with their races played the role in foundations of factories.

The very Giant Mountains linen region can be delimited by the valley of **Upper Úpa** —with Horní Maršov, Mladé Buky, with the large Trutnov agglomeration, and also with Úpice, the near Malé Svatoňovice and Rtyně including, and by the afflux Ličná (Žacléř, Bernartice, Libeč), Petřikovice brook (Chvaleč, Petřikovice) and Olešnice perhaps (Červený Kostelec), together with the **Upper Elbe** valley— with the big textile centre Dvůr Králové, when the textile industry in Vrchlabí and Hostinné was now partly displaced with other industries, by the affluxes Čistá-Bolkov brook (Rudník), Pilníkovský and kalenský brook (Čistá u Horek). The Upper Úpa and Elbe basin is necessary to complete by the **Upper Metuje** basin with flax and linen factories in the area of Teplice on Metuje, at Česká Metuje and at Stárkov on the Dřevíč influx.

The real centre of this area is the greater **Trutnov** agglomeration with its suburbs. Since the 18th-19th century the town of Trutnov is considered the unique centre of Czech linen industry. Actually it became the residence of the **LINEN INDUSTRY** trust (VHJ Lnářský průmysl) joining the Czechoslovak national enterprises Texlen, Moravolen, Technolen, Českomoravský len and Juta.

Krajině jednotky
Landscape units

Řeky lánřských povodí
Flax river basins

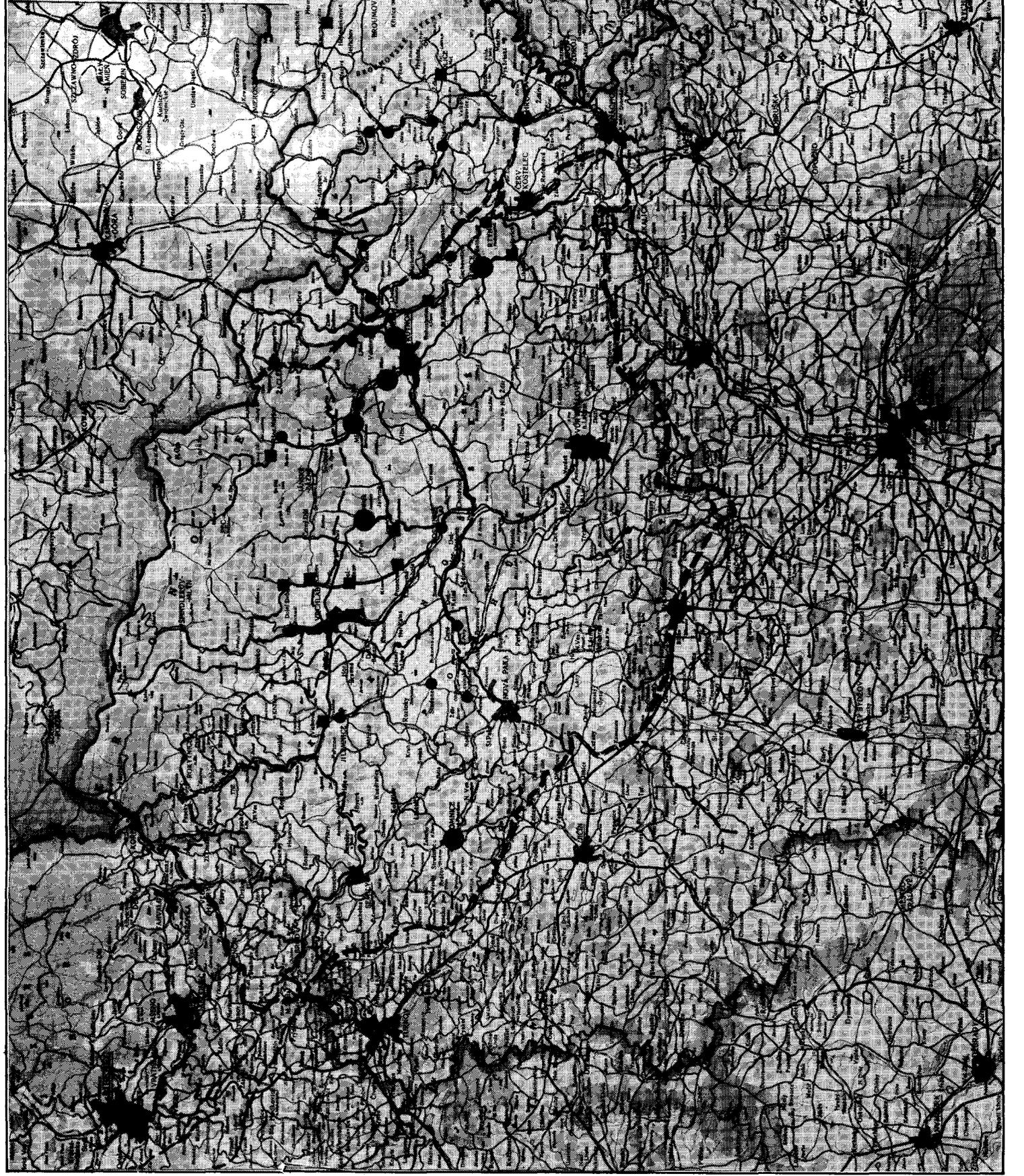
Lánřské závody
Linen works

TEXILEN

TECHNOLEN

ČESKOMORAVSKÝ LEN

Historické lokality
Historical localities



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La influència de la producció del lli en la localització de la indústria tèxtil a la regió de les Muntanyes Gegants de Bohèmia

La manufactura del lli de les Muntanyes Gegants va influenciar la localització de la indústria tèxtil des del principi del seu desenvolupament en els segles XVIII i XIX. L'impacte del lli del país en la localització general de la indústria tèxtil és força interessant, malgrat que algunes instal·lacions van deixar d'utilitzar la matèria primera local per orientar-se cap el procés del cotó, el jute, les viscoses i altres fibres vegetals o químiques importades en l'últim període. Els resultats de les investigacions històriques i geogràfiques mostren fins avui

una certa ambigüitat pel que fa a la funció que encara conserva la matèria primera original, la de la inèrcia territorial en la localització de la indústria tèxtil.

La regió de les Muntanyes Gegants, especialment l'àrea central de les conques de l'alt Upa i l'Elba, era i és representada per la manufactura del lli amb una relativament escassa presència d'indústria de maquinària, alimentació, fusta o paper. En conjunt, pot considerar-se com un fenomen excepcional de l'estructura industrial a Txecoslovàquia. Una existència de cent anys d'antiguitat de nombroses fàbriques de lli, especialment filats, i un gran nombre de treballadors tradicionalment ocupats en la indústria tèxtil són els factors reals de delimitació de la regió del lli de les Muntanyes Gegants basada originalment en la matèria primera local i les tradicions centenàries de filadores i teixidores de l'àrea.

L'influence de la production du lin dans la localisation de l'industrie textile de la region des Montagnes Géantes en Bohème

Les manufactures du lin des Montagnes Géantes ont influencé la localisation de l'industrie textile tchecoslovaque des sa création dans le XVIIIème siècle. L'impact du lin du pays dans la localisation générale de l'industrie textile est bien interessante, malgré que quelques fabriques l'abandonèrent car on préfèrait le processus du coton, du jute, des viscoses ou d'autres fibres importées, végétales ou chimiques.

Les resultats de la recherche historique et géographique nous montrent qu'il y a une fonction ambiguë de la matière première originelle, celle de l'inèrcie dans la localisation territoriale de l'industrie textile.

La région des Montagnes Géantes, spécialement l'aire des bassins du haut Upa et de l'Elbe était, et il est encore, représenté, par la manufacture du lin avec petite participation des industries de machinerie, d'alimentation, du bois, du papier ou de quelques autres. On peut considerer, alors, qu'elle constitue un phénomène exceptionnel dans la structure industrielle tchecoslovaque. Une existence de plus de cent ans de nombreuses usines du lin, spécialement filatures, et un grand nombre de travailleurs employés à l'industrie textile sont des facteurs reals de la délimitation de la région linière des Montagnes Géantes, qui est basée originalement sur la production local de la matière première et dans la tradition centenaire des filatures et des tissages de la région.