

# The development of the Czech style of beer

Gabriela Basařová

Brewing has a long tradition in the territory of the present Czech Republic, culminating towards the close of the 19<sup>th</sup> century in the formation of a clearly defined style of Czech beer. The following text makes use of historical data to demonstrate the justification for recognising this beer style as a specific product.

A historical milestone was the foundation of the Měšťanský pivovar (Burgesses' Brewery) in Plzeň (Pilsen) in 1842. Here the decision was taken, in a period when the production of top-fermented beers still predominated, to brew exclusively bottom-fermented beer, following the example of Bavarian breweries. Influenced by local circumstances, excellent raw materials and the experience of

brewers that had been handed down from generation to generation, a beer developed that was both individual in character and of top quality. Production grew rapidly and influenced producers throughout the Kingdom of Bohemia who began to imitate the Pilsen beer. In a very short period of time the production of top-fermented beers disappeared from Bohemian and Moravian breweries. Throughout the country only bottom-fermented beers were brewed, using the same basic technological and quality principles, with no equivalent anywhere else in the world.<sup>1</sup>

In 1841 there were 1,051 breweries operating in Bohemia and Moravia; bottom-fermented beer was brewed in only 17 of

Year	Number of breweries	Breweries using bottom fermentation	% of total number of breweries
1841	1052	17	1.6
1864	1026	311	30.0
1869	988	706	71.0
1870	968	831	87.0
1884	927	925	99.0

*Table 1. Development of the conversion to bottom fermentation in Bohemia and Moravia.*

them, i.e. 1.6% of the total number (Table 1). From this point onwards production of top-fermented beer fell rapidly and in 1884 the last brew of top-fermented beer was mashed in the Krupka brewery. From 1885 beer in all breweries in the Kingdom of Bohemia was produced solely in accordance with the principle of bottom fermentation.<sup>2</sup>

Czech beer may from that time be characterised as a clearly defined product made from raw materials with optimum, barely modified malt, with hopping to ensure a heightened delicate bitterness, using the decoction method of producing the wort, and bottom-fermented. The choice of materials and the technical process ensure a higher level of polyphenol compounds, a sufficient quantity of substances giving the beer a pleasant fullness and, in the case of the main representative of the Czech style (pale beer), not the yellow to greenish-yellow colour which ordinary pale beers have, but a pronounced golden-yellow colour. A particular feature of the Czech beer style is not only its thirst quenching but also, as a result of its combination of chemical structures and physico-chemical properties, the capacity to incite further drinking. The specific qualities chosen by the individual breweries are distinguished by certain characteristic variations but, from the point of view of the basic qualities, these fall within the general specification of Czech beer.

The Czech beer style did not appear at a stroke after the introduction of bottom

fermentation throughout the country, but evolved gradually over the years. A great part was played by lessons drawn from previous centuries in the creation of today's type of Czech beer, albeit from practices directed at products of a different kind. Another significant factor, from the mid-19<sup>th</sup> century, was the influence of scientific knowledge.

In 1885 the well-known Czech brewing expert and brewing school teacher František Chodounský wrote:

Czech beer has long since been renowned for its quality not only at home but also beyond the frontiers of the country, while at the same time the quality of materials has had not the least share in that exceptional status.<sup>3</sup>

The basic features of the hops, which gradually became unified as a single variety, semi-early red-bine (*poloraný červeňák*), and the regional varieties of good quality barley cultivated at that time in the territory of our present republic played an important part in the formation of the typical qualities of Czech bottom-fermented beers.<sup>4</sup>

After 1866 the foreign Chevalier, Imperial and Oregon varieties of barley began to be introduced into Bohemia and Moravia. The typical qualities of the beers were adversely affected in those breweries using malt from these varieties as it was too highly modified. At that time control methods were not yet available to determine precisely the differences in the

composition of malt from domestic varieties compared to foreign ones. Nor was there the scientific or technical knowledge available to alter malts from foreign varieties to resemble in their characteristics malts from domestic barley types. The Czech brewing industry therefore quickly returned to the use of domestic varieties. In 1872 the Kvasický Hanácký variety was cultivated by Emil Proskowec senior, followed in 1884 by the variety Hanna Pedigree cultivated by his son, Emil Proskowec junior. These types laid the foundations for future breeders' successes not only at home as they also constitute the genetic basis of prestigious, modern-day foreign barley varieties. This example shows that exceptional attention was always paid in the Czech brewing industry to preserving the typical characteristics of the beer, even though there was little opportunity as yet for analytical documentation.<sup>5</sup>

What elements of the development of brewing over the past centuries in the territory of the present-day Czech Republic contributed to the formation of the Czech beer style at the turn of the 19<sup>th</sup> and 20<sup>th</sup> centuries?

From the 12<sup>th</sup> and 13<sup>th</sup> centuries the guilds of maltsters played a large part in the development of brewing in the Kingdom of Bohemia. During this time the production of top-fermented beers still predominated, but the habits and principles of brewing good quality beer, bequeathed from generation to generation, are reflected to the present day.

Even in those far-off times only a man who had been properly taught and acquired practical experience was allowed to brew beer in our country. Consequently, even the young heir of a house which had the right to brew could only produce - in contrast to his experienced predecessor - comparatively small amounts of beer at first. He could increase his output once he had shown that he was capable of routinely producing beer of good quality.<sup>6</sup>

It is interesting to note that for some centuries a certain stylistic uniformity of beers had already existed in the territory of our present state. Czech beer had for some time exhibited a high degree of bitterness and was popular not only at home but also abroad. It was also found royal favour. This is confirmed by Čeněk Zíbrt in his book *Listy z kulturních dějin městských pivovarů v zemích českých (Documents from the cultural history of town brewing in the Czech Lands)*,<sup>7</sup> in the article 'Hořké pivo české na tabuli arciknížete Ferdinanda v Innspruku roku 1576' (Bohemian bitter beer on the table of Archduke Ferdinand in Innsbruck in 1576).

By their rules the guilds determined the quantities of raw materials that had to be used for the production of beer. But not only the guilds, decrees of the sovereign also regulated the amount of materials for brewing, as is also confirmed by Zíbrt in the above-mentioned book, in the article 'Nařízení královské o sypání sladu na var z roku 1576' (A royal decree on the malt grist for the brew from the year 1576).

Another contribution of the guilds to the development of fine quality beer was the uncompromising schooling given to brewers in order to produce a high grade product. Brewers paid a fine for bad brews, and as a disgrace barrels containing inferior beer were rolled to the market place and drained.

1585 saw the publication of what may be world's first book on the technology of malt and beer. Written by Tadeáš Hájek z Hájku, a professor of the University of Prague, astronomer, personal counsellor and physician to the emperor Rudolf II, it was entitled *De cerevisia eiusque conficiendi ratione, natura, viribus et facultatibus*. Translated into Czech by K. Nademlejnský in 1884 as 'O pivě a jeho výrobě, povaze, sílách a vlastnostech' (On beer and the method of making it, its nature, strengths and faculties), it appeared in the journal *Pivovarské Listy*. The book was written from a concern by medical circles in evaluating the qualities of domestic food and drink products. In addition to the description in relative detail of the contemporary techniques of making malt and beer, much space is devoted by the author to observations on the importance of the quality of raw materials, the correct handling of the production processes and, in particular, the need to ensure perfect cleanliness in breweries. The health aspects of beer are also discussed.<sup>8,9</sup>

The conditions of beer brewing in the Czech Lands, with the praise of 'the goodness of profit and the profitability of

tasty and healthy Bohemian beer', are described in even more detail in a Latin work of 1679 by the Jesuit priest Křištof Fišer. The Czech translation by Jan Barner *Oko páně aneb dobře spořádané hospodářství polní* (*The Eye of the Lord or a well-ordered agriculture*) was published in 1706 under the general title *Knihy Hospodářské* (Economic Books). Consequently, even in past centuries, Czech brewers had a native specialist literature available to them.

The greatest contribution to the ensuing creation of the specific Czech beer style was made by the reforms in brewing for which the legendary brewer František Ondřej Poupě (1753-1805) won fame in the 18<sup>th</sup> century.<sup>10,11</sup> He introduced many refinements in the production of malt and beer which improved both the quality of the products and the economics of manufacturing them. He persuaded Czech brewers to use only barley malt for beer production. His fundamental motto was 'wheat for cakes, oats for horses, barley for beer.' It is of interest that he was no friend of the top-fermented beers that were then prevalent. He gave priority to bottom-fermented beers, and also produced them to a great extent in the breweries in which he worked as a brewer. Even in those distant times the decoction process of making the wort was typical of Czech brewing.

In Poupě's lifetime single to triple mash processes were in use. Pale beers were in fact relatively dark, because the hopping process entailed a roasted dark

mass of sweet wort and hops. Poupě taught brewers to prepare an aqueous solution of hops with which the sweet wort was boiled; for about an hour in winter and three quarters of an hour in summer. This improved the bitterness characteristics of the beer and enabled it to be of a more balanced and paler colour. In 1788 he also brought into practice the use of thermometers as well as constructing the beer scale, a device for checking the extract of the sweet wort and the hopped wort - both increased the standardisation of the technical processes and the uniformity of beer quality. He scrupulously published all the knowledge he gained from practice and his advice to maltsters and brewers. His most important works are *Die Kunst des Bierbrauens (The Art of Brewing)* of 1794 and *Počátkové naučení o vaření piva (First Lessons in Brewing)* of 1801. Not least, he insisted on constant education and the gaining of new insights, in which he was himself an example, and saw in this the fundamental possibility of guaranteeing the production of consistent and good quality beers. Towards the end of his life he set up a brewing school in Brno, apparently the first such place of instruction in Europe.

It is clear from the above that brewer Poupě's reforms were an important step towards the creation of the Czech beer style at the turn of the 19<sup>th</sup> and 20<sup>th</sup> centuries, when industrial production of the drink began. Other important contributions were the observations on the fermentation process published by the French

scientist Louis Pasteur,<sup>12</sup> the attenuation laws of fermentation, the introduction of saccharometer and the calculation of the original concentration of the wort by analysing the beer. The latter was formulated by the professor of the Prague technical college, Karel Napoleon Josef Balling,<sup>13,14</sup> and summarised in his fundamental work *Die Gärungschemie (Fermentation Chemistry)*.<sup>15</sup> Czech breweries very quickly introduced effective cultures of pure yeast strains after their isolation by the Danish scientist, Christian Hansen. In summary, it may be stated that in the Czech brewing industry production has since then been carried out with the widespread use of both practical and scientific knowledge and the activity of professionally trained brewers. Even in the 19<sup>th</sup> century the Czech brewing industry had a specialised monopoly training of college-level brewing experts at the Prague technical college, secondary-school experts at the brewing school, and breweries which were renowned as excellent places of training for brewers.<sup>16</sup> From the 19<sup>th</sup> century it also had a brewing and malting research institute and a hops and barley breeding centre. All these elements combined to further scientific research and understanding, enabled any divergences from the basic qualities of Czech beer to be noticed, and provided the means for resolving them.

It could be argued that the subsequent, constant modernisation of malting and brewing installations brought about a change in the typical characteristics of Czech beer. The design of equipment

changed and is still being perfected, especially in those basic areas of technology, the brewhouse and fermenting vessel. That Czech beer has preserved its basic characteristics despite these developments was helped by the nation's brewing industry's acceptance and implementation of scientific knowledge, the constant extension of monitoring and research methods (making it possible to detect the importance of each raw material's individual elements and to understand the reactions which result in the beer's characteristics), and, not least, a strong desire to preserve those characteristics.

Nor did the Czech beer style change under the influence of socialist Czechoslovakia's conditions of production, despite the overexertion of predominantly obsolete equipment. One must express great respect for the brewers who were able, in those circumstances, to produce good quality Czech beer which was capable of competing even in demanding, foreign markets. Paradoxically, the delay in modernisation could have contributed to preserving the Czech beer style. There existed a central management of breweries which laid down unified production standards (grist, lagering time, etc), which applied to all breweries, and from that point of view the beers were prepared by the same process throughout the country. In addition, over 95% of production was ordinary and lagered pale beer, and no types of foreign beers were produced in our country, nor were they even considered.

Dynamic modernisation of Bohemian and Moravian breweries started only in 1989, after the Velvet Revolution. By this time, from a worldwide perspective, scientific knowledge as applied to brewing had progressed markedly. It is therefore now possible to observe in an even more positive and objective way the quality of raw materials and to improve malt and beer technology by means of technical steps, while, of course, maintaining the traditional conditions of malting, kilning, decoction mashing and bottom fermentation, with the aim of preserving the basic parameters of the Czech style of beer.

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