

There are but few spots in Central Europe where the population is so sparse as to be able to make his living merely by agriculture and livestock-raising. Some part of the population - in the northwest the majority - is compelled to take part in industrial and other activities. Beside a large number of well-trained workers the most important factors in industrial activity are fuels and raw materials. Today coal is the most important fuel and it seems likely to continue to remain for some time to come.

A considerable part of raw materials too, come from the products of mining. Mining is thus of great importance in the life of Central Europe; together with industry, it directs the fate of more than one-fifth of the population /25 million souls/.

Mineral wealth is rather unequally distributed in Central Europe. There are two large centers of coal reserves to be found here: Upper Silesia is the more important one, it equals the coalfields of the Ruhr-district in Europe in importance. It produces some 6-7 per cent of the world's supply of coal: 80 million tons.

The coal deposits of Saxony and the Bohemian Basin constitute the second center. This contains several small deposits scattered in all directions. The production of coal outside these regions, compared to that of the total area, is insignificant. Apart from Germany, Russia and Italy, about 65 million tons of coal had been mined in this region in normal times, between the First and Second World War. Of this amount Poland produced 46 million tons, Czecho-Slovakia mined 17 million tons. In post-war times, however, even the smaller reserves of coal and lignite have played an important part in the supply of local industry. This was due to

the fact that the mines of great capacity were handicapped to export their products everywhere by the different boundaries and high tariffs.

Next to the Russian reserves of petroleum in the region of the Caucasus the most important deposits of oil-shale are to be found in Central Europe along the edge of the Roumanian Plain /Ploesti/ and in Galicia. These areas, as well as the Transylvanian Basin are abundant in natural gas-fields as well.

Central Europe is poorly supplied with iron ore which is by far the most important mineral from the point of view of heavy industry. Austria, the Bohemian Basin, the Hungarian Ore Mountains and Bosnia produce moderate amounts of ore; their reserves, however, are so limited that it seems doubtful whether their production will show any marked advance. Not included Germany, Italy and the Soviet-Union, the mined ores contain some 1.7 million tons of iron which constitutes hardly 2 per cent of the world's supply, and 4.5 per cent of the European production. Of this amount 1/2 - 1/2 million tons are produced by Austria and Czecho-Slovakia.

Among the other metals copper and lead-ores are to be found in Central Europe in the Alps and in the northern corner of the Balkan Mountains; bauxite is mined in Hungarian Transdanubia and Dalmatia. The Transylvanian mines of precious metals /gold and silver/ are nearing exhaustion; they were rich mines in the olden times and actively exploited. Even today, they rank second to Sweden in Europe, constituting 3-5 per cent of the world's gold production.

Salt is found in considerable amounts in many sections of Central Europe, such as in Austria, Transylvania, as well as at the outer feet of the Carpathians, in Moldavia and Muntenia. Potash-salt is mined in large quantities in the Saxonian province.

The edge of the Eastern European table land represented by our map is an area of vast expanse lacking entirely in mineral wealth. The Alps, and especially the regions of the Carpathians and the Balkans are poorly supplied with mineral wealth; the Hungarian and Roumanian Plains and the Bulgarian area are equally poor in minerals.

Beside the exploited reserves and the mining of today, researches promise to furnish some new sources of minerals on the Balkan Peninsula. In the southwestern portion of Hungarian Transdanubia there are considerable petroleum reserves under exploitation. There are also some traces of petroleum to be found at the eastern edge of the Great Hungarian Plain. However, from the recent geological researches and exploitations it is hardly to be expected that, compared to the northwestern areas, they would be able to increase essentially the mineral wealth of the middle, southern and eastern portions of Central Europe.

It must be noted, however, that in consequence of the political and economic crises, the mines of the northern areas are not adequately utilised. Thus, in Czecho-Slovakia the number of mining industrial workers diminished from 114.813 to 80.308 between 1926 and 1936. Meanwhile in Austria it decreased from 20.622 to 12.588.

As a source to our summarising map, the mining and statistical Year-books of the various states have been used, completed by the data of text-books, encyclopedias and other authentic sources. The annual yield of the mined products had been converted into money values, and this assigned the size of marks.

Our production figures refer to the period between 1934 and 1938; sources from an earlier period were used but in exceptional cases. In constructing our detailed maps beside the following official, statistical publications,

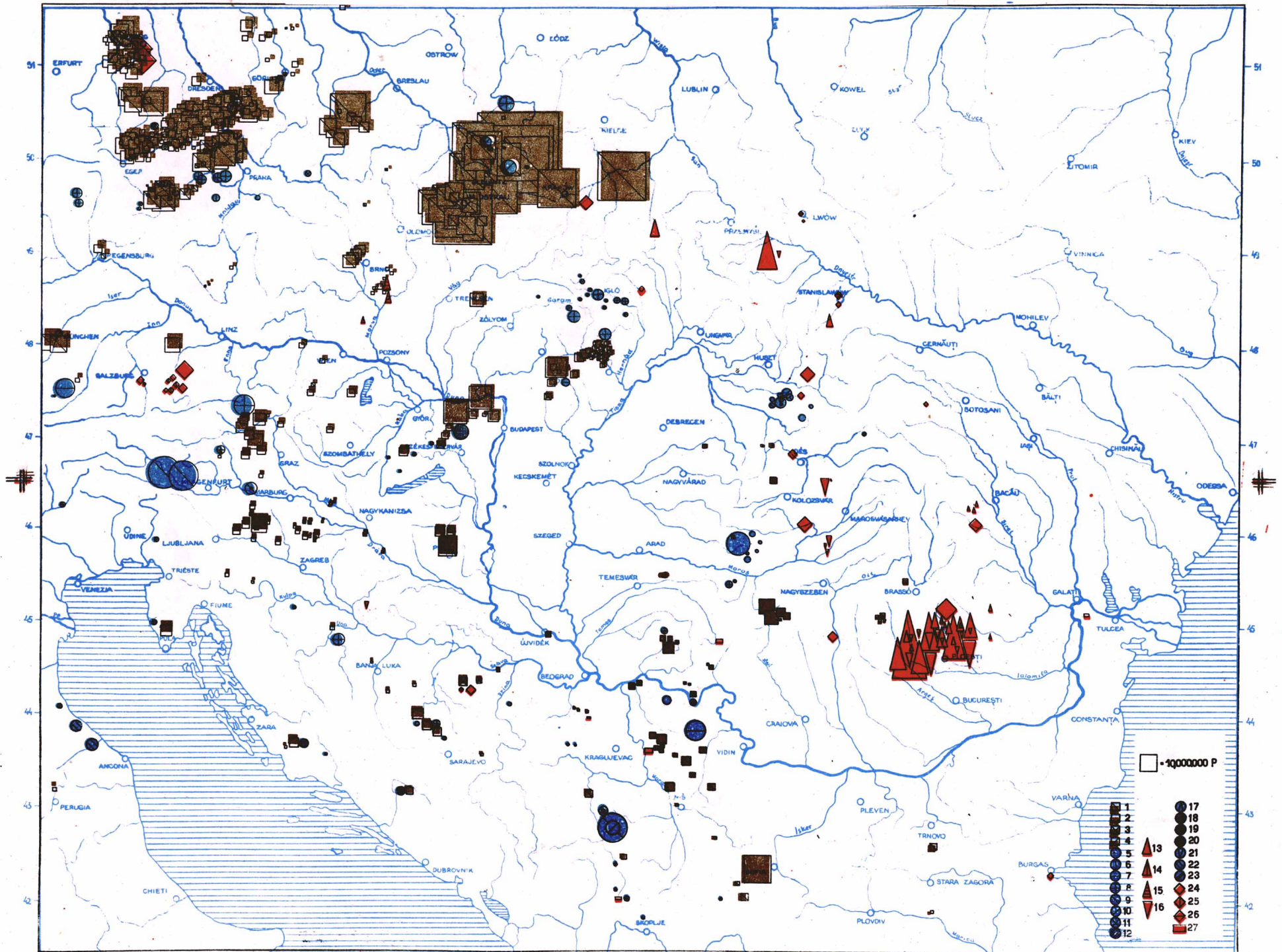
a series of half-official and private publications have been used, especially as regards reserves.

SOURCES to the mining-map of Central Europe:

- Dismembered Hungary: M.Kir.Központi Statisztikai Hivatal.Kézirat. Csonkamagyarország bányatelepei 1937-ben községeként.
- Germany: Deutsches Bergbau Jahrbuch. 1937.Berlin.
- Austria: Mitteilung über den Österreichischen Bergbau. 18.Jahrgang 1937.Wien.
- Czecho-Slovakia: Statisticka Prirucka Csl.Hornictoi,1930.Praha.
- Jugoslavia: Rudarska i Topionicka Statistika Kraljevine Jugoslavije 1936-37. Beograd.
- Roumania: Statistica Miniera a Romaniei pe anul 1934.Bucuresti.Transilvania, Banat,Crisana.Bucuresti,1929. Enciclopedia Romaniei. Bucuresti, 1939.
- Italy: Relazione sul servizio minerario nell'anno 1933. Roma.
- Poland: Atlas Polonais, Varsovie, 1931.
- Bulgaria: Bogomil M.: Das Bergwesen Bulgariens. Kgl.Bulgar. Minist.für Handel, Gewerbe u. Arbeit.Sofia,1931.
- Ukraine: Atlas of Ukraine and Adjoining Countries.1937.Lviv.

MINING PRODUCTS OF CENTRAL EUROPE

(IN VALUE OF PRODUCTION)



1. Anthracite 2. Brown coal 3. Lignite 4. Graphite 5. Gold 6. Silver 7. Copper 8. Iron 9. Lead 10. Zinc 11. Manganese 12. Mercury 13. Petroleum 14. Rock oil
 15. Nafta 16. Natural Gas 17. Antimone 18. Bauxite 19. Chrome 20. Uranium 21. Magnasite 22. Sulphur 23. Other metals 24. Salt 25. Salt water 26. Potassium salt 27. Stone

Coal Reserves of Central Europe.

The estimates of coal reserves have been made by different authors at different times. The available recent estimates have been taken into consideration everywhere. The limit of depth at the estimates of coal reserves is 1000 m which may be regarded as the limit of mining. In contrast with the former estimates, the recent ones show, for the most part, an increase in reserves; they might mean in certain cases a threefold increase in valuation./e.g. Zsil-Valley./

In order to be able to compare the different coal reserves from the point of value, they have to be reduced to a uniform coal of 500 calorie. The amount of brown coal converted into "uniform Coal" would diminish on an average by 1/3 - 1/4 portion, while the major part of anthracite would increase by 1/4 - 1/5 portion. In the map instead of the "uniform coal" the different kinds of coal have been indicated from the point of view of their practical use.

Lignite is a kind of low-grade brown coal containing more than 30 per cent water. Among the various kinds of brown coal there are cannel /or jet/ rich in gas and coking used for the production of coke. Some anthracite are not suitable for coke, others may be used for gas of coke manufacture, according to the amount of volatile matter contained. Splint coal has 5-12 per cent of volatile matter, coal rich in gas, with big flames has 35-45 per cent.

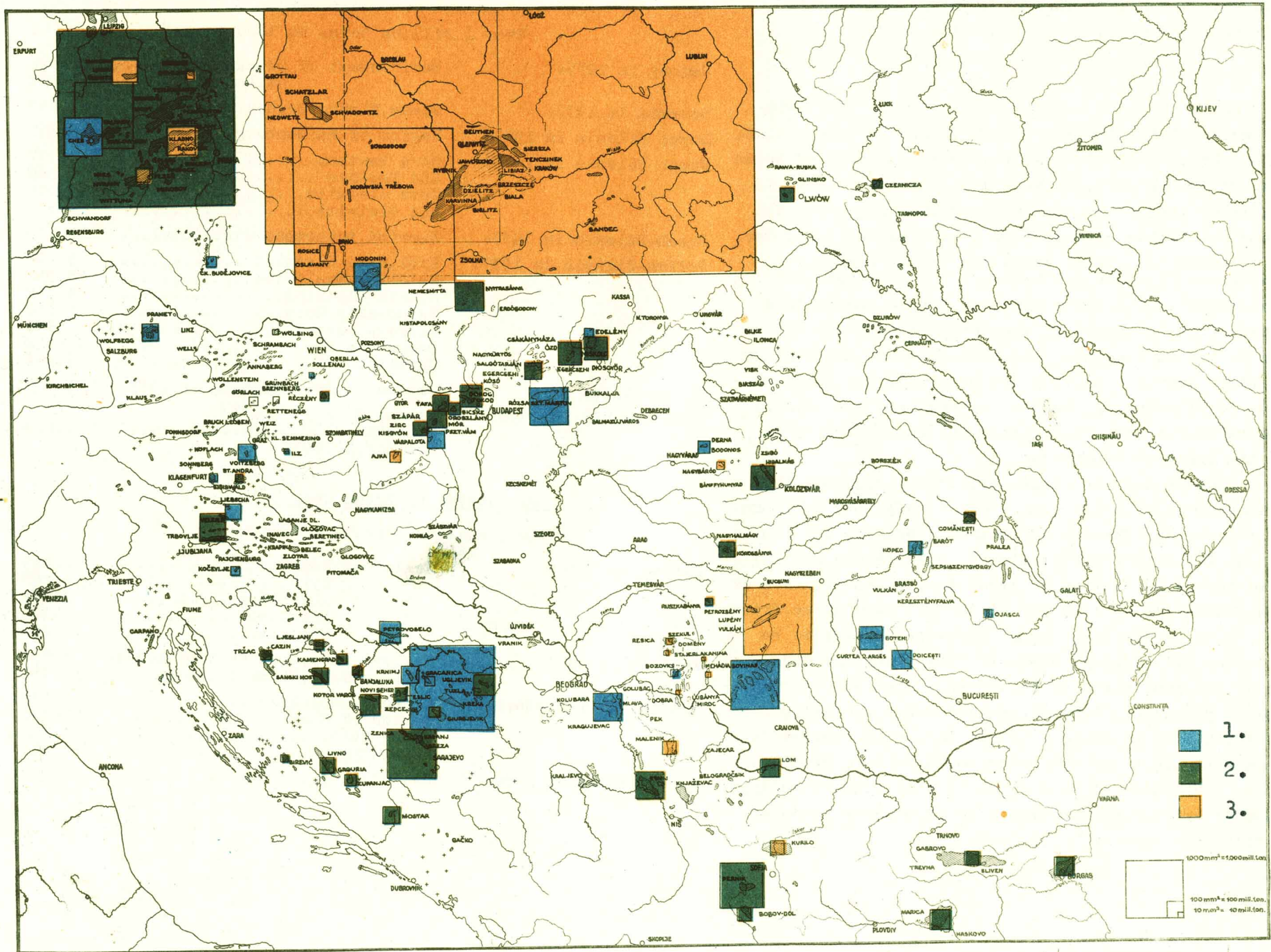
Coal reserves. /over 100 million tons, in millions of metric quintals./

Anthracite.

Environment of the Bohemian Massif: Middle Bohemian district
/Rakonitz-Klando, environment of Schlan by Prague ... 237
in Silesia: Lugau-Ölsnitz ... 120
Ostrau-Karwin district: 8.300

Coal deposits of Poland and German-Silesia /to the depth of 2000 m, 165 milliard quintals/.....	58.800
In the Carpathian Basin: Mecsek Mountains /Pécsvidék, Kömlő, Szászvár, Nagymányok.....	160
<u>Brown coal.</u>	
Bohemia, Moravia, Silesia /Falkenau, Elbogen, Karlsbad/...	10.311
Eger Basin	481
Brüx, Teplitz-Komotau . . .	1,108.592
District between the Drava and Sava/Wöllau, Trifail/..	383
Carpathian Basin:	
Esztergom-region	130
Mór-Pusztavám-Oroszlány.....	100
Várpalota.....	100
Salgótarján-Nagybátony.....	110
Egercsehi-Királd-Ózd.....	158
Sajóvölgy.....	183
Mátra-Bükkalj /lignites/.....	500
Nyitrabánya /Handlova/.....	286
Egeres, Farkasmező, Kiskeresztes	150
Lupény-Vulkán-Petrozsény.....	1.576
Lignite of Oltenia:	800
Doicești.....	122
Jidava Poteni.....	177
Lignites of Croatia-Slavonia/Krapina, Glogovec, Petro- voselo/.....	154
Bosnia:	
Kotor Varos.....	123
Krnin Planina.....	102
Tuzla-Kreka.....	2.350
Western Serbia:	
Morava Valley.....	215
Environment of Kolubara, Kraljevo, Kragujevac.....	267
Bulgaria:	
Region of Lom.....	100
" Pernik.....	600
Maritsa Valley.....	120
Region of Burgas.....	100

COAL RESERVES



1. Lignit

2. Barnaszén

3. Feketeszén

1. Lignite
2. Brown coal
3. Anthracite

100 mm² = 100 million tons

Production of Coal and Carbonic Hydrogene of Central Europe.

/Coal-production about 1930-1938./

Coals having a heating-power of more than 6000 calorie are called anthracite, while those of less calorie are called brown coal. In case the water contents of brown coal exceed 30 per cent, it is called lignite. Silesia is the center of the great anthracite-producing regions. The Silesian coal-fields were divided following the World War. Poland received the lion's share, while the remainder went to Czecho-Slovakia and Germany. The Silesian coal and that mined in the environment of Prague are of less importance from the point of view of international trade, - just as it is the case with the production at the section of the Lower Danube, - as they are absorbed, for the most part, by local industry. Next to several smaller anthracite deposits the coal reserves in the Mecsek Mountains are of the greatest importance.

Saxony and the region around Kiev contain the largest reserves of brown coal. They furnish the basic material for the manufacture of synthetic benzine. The Alpine brown coal-fields are insignificant. Hungary has rapidly advanced in the production of brown coal in consequence of the peace-treaties of 1918 and of the new boundaries. Prior to 1918, most of the large brown coal-fields were to be found in the Zsil Valley; however, today they are surpassed by the coal mines of Tata-Dorog-Tokod-Salgótarján. In time of prosperity several smaller mines are being opened which stop production in the period of depression; e.g. the coal-mines of Borsod and Southern Transylvania.

Lignite is used either electrified or refined by means of extracting its water. It is nowhere produced in considerable amounts.

Production of Anthracite.

/Over 1 million tons, in 1000 tons./

Saxony in 1935:	Environment of Zwickau.....	1.594
	" Oelsnitz.....	1.651
Bohemia in 1937:	Slany, Kladno, Beroun, Rakovník...	1.657
Lower Silesia in 1935:	Region of Waldenburg.....	3.861
Upper Silesia in 1935:	Nord Beuthen.....	4.377
	Süd Beuthen	6.860
	Nord Gleiwitz	3.269
	Süd Gleiwitz	4.537
Czech-Silesia in 1937:	Karwiná, Doubrvna districts....	12.933
Polish-Silesia in 1937:	Król, Huta district	9.227
	Katowice-Myslowice.....	8.358
	Rybnik district.....	4.358
	Tarnowskie Gory.....	4.358
	Dawrowa district.....	3.051
	Sosnowiec "	3.350
	Jaworzno "	2.642
In the Alps:	Region of Preissenberg in 1935.	1.327
Transdanubia in 1938:	Mecsek, Pécs /741,803/	
	Szászvár /130,373/.....	1.023
	Komló /151,055/	

Production of Brown Coal.

/Over 1 million tons, in 1000 tons/

Saxony in 1935:	Region of Naumburg.....	12.929
	" Borna	9.265
	" Altenburg.....	2.032
	" Dresden.....	5.062
	" Görlitz.....	2.251
Bohemia in 1937:	Karlovy Vary, Cheb, Falknov, Loket	3.351
	Teplice, Most, Chomutov, Zatec....	13.351
Within the Carpathians:	Miskolc, Sajómelléke.....	1.278
	Region of Salgótarján.....	1.397
	Dorog-Tokod	1.381
	Tatabánya	1.977
Transylvania in 1934:	Zsil Valley	1.031

Production of Carbonic Hydrogene in 1938.

/Over 100.000 tons, 1 million m³ resp./

<u>ROUMANIA.</u>		Rock oil 1000 tons	Natural gas 1000 m ³
Dambovita district:	Gura Ocnieni	1.484	157.130
	Bucsan	375	199.637
	Ochiuri	331	41.682
	Rasvad	225	-
	Teis, Aninoasa	57	17.712
Prahova district:	Doicesti	-	2.441
	Boldesti	967	567.665
	Moreni, Piscuri	1.274	312.390
	Ceptura	671	140.096
	Aricesti	36	55.894
	Region of Bustenari	111	10.928
	Recea	125	4.307
	Baicoi	51	12.673
	Tintea	636	169.063
	Filipestide, Padure	12	6.024
	Margineni	28	127.450
<u>POLAND.</u>	Region of Boryslav	247	120.829
	" Drohobycz	76	210.081
	" Jaslo	136	183.612
	" Stanislawow	45	69.991
<u>Carpathian Basin:</u>	Inke	-	8.000
Great Hungarian Plain:	Debrecen /1937/	-	1.088
	Hajduszoboszló /1937/	-	1.631
	Karcag	- about	1.500
	<u>Transylvania:</u>	Sármás	-
	Magyarsáros	-	79.885
	Bázna	-	19.072
	Kiskapus	-	75.268
	Szásznádas	-	5.576
<u>Croatia:</u>	Bujavica, Goilo	-	2.432

Natural Gas and Rock Oil Mains.

ROUMANIA: 2800 km; of this 2040 km are working mains within the oil fields
760 km are state mains.
a/ 320 km for lamp oils: along the Baicoi railway Ploiesti-Buzau-Faurei, Fetesti-Cerna Voda-Constanta.
b/ 180 km long double main: Baicoi-Ploesti-Bucuresti-Giurgiu.
c/ Baicoi-Bucuresti.

TRANSYLVANIA:

Kissármás-Torda.....	50 km
Torda-Felvinc	23 "
Dicsőszentmárton-Marosvásárhely	32 "
Bázna-Medgyes.....	5.07
Kiskapus-Medgyes, Szásznádas-Szegesvár.....	9 km
Nyárádszereda-Marosvásárhely.....	30 "
Lispe-Csepel.....	210 "

TRANS-DANUBIA:

The oil reserves of the petroleum fields can hardly be estimated to be relied on; at most the exploited reserves could be numerically estimated, the possible ones, however, by discovery of new reserves might be multiplied. From the production we cannot conclude on the reserves. Considerable reserves are sure to be found in Central Europe in Moldavia, Eastern Galicia, in the Vienna Basin and in the Hungarian Basin.

Some part of the natural gas mined together with the production of rock-oil is used up by the boring works. They will be partly pressed back into the bore, partly they will be put on the market. Some part of the natural gas is used for benzine manufacture.

	Produced oil in 1000 tons till December 31.1935.	World's pro- duction %	Reserves in 1000 tons January 1.1936.	World's supply %
Soviet-Union	471.038	12.54	550.658	13.54
Roumania	91.092	2.42	113.133	2.78
Poland	34.141	0.91	68.956	1.70
France	2.050	0.05	1.343	
Germany	3.627	0.10	1.261	
Austria	12		991	
Albania	21		990	
Czecho-Slovakia	285	0.02	945	0.23
Others	319		3.844	
Totally:	602.585	16.04 %	742.121	18.25 %

These estimates are quite unreliable, they have been essentially changed ever since. Besides, the manufacture of synthetic benzine should also be taken into consideration. According to the data given before, the rock-oil reserves of Europe, by the present consumption, would be exhausted on an average in 22 years; e.g. the reserves of Germany in 3 years, that of Roumania and Poland in 13 years, and that of France in 18 years. Albania's reserves, however, would suffice for 198 years.

The Transylvanian natural gas-fields are not adequately exploited. Only the known production has been indicated by the map; the capacity of the gas-fields, however, is far bigger than that, and the possible reserves may be 100-200 times bigger than the real ones.

	Daily capacity million m	Possible reserves milliard m ³
Kissármás	1	10
Mezőzáh	1.5	12
Mezősámsond	1	10
Marostelek-M. jára	1.5	30
Nyárádszereda	2	40
Rava	1.5	30
Fülöptelek	1	20
Szásznádas	1.5	12
Székelykeresztur	1	24
Dicsőszentmárton-Sáros	4	80
Küküllővár	2	40
Bázna	1.5	30
Kiskapus	3	50
Szászujfalu	8	100
Dálya	5	60
Szászkeresztur	1.5	12
Nádpatak	1	12
Illenbák	0.75	15

The natural gas reserves of Bujavica in Croatia have been estimated at 1-1.5 milliard m³.

Constructed by Dr. Francis Szentes,
under the control of
Prof. Dr. Lewis Lóczy

Coal-mining in Hungary had developed during the period between the First and Second World War. However, it declined in Czecho-Slovakia and Roumania, while in the other states, represented in their total area by the map, it showed a stagnation. Austria had to rely on imports from Poland, Czecho-Slovakia and Germany. Hungary imported anthracite and exported brown coal. The same was the situation in Jugoslavia too, but here exports constituted a much smaller part of imports. Roumania, though to a small extent, depended on imports from anthracite. Considerable amounts of coal have been exported from Czecho-Slovakia, Poland and Germany.

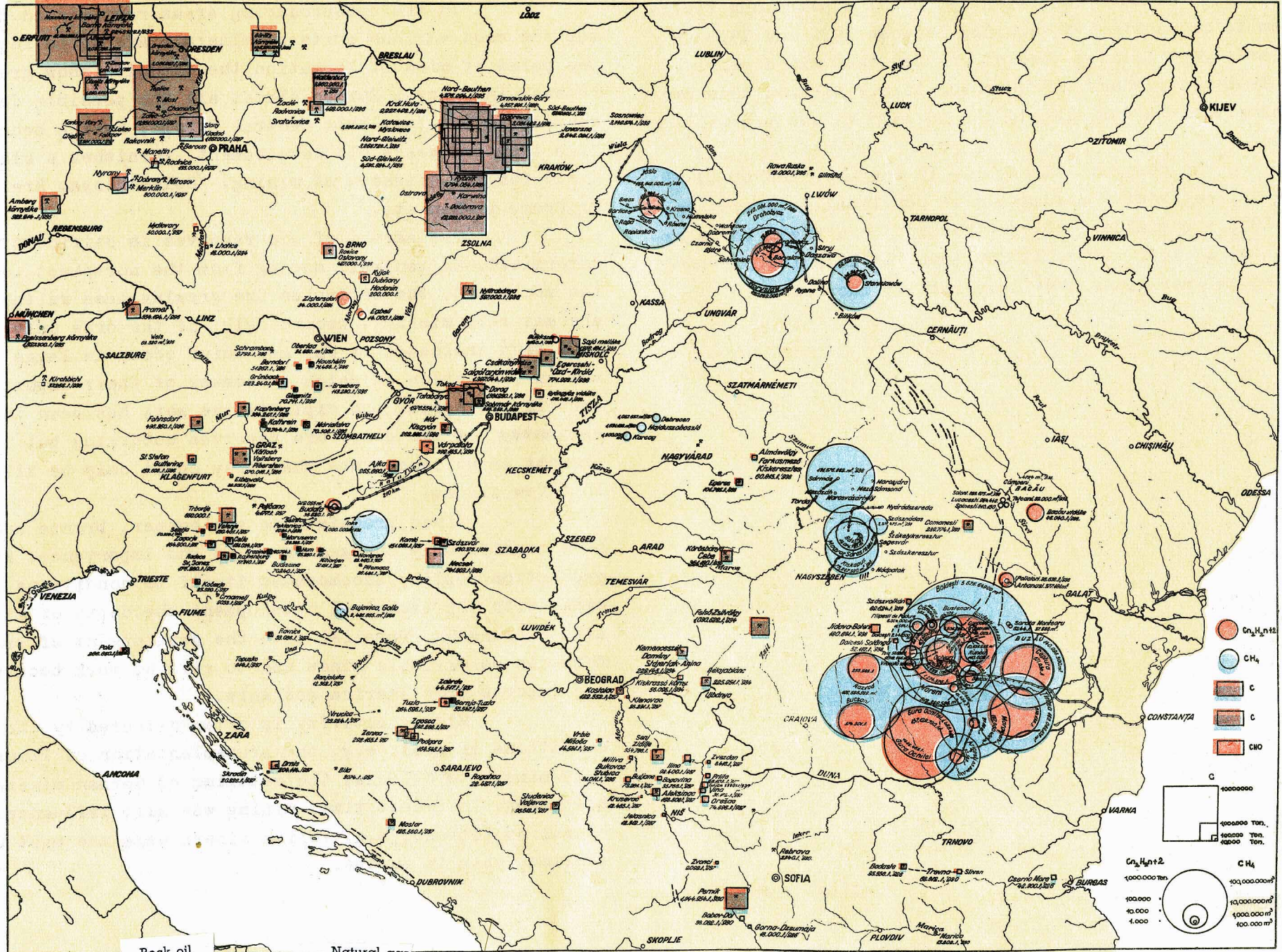
In some states coal consumption depends on the developed conditions of industry and on the number of townspeople. Production, foreign trade and the per capita consumption of some states is indicated by the following Table:

Area	Year	Production		Imports		Exports		Per capita consumption		Combined average amount per head converted into uniform coal
		in 1000 tons Anthracite	Brown coal	in 1000 tons Anthracite	Brown coal	in 1000 tons Anthracite	Brown coal	in quintals Anthracite	Brown coal	
Austria	1926/29	186	3,203	4,644	452	5	21	7.30	5.50	13.24
	1934/37	247	2,990	2,516	165	-	1	4.09	4.67	8.61
Czecho-Slovakia	1926/29	14,827	20,279	2,032	45	2,007	2,941	10.38	12.15	22.08
	1934/37	12,674	16,007	1,244	64	1,562	1,770	8.11	9.43	17.24
Hungary	1926/29	806	6,405	1,115	30	164	249	2.09	7.34	8.12
	1934/37	831	7,019	207	1	24	182	1.13	7.62	7.13
Roumania	1926/29	366	2,722	186	8	27	-	0.31	1.61	1.60
	1934/37	265	1,711	28	-	-	-	0.15	0.89	0.86
Jugoslavia	1926/29	336	4,596	316	29	12	136	0.48	3.36	3.12
	1934/37	412	4,134	185	1	3	60	0.39	2.68	2.50

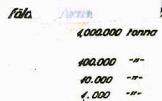
Roumania supplied all the Central European states with rock-oil; they all had to rely on imports. The Roumanian exports for rock-oil is widely scattered according to the states. A considerable portion was sent to long distances, to Western Europe, England and France. The chief consumers in Central Europe were Germany and Italy;

PRODUCTION OF COAL AND CARBONIC HYDROGENE

(BETWEEN 1930—1938)



Rock oil



Natural gas



rock oil
natural gas
carbonic hydrogene deposits
pipe lines

anthracite
brown coal
lignite

100 million tons
1,000,000
100,000
10,000
1,000

széntermelés
1930-38. évek között

M. T. AKADEMIA
FÖLDRAJZI
KÖNYVTÁR

Except Poland all the Central European states drew their supply of petroleum from Roumania. The Roumanian petroleum production fluctuates violently, and the petroleum fields seem to be nearing exhaustion. Between 1926 and 1930 on an average 4 million tons of oil had been mined yearly. In 1936 the production increased to 8.7 million tons per annum; then it diminished, and in 1938 it was 5.6 million tons.

In contrast with this, in Hungary, the yield of the oil-wells of Transdanubia is continually increasing. In 1938 the yields of oil-wells which were begun to be exploited in 1937 - were 42.800 tons, in 1939 143.800 tons. In recent war-times they have rapidly increased.

Ore Reserves of Central Europe.

In the ore-producing areas represented by the map the most various sorts of minerals are to be found. From the point of view of formation the deposits show great differences. In Central Europe almost all the possible deposits results in the fact that Central Europe, having been formed by a thousand years old development, furnishes a classical field for the sciences of mining. /Selmebánya, Freiberg, Příbram, Leoben etc./

The amount of ore reserves is difficult to be determined. In general, moving from the northwest towards the southeast, the estimates are growing less reliable or are entirely missing. Accordingly, of the ores only those have been indicated by our map which occur in large amounts, and in connection of which - because of their importance - certain geological and exploitative work has been done. The estimates of the other ore reserves occurring but in small amounts is so inaccurate that they could only be illustrated in a few places.

Since praehistoric age copper, bronze and iron have considerably changed in value and importance. Even today production rapidly accomodates itself to conditions. In accordance with the technical development the depth of mining is also increasing. Parallel with the development of trade, the formerly so valuable mines had to give up work because of the imports from America and Asia.

Mining activity is often directed by the labour conditions as well; e.g. the transplantation of Transylvanian salt-miners to Galicia, the settling of German miners to the Szepesség. In recent times mining was also influenced by social conditions; e.g. Polish miners were the most unpretentious ones in Europe.

In general, the estimates of reserves show increasing values in accordance with the development of mining, as more intensive mining might lead to the discovery of newer and newer deposits and veins respectively. On the other hand, the development of mining leads to a rapid exhaustion of the reserves. In this way a certain balance is brought forth, so the 20-30 years old estimates may be accepted even today. An important work has been done in this respect by the international geological congresses. Surprising results may be expected on the Balkan Peninsula where an increase in reserves might be possible.

IRON ORE RESERVES. Of the minerals of the iron ore reserves Central Europe contains small reserves of magnetite ore $/\text{Fe}_3\text{O}_4/$, with a 72 per cent of iron contents. The most important is the hematite $/\text{Fe}_2\text{O}_3/$, with a 55-70 per cent of iron contents. Siderite $/\text{FeCO}_3/$ contains 38-48 per cent of iron. Clay siderite often occurs in the Beskides. In the area of the iron ores mentioned above, especially near the surface, limonite $/\text{Fe}_2\text{O}_3\text{nH}_2\text{O}/$ is most frequent; in theory it contains 60 per cent of iron, in reality, however, due to its filthiness its iron contents fluctuate between 25 and 45 per cent. Ankerite of metasomatic origin $/\text{FeMgCaCO}_3/$ contains iron of about 30 per cent. Although chamosite and thuringite being Fe Al silicates with water contents, containing 29-36 per cent of iron, are in general from the point of view of mining not important minerals. Nevertheless, they have such expansive deposits in the Basin of Prague and Pilsen that they became the most important products of mining. Iron ores washed from bog water are of less importance /e.g. Bagamér/. Pyrites and marcasites $/\text{FeS}_2/$ with a 47 per cent of iron contents cannot be regarded directly as iron ores; they are but basic products of the manufacture of sulphuric acid; they come only after calcination, with 65 per cent of iron contents to the furnace.

In general, the lowest limit in the rentability of production is 33 per cent of iron contents; ores of roundly 35-45 per cent occur in our estimates of reserves. In the regions

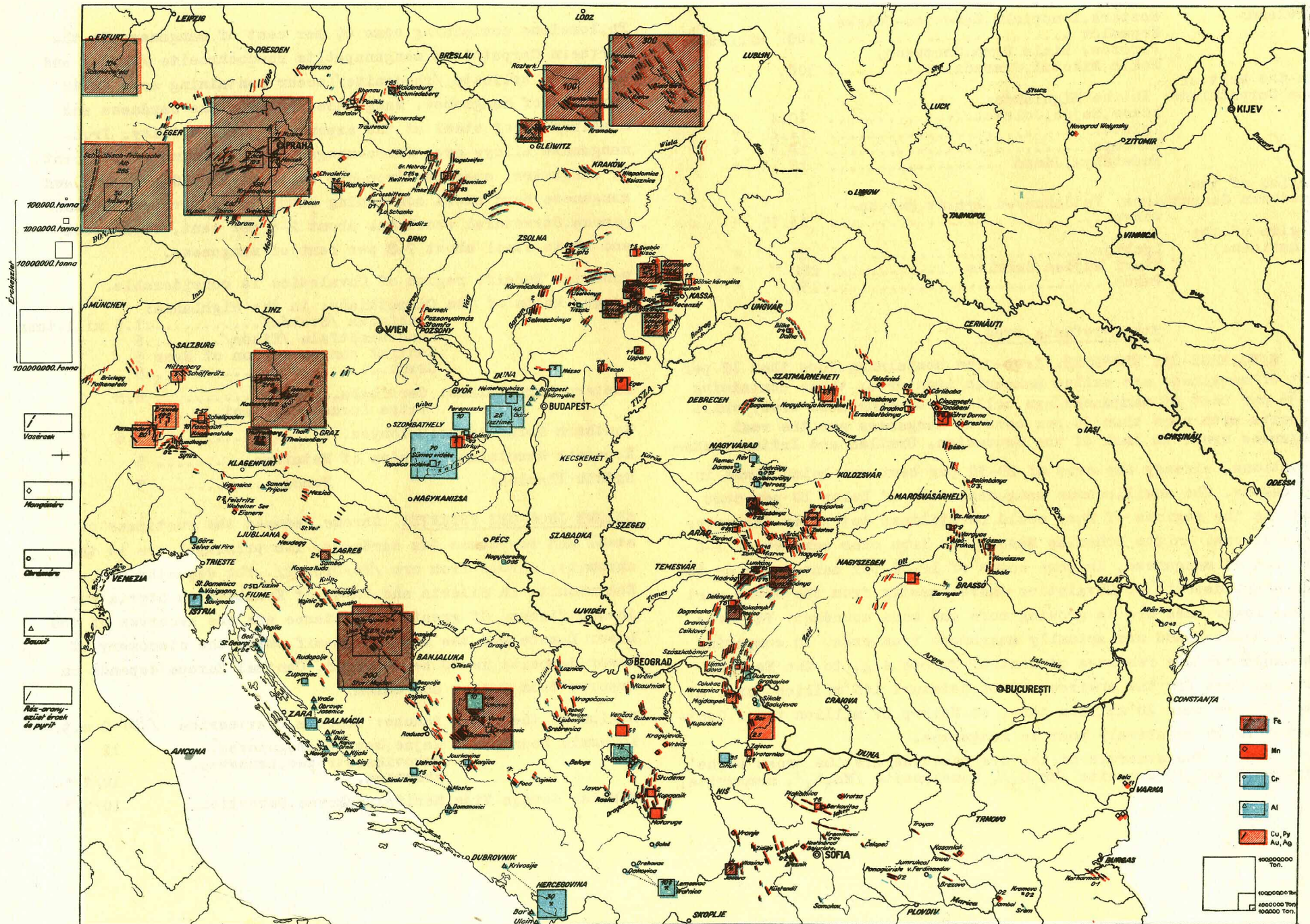
of Geislingen, in the deposits of the Franconian Alb iron ores of 20-25 per cent are produced, which by means of float-are are concentrated to 25 per cent.

The quite pure iron is practically a material of no value; hardened with 1.7-7 per cent of coal, it produces pig-iron; by hardening it further on with 0.3-1.7 per cent of coal, it gives steel; with 0.05-1.7 per cent of coal wrought iron is produced. By adding the elements of Si, Mn, Ph, S, Cr, Ti, Mo, Wa, etc. we get steel of the most various character.

Far more valuable ore are those with veins, which are older blocks filled with ores of the newer volcanos, such as in the Northern Highlands, in the Szepesség and in Krassó-szörény. The iron ore deposits of the Prague-Pilsen Basin are of vast expanse; here ores are mined depository like coals. The syngenetic iron ores lying in the Swabian Jurassic and Lower Cretaceous strata are of inferior quality, but in large amounts; they are coastal sediments formed at the same time with limestones. The contact deposits viz. the secretions of ore formed on the limit of the sour eruptive, and sediment rocks are of less importance, just as the magmatic secretions in a large eruptive mass. In contrast with this, the metasomatic iron ore reserves, such as the deposits of Eisenerz, Hüttenberg and Rudabánya, having been formed through elimination of the limestones by solutions of ore, are of a considerable importance.

Eastern Alps:	Admont.....	21.8	mill. tons
	Eisenerz.....	206.0	"
	Hüttenberg.....	18.3	"
Schwäbisch-Fränkische Alb, Aalen, Geislingen, Gutmadingen, Wasseralfingen, Staffelstein, Cordingast, Thurnau.....		265.0	"
Sudetenland-Schmiedefeld /Thüringisch-Fränkischer Wald/.....		104	"
Silesia:	Beuthen.....	16	"
Bohemia:	Krusna-Hora, Hudlice, Jinocany	356	"
	Nusice.....	11	"
	Zdice.....	10.3	"
	Zbirov, Svejkovice, Kysice.....	260	"

ORE RESERVES



Poland:	Rozterk, Konopiska, Kamenica-Polska, Kromolov	100	mill. tons
	Parczow, Biala Gora, Szczecno, Pekla, Mikotai, Gramadzice	300	"
In the belt of the Carpathians:	In the Highlands:		
	Rakos, Rajec, Jolsva	10.4	"
	Igl6	14.4	"
	Korompa	12.6	"
	Rudabanya, Jasz6	16.15	"
Region of the Southern Carpathians:	Vajdahunyad, Gyalar, Ruszka-banya	13.75	"
Region of the Dinarides:	Lyubija	80	"
	Stari Majdan, Rakelic	200	"
	Vares	130	"

Steel-refining Ores.

MANGANESE-ORE RESERVES. Iron-ores containing less than 12 per cent of manganese are called manganic iron ores; those containing 12-35 per cent of manganese are called iron-manganese ores; while deposits with more than 35 per cent of manganese are the real manganese ores. In lack of the Caucasian, Urallian and Indian trans- portations, already the ores of 20-30 per cent are being mined in the Bakony. The angillaceous manganese ores of below 10 per cent found in the regions of Eger could be utilised but after expensive preparations. In the Bohemian Massif the iron ores consist of 1-6 per cent of manganese, in rare cases of 12-30 per cent, such as the descendent deposit of Chvaletice where passing from the upper part to the lower ones ore is growing more and more abundant. The ores of the Sudetenland are actually manganous iron ores. In comparing the manganese ore reserves of Central Europe e.g. to the Eastern European ones /in the environment of Csiaturi 146 million tons, at Nikopol more than 20 million tons, at Maikop 32 million tons/, Central Europe is relatively poor in manganese.

The minerals of the ore reserves are the brown stone /pirolusit MnO_2 /, braunite Mn_2O_3 /, hausmannite Mn_3O_4 /, manganite,

Psilomelane containing some 60 per cent of manganese. In the Northern Carpathians manganapatite rhodochrosite $MnCO_3$ and manganese silicate /rhodonite/ occur containing some 42-48 per cent of manganese. Manganese augments the hardness and massiveness of steel at the expense of malleability. Iron-manganese alloys are: ferro-manganese containing 80 per cent of manganese, specular iron-ore containing 8-10 per cent, and manganese hard steel containing about 10-14 per cent of manganese. Structural steel has about 2-8 per cent, tool-steel and white steel about 2-8 per cent of manganese.

Bohemian Massif: region of Chvaletice is considerable.

In the belts of the Carpathians:	In the Highlands:		
	Svabfalva /Svaboc/	1.5	mill. tons
	Landszasotfalu /Kisec/	6	"
	Central range: region of Eger	5	"
	Urkut	5	"
Eastern Carpathians:	Carlibaba, Jacobeni	6.8	"
	Vatra Dornei, Brosteni		
Southern Carpathians:	Delenyas	1.6	"
Kopaonik Mountains:	Region of Mataruga	5	"
Rudnik Planina:	" Vencas	5	"

CHROME IRON-ORE RESERVES. Chrome reduces the rustiness of steel and increases its hardness. Its principal ore is the chromite, chrome iron ore $Fe/CrO_2/2$. The deposits of Schweidnitz in Silesia and those of Kraubath in Styria are insignificant. Of greater importance are the reserves of the Lower Danube and the Rhodope Massif where the discovery of newer deposits is to be expected. Central Europe depends on imports from Turkey and China.

Region of the Lower Danube:	Dubrova, Plavisevica	/10/	2 m.t.
Kopaonik Mountains:	Rajac, Suvobor, Bogutovac, Dakovica, Strepce, Lensevac, Vratnica.	12	"
Bosnia:	Gornja Vija, Meridol, Rakovac, Dubostica.	10/?	"
		10/?	"

All the other steel refining ores like nickel, cobalt, Wolfram, molybdenum etc. occur in the highland areas, though in an insignificant amount. Their production is varying. Their reserves cannot be estimated being but byproducts of mining.

ALUMINIUM /BAUXITE/ ORE RESERVES. The youngest and "most modern" ore of mass-production is the clay-like bauxite containing about 40-60 per cent of Al_2O_3 and maximum 4 per cent of SiO_2 . Beside the reserves of France the most important ones are to be found in Transdanubia and Bosnia-Herzegovina-Dalmatia.

Bauxite is a product of moulding. The amount of its suddenly wedged-out, nest-like reserves of various thicknesses is hard to be estimated in advance; it becomes often evident but by splitting. Especially in the estimation of the Balkan reserves a 50 per cent increase or decrease might be possible. In general, the estimates are indicated in an optimistic way, viz. the probable reserves are included too.

Aluminium had been discovered in 1827; at first it was an exceedingly expensive, rare metal; today with its widely spread electrolytic metallurgy, it is quite indispensable. The most is produced by Germany; /from raw-materials imported from abroad/; then the U.S.A., Canada, Russia, France, Switzerland, Norway and Italy are followed. Its brass-manganese alloy is the duraluminium, the chief constituent of aeroplanes. Its Zn, Mn, Mg alloys are various electro-metals.

Transdanubia:	Region of Budapest and at Nézsza.....	5	mill. tons
	Németegyháza.....	5	"
	Gánt	40	"
	Iszkaszentgyörgy, Isztimér	25	"
	Eplény	1	"
	Perepuszta.....	10	"
	Region of Sümeg, especially Halimba....	70	"
	" Tapolca " Nyirád	1	"
In the Bihar Mountains:	Rév	2	"
	Galbina Valley, Petrosz.....	1	"
Southern Alps:	Gorizia, Selva del Piro.....	1	"
Dalmatia:	/Goli, St. Georgi, Rab/		
Istria:	/Sta. Domenica, Visignano, Sovignoco/ Vrace, Obrovac, Jasenica, Knin, Dulz.....	10	"
Dalmatia:	Kajun, Drnis, Kljaki, Sinj, Zupanjec	1	"
Montenegro:	chiefly Bar, region of Ulcinj	30	"
	Citluk.....	3.5	"
Bosnia:	Siroki Brag	1.5	"
	Jourkovina.....	1	"
	Bespoljo	1.5	"

Copper, Pyrite, Gold and Silver Ore Reserves. After iron copper is of the greatest economic importance, although in amounts it is far behind it. In 1938, the world's production in iron ore was 170 million tons; in copper it was 2.1 million tons. Half of the production is used by electrotechniques, half of it by the industries of metals, machinery and chemicals. It is especially suitable for making alloys. Its alloy with zinc is brass, that with tin is bronze.

Next to the pure native copper /Cu/, the most important copper minerals are: chalcopyrite / $CuFeS_2$ /, containing 34.5 per cent of copper; chalcocine / Cu_2S / having 79.8 per cent; fahlore / $Cu_2Ag_2FeZnHg_3$ /, / $SbAsBi/S_3$ containing 30-35 per cent of copper, and enargite / Cu_3AsS_4 / to be found: in Reesk in the Mátra Mountains. The mould of the copper ores is easily to be recognized because of its gay colours; malachite / $CuCO_3Cu/OH/2$ / is of a lively green colour, containing 57.4 per cent of copper; azurite is lively blue, / $CuCO_3Cu/OH/2$. It is always to be found in vein-like or dense deposits, and very often with lead, tin and zinc ores or most of the times, with pyrites and marcasites / FeS_2 /. /See pyrites in connection with iron ores./

All these ores often contain native ore, gold and silver too, though in small amounts. Three grammes of gold per tons may be profitably mined in Central Europe; however, its two or threefold amount is usually mined. From silver the minimum used to be 100 grammes per tons. It happens that the native ores are not bound to these minerals but to pure quartz, such as the native ores of the Central Alps and Tauerns. The ore reserves indicated here are practically the amounts of this quartz containing native ores, consequently they are of less importance than the other occurrences where next to the native ores some other ores may be mixed.

The mining of native ores depends on the fluctuation of conjuncture. Gold-washes, viz. gold obtained by washing it from the sand of the worn veins occur everywhere in the region of the deposits; they are especially frequent in Transylvania and Serbia, but are of no significance.

Eastern Alps: Mitterberg, Schöffersötz, Rettenbach...	5	mill. tons
Goldzech, Erzgies, Radhauberg.....	19.2	"
Panzendorf	20	"
Schellgaden	3.57	"
Faschaun, Knappstube.....	10	"
Region of the Carpathians: in the Highlands:		
mines of Szepesség.....	1.2	"
Recsk	1.8	"
Region of the Eastern Carpathians: Nagybánya, Felsőbánya, Kapnikbánya, Erzsébetbánya..	4.5	"
Óradna.....	1	"
Region of Bihar: Verespatak, Bucsum.....	6.67	"
Zalatna, Brád, Nagyág.....	1.85	"
Region of the Balkan Mountains: Majdanpek.....	3	"
Bor	25	"
Zajecar, Vratnica	2	"
Plakalnica	1.5	"
Region of the Dinaric Alps: Bakovic	2	"

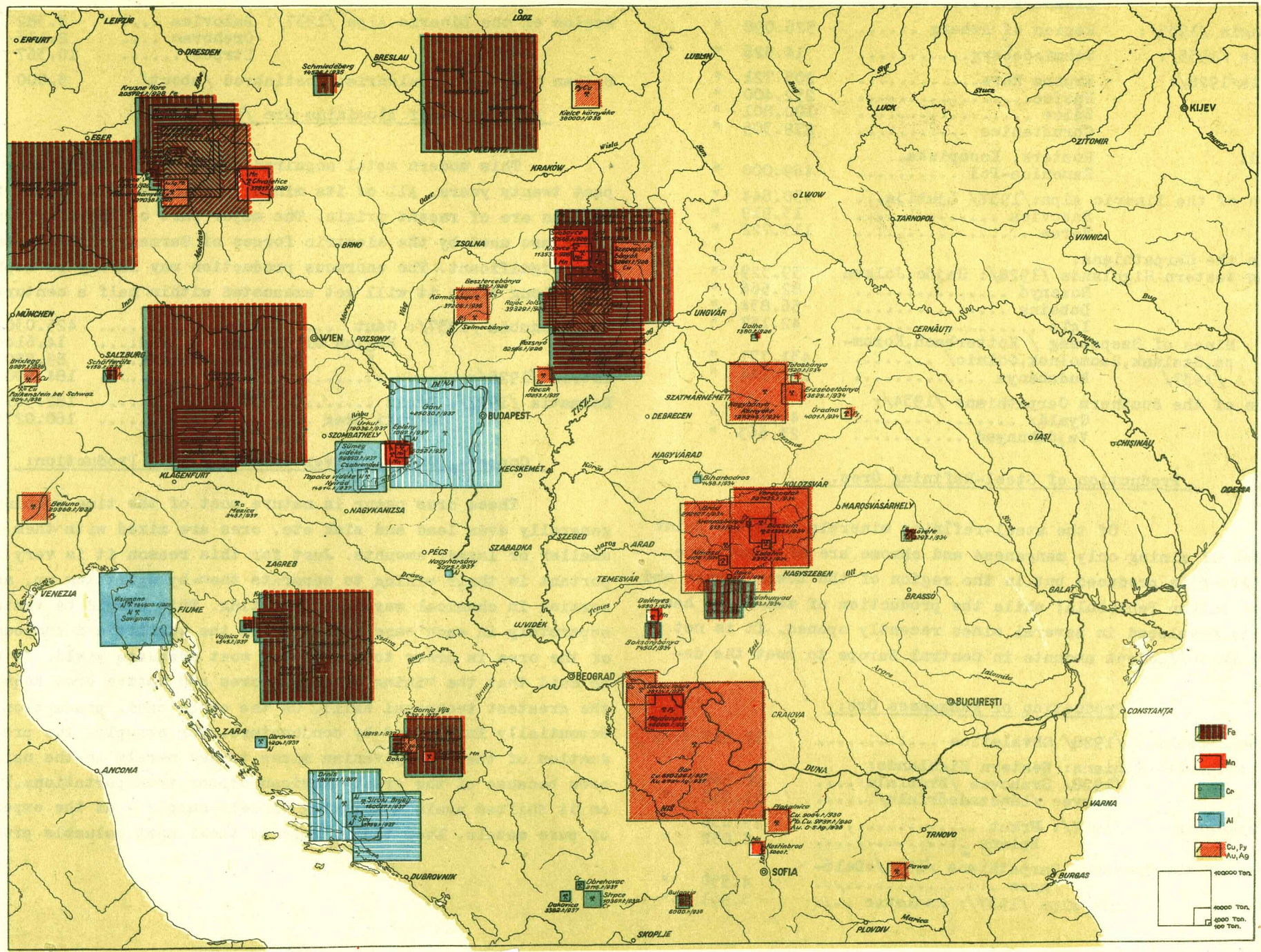
Constructed by Dr. Francis Szentes
under the control of
Prof. Dr. Lewis Lóczy.

Iron-, Steel Refining-, Copper- and Aluminium Ore Production
of Central Europe between 1928 and 1938.

The production of ores has been essentially influenced by the changes of world's conjuncture in the past thirty years. This is connected not only with the enormous reserves of strange continents, but with the development of world's trade as well. The mineral wealth of Central Europe is of different character. Production is influenced by geographical location, accessibility, transportation facilities, tariff politics, labour problem to the same extent as by geological possibilities. All these factors have played an important part in Central Europe, especially in the past decades. Mining was fairly developed in the Sudeten already in the XI. century, production was directed by the measurements of mining in the XII. century; in spite of this fact, the mining of today is of no considerable importance, it follows unnaturally the old traditions.

Iron-ore production. The iron ore production of Central Europe is characterised by the fact that in the old mining plants ores of mediocre quality are produced with a not highly developed technique. Moving from the northwest towards the southeast, only mines of less importance are to be found. The iron ore production could not yet develop in the Balkan states, although traces of several thousand years' old mining may be found there. Due to the political splitting up, the production of old, important mines diminished /e.g. in the Slovakian Highlands/, or ceased /Ruthenia/, while mines of medium importance were forced to increase their production, such as Rudabánya, Eisenerz.

PRODUCTION OF IRON-, COPPER-, ALUMINIUM- AND STEEL REFINING ORES 1928—38



<table border="0" style="margin-right: 20px;"> <tr> <td style="border: 1px solid black; width: 10px; height: 10px; display: inline-block;"></td> <td style="padding: 0 5px;">100 Tonne</td> <td rowspan="3" style="font-size: 2em; vertical-align: middle;">}</td> <td rowspan="3" style="padding: 0 5px;">Tonnages</td> </tr> <tr> <td style="border: 1px solid black; width: 10px; height: 10px; display: inline-block;"></td> <td style="padding: 0 5px;">1000 Tonne</td> </tr> <tr> <td style="border: 1px solid black; width: 10px; height: 10px; display: inline-block;"></td> <td style="padding: 0 5px;">10000 Tonne</td> </tr> </table>		100 Tonne	}	Tonnages		1000 Tonne		10000 Tonne		100000 Tonne Tonnages		Fe Mn	Iron		Mn	Manganese		Cr	Chrome		Al	Aluminium		Cu, Py Au, Ag	Copper, Pyrite, Gold, Silver
	100 Tonne	}			Tonnages																				
	1000 Tonne																								
	10000 Tonne																								

Eastern Alps /1936/:	Hüttenberg.....	149.830	tons
	Eisenerz	870.300	"
Thüringia /1935/:	Region of Amberg	526.098	"
Silesia /1935/:	Schmiedeberg.....	14.526	"
Bohemia/1928/:	Krusne Hore.....	205.721	"
	Nusice.....	252.400	"
	Zdice	100.801	"
	Chrustenice	279.305	"
Poland:	Rozterk, Konopiska, Kamenica-Pol	469.000	"
Region of the Dinaric Alps:/1937/	Ljubija... ..	430.644	"
	Bakovica	13.919	"
	Vares	113.722	"
Within the Carpathians:			
In the Western Highlands /1928/:	Rajóc, Jolsva	39.329	"
	Rozsnyó	82.566	"
	Dobsina	56.834	"
	Igló	42.157	"
Mines of Szepesség / Kotterbach, Korompa, Szalánk, Szomolnok, Gölnic/	431.771	"
/1937/	Rudabánya	290.044	"
Region of the Southern Carpathians /1934/:			
	Gyalár	49.184	"
	Vajdahunyad	23.663	"

Production of Steel-Refining Ores.

Of the steel-refining minerals from the point of view of mining only manganese and chrome are of importance. The latter is produced but in the region of the Lower Danube and on the Balkan Peninsula; while the production of manganese has rapidly developed in several mines recently opened. It is not mined in sufficient amounts in Central Europe to meet the demands.

Production of Manganese Ore:

Czecho-Slovakia: /1928/	Chvaletice	37.517	tons
Within the Carpathians: Western Highlands:			
/1928/	Svabovce /Svábfalu/.....	50.568	"
	Kisovec /Lándzsásórfalu/.....	11.353	"
Transdanubia: /1937/:	Úrkut	19.036	"
	Eplény	6.052	"
Region of the Southern Carpathians /1934/:	Delényes	4.550	"
"	Dinaric Alps /1937/:	Rajlovac	3.961

Production of Chrome Ore:

Region of the Dinaric Alps /1937/:	Dakovica	3.382	tons
	Orehovac	2.116	"
	Strpce	10.367	"
Balkan Mountains: Bulgaria: Kostinbrod /about/		5.000	"

Production of Aluminium Ore /Bauxite/:

This modern metal acquired considerable importance in the past twenty years. All of its mines in Transdanubia and in the Balkans are of recent origin. The major part of the mining products are used by the electric forges of Germany; local metallurgy is insignificant. The enormous production may hardly be kept up for a long time; it will get exhausted within half a century.

Transdanubia /1937/:	Gánt	425.030	tons
	Region of Tapolca: Nyirád.....	14.614	"
	" Sümeg:Csabrendek.....	89.850	"
Istria /1925/:	184.500	"
Dalmatia /1937/:	Drnis	182.561	"
	Siroki Breg	160.027	"

Copper-, Gold-, Silver Ore and Pyrite Production:

These ores occur in nature most of the time combined; generally even lead and zinc etc. ores are mixed with them in smaller or larger amounts. Just for this reason it is very important in their mining to separate them by splitting up, and sorting in chemical way or by floating. This should be tested separately in each case according to the quality and compound of the ores in order to obtain the most adequate yield. It may be said that the mining of copper ores and native ores requires the greatest technical skill. On the other hand, production is essentially influenced by conjuncture. For example, the production of the Transylvanian mines turned merely to the native ores because of the great American copper transportations, later on it shifted again - thinking of self-supply - at the expense of pure metals. Even today, gold is their most valuable products.

Production of Salt, Mottled Ore and Other Useful Minerals
between 1927-1938.

The most precious gold-mines of Europe are to be found in Central Europe. The former gold-mines of Pribram and Selmec-, Kőrmöcbánya are nearing exhaustion. The biggest copper-producing area of Europe is in Serbia, the region of Bor-Majdanpek. Our map indicates the produced tons of iron, in value they cannot be compared with each other.

Eastern Alps /1936/: Belluno /1932/ pyrite ...	29.968 tons
Bohemia /1928/: region of Pribram	27.038 "
Poland /1936/: region of Kielce.....	38.000 "
Highlands: Kőrmöcbánya /1936/.....	37.208 "
Mines of Szepesség /1928/:Kotterbach,	
Korompa,Szalánk,Gölnic,Szomolnok...	52.861 "
Recsk /1937/	10.253 "
Transylvania /1934/: region of Nagybánya,Bor-	
kut,Felsőbánya,Kapnikbánya	127.346 "
Erzsébetbánya	13.629 "
Verespatak	227.135 "
Bucsum	21.331 "
Region of Brád	272.107 "
Region of the Dinaric Alps:/1937/ Golubac,Voluje	35.134 "
je, Majdanpek /pyrite/	46.000 "
Bor	650.339 "
Balkan Mountains /1930/: Plakalnica	9.737 "
Other Bulgarian production /region of Pavel/..	10.000 "

By Prof. Dr.Lewis Lóczy ,
Dr.Francis Szentes.

Mineral salt. The Central European salt-mining may be traced back to the Celtic times. Salt-mining had been flourishing in the Alps in the time of the Hallstadt civilisation, as well as in Transylvania and in the Eastern Alps in the Roman period. In Galicia salt-mining was begun but in the X. century with the cooperation of Hungarian miners. Today it is everywhere a state monopoly.

The Tertiary salt-beds found in Transylvania and in the region of the Carpathians may produce salt in almost unlimited amounts; they chiefly supply the Balkan Peninsula deficient in salt where only salt by evaporation is produced. The old salt-mines of Hallstadt are of no importance today; here too, salt is, for the most part, produced by evaporation of the water of the old mine-pits found in the strata of the Triassic period. At the outer edge of the Eastern Carpathians salt by evaporation is produced in Casica. Along the Adriatic coast the inhabitants are engaged at many places in the evaporation of bay-salt. All these salts are rock-salts /NaCl/ which, beside as a seasoning of food, are used in large amounts by soda manufacturing, by chemical industry etc.

Potassium salt is produced but in Galicia, in the salt-works of Stebnik and Kalusz. The reserves of the former mine may be estimated at 10-12 million tons, those of the latter one at about 5 million. Potassium salt occurs here as sylvite /KCl/, kainite /KCl.MgSO₄.3.H₂O/ and polyhalite /2CaSO₄.K₂SO₄.2H₂O/; formerly it had been thrown away as useless salt; however, since 1923 it has been regularly produced. In 90 per cent it is used as fertilizer in agriculture, in 10 per cent it is used by industry.

Eastern Alps /1936/: /chiefly salt by evaporation/		
Hallein	17.432	tons
Aussee.....	70.704	"
Hallstadt	97.127	"
Galicia /1927/: 30 per cent in Wieliczka, about 20 per cent in Bochnia, the rest in Stebnik, Kalusz.....		
	539.211	"
Northeastern Carpathians /1934/ Sóvár:.....		
	15.221	"
Aknaszlatina /1928/.....	84.374	"
Aknasugatag /1936/.....	14.878	"
Transylvania /1938/: Désakna		
	35.811	"
Marosujvár	86.791	"
Parajd	6.127	"
Eastern and Southern Carpathians /1938/:		
Căciua	4.992	"
Targu Ocna	45.000	"
Slanic	45.057	"
Ocnele-Mari	22.352	"
Region of the Black Sea /1938/ Dobrogea.....		
	1.139	"
/salt by evaporation/		
Provadia, Anchialo.....	48.000	"
Bosnia /1937/ salt by evaporation: Tuzla.....		
	46.323	"

Potassium salt production.

Galicia /1927/:		
Stebnik	104.240	"
Kalusz	171.814	"

Graphite: In general, graphite is a pure carbon metamorphosed by great heat and pressure. Beside using it for manufacturing pencils, it is principally employed in the electric industry and in the working of metals. Nearly half of the world's production is produced in the Bohemian Massif and in the Central Ranges of the Alps.

Along the Danube in the Bohemian Massif /1936/:

Strassreith-Feistritz.....	2.137	tons
Röhrenbach	2.176	"
Mühdorf	3.515	"
Bavarian production /1929/: region of Passau...		
	21.300	"
Eastern Alps /1936/:		
Kaiserberg.....	7.875	"
Hohe Tauern-Trieben.....	4.604	"
Bohemia /1928/:		
Stuben	15.770	"
Tressny Rovecin	9.991	"

Phosphate: The phosphate mineral itself: the apatite $/Ca_5Cl/PO_3/$ is not to be mined in considerable amounts. Tertiary phosphorite sediments are in wide expanse in Poland, Eastern Galicia and Bucovina. In the region of Linz, especially in the Oligocene strata of Prambachkirchen it is estimated at 310.000 tons. The Quaternary bone-phosphate and guano-phosphate which occur in caverns at some places in enormous amounts should also be taken into consideration. In the Dachstein Mountains the Mixnitz cave produced several thousand waggons of phosphates; in Transylvania the phosphate of the Cholnoky Cavern by Lunkány and of Homoródmás in Háromszék were mined periodically. It is used directly or transformed in superphosphate as fertilizer in agriculture. It is imported in considerable amounts from French Marokko and America.

Poland /chiefly Eastern Galicia//1930/	30.000	tons
Bucovina /1936/	1.000	"
Bihar, Lunkány, Csoklovina /1938/.....	970	"

Uranium pitch "blende". /Jáchymov/ Joachimstal had been based in 1516 upon the silver ores concentrated in the cementation zones of uranite. The silverthaler /Joachimstaler/ coined here have made this place famous. The uranium oxyd $/UO_2/$ had been discovered in 1789. It has been used for glass-painting since 1840. It became important since the discovery of radium in 1898. It occurs in smaller amounts in the region of the neighbouring Breitenbach and Seifen, as well as in some places of the Sudeten and the Riesen Gebirge. It lost its world's monopoly in 1913, due to the discovery of the deposits of Colorado and Utah. The deposits of the Belgian Congo had been discovered in 1921, while the largest deposit of the world along the Bear Lake in Canada had been discovered in 1930. The radium emanative medicinal springs should be also taken into consideration.

Region of Joachimstal /Jáchymov/ /1933/:

native ore.....	232.101	tons
concentration.....	21.3	"
radium.....	3.375	mg

In this single place of resource of Europe about 500 tons of concentration were obtained between 1854 and 1914, the major part of which is being used as uranium dye. From 1920 to 1940 250-300 tons of concentration were produced. The total production of radium is about 50 grammes. Roundly half of the concentration is U_3O_8 , which contains 0.119 gr radium or 0.2 gr RaBr per tons.

Ores of Lead and Zinc. The most frequent ore of lead is the galenite /PbS/, that of zinc the sphalerite /ZnS/, and zinc-spar or galmei /ZnCO₃/. The two occur, for the most part, combined containing sometimes even native ores. The reserves of the exceedingly rich plants of Upper Silesia have been estimated at 33 million tons. These are real vein deposits in the mine of Bleyscharley with a deposit of 40 m thickness. The mines around Freiberg are real vein groups where in the XII. century 700 mines were in work in more than thousand veins, 20 per cent of which was ore. At present it is almost exhausted; recently the mine of Beihilfe was set in work, but there are prospects of opening some new ones as well. The old mines of Příbram is nearing exhaustion. Here mining originally was based upon the silver ores. The Triassic limestone containing metasomatic ores found in Crain in the region of Freiberg and in Croatia in the environment of Mešica had been the base of an old, large scale mining. The deposits occurring in the Kopaonik Mountains of Serbia /Trepca mine/ are regarded today as the largest reserves of Europe where the rapidly developed production is carried on with English capital. The ore contains 9 per cent of Pb, 7 per cent of Zn and 100-150 g/t of Ag. The deposits of the Balkan Mountains are hardly known yet; it seems, however, that no great hopes should be cherished in this respect, just as it is the case with the mining in the region of Selmeč-Körmöcbánya, as well as of Nagybánya.

A large amount of lead is employed in the cable manufacturing, and being acid-proof, it is used in the industry of chemicals and in building as well. Zinc is used for the manufacturing of brass, for the zincing of tin-plates and wire.

The production of the ores of tin, that of cassiterite necessary for the manufacturing of bronze, tin-plate and white metals, is insignificant at present. The Kaiserwald, the once most abundant deposits of Europe are exhausted; the veins, of the Erz Gebirge and the Sudeten are but periodically mined.

Region of Freiberg /1928/:	/Pb, Ag, Zn, WO, Bi/	15.452 tons
"	Amberg " /Pb/.....	13.400 "
Bohemia:	Stribro /1928/ /Pb/.....	320 "
	Cernovice " /Zn/.....	557 "
Silesia:	German-Silesia, region of Beuthen /1928/:	/Pb, Zn/..... 423.490 "
	Polish Silesia, Ulisses, Olkusz, region of Boleslaw /1936/:	/Pb, Zn/ 64.500 "
Eastern Alps /1936/:	Bleiberg Kreuth /Pb/,,	58.440 "
	Mezica /1937/:	/Pb, Zn/..... .01.827 "
Within the Carpathians Selmečbánya:	/1936/	
	/Pb, Zn/.....	65.000 "
Kopaonik Mountains /1937/:	region of Nagybánya /1934/	/Pb, Zn/ 7.972 "
	Blazevo, Zveca, Salj /Pb, Zn/ reserves	
	5 million tons/	633.480 "
	Goles, Novobrdo /Pb, Zn/.....	15.980 "
Balkan Mountains:	region of Plakalnica /1930/	/Pb, Zn/..... 2.762 "
Other Bulgarian production	/region of Pavel/	
	/Pb, Zn/.....	10.000 "

Ores of antimony: The ores of antimony mostly of hydrothermal origin are the antimonite /Sb₂S₃/ and antimony ocher /Sb₂O₄/. In hard lead some 10-15 per cent is alloyed with lead, 30 per cent in solder lead. It now finds extensive use in the industry of dyes, pyrotechnique, chemical industry etc. In the Carpathian Basin the mines of Csucsom, Szomolnik, Breznóbánya; in Serbia the region of Krupanj are of importance.

Region of the Carpathians:	Városszalónak /1936/	1.504 tons
	Region of Csucsom /1928/...	10.843 "
	Breznóbánya.....	7.947 "
Serbia:	Bugojno /1929/.....	1.302 "
	Kostajnica /1937/.....	7.485 "
	Krupanj	579 "
	Lisa /1937/	905 "

Ores of arsenite. The most frequent ores of arsenite are the arseno-pyrite /FeAsS/, the auripigment /As₂S₃/ and the löllingite /FeAs₂/. A smaller production is carried on in the contact plants of the Sudeten, in the region of Waldenburg and Reichenstein. As arsenite is often found combined with other ores, it is not a rare product in metallurgy. It is extensively used in the protection of plants.

In the region of Waldenburg in 1928 the yield of arsenite was 24.000 tons.

In the Southern Alps and in the Northern Carpathians arsenite occurs in small amounts at several places, mined periodically as a byproduct.

Bismuth ores. They are produced in several smaller mines of the Erz Gebirge in the region of Schneeberg and Johanngeorgenstadt. Its name derives also from here. /St. George in der Wiesen Wiesenmet>Wismut>Bismut/. It is employed in the preparation of many pharmaceutical products and cosmetics. In the technique of smelting bismuth considerably diminishes the fusing point of ores. Its ores are bismuthinite /Bi₂S₃/ and bismuth ocker /Bi₂O₃/. In the region of Johanngeorgenstadt in 1928...15.802 tons.

Magnesite. /MgCO₃/ It forms vast metasomatic reserves mined in large open cast in the grauwacke belt of the Eastern Alps, especially in the region of St. Veitsch and Dienten. Numerous smaller mines, such as of Sunk, Wald, Oberdorf, Leoben, Kraubath and Radenthein in Crain, compared to the former one, are insignificant. Some smaller mines found in the Hungarian Highland in the region of Jolsva, Ratkószuha and Kassa, as well as in the region of Gorevnica, Brezna, Milicevac in Serbia, compared to the Alpine ones, are of no importance either.

Magnesite heated to 700-900° produces caustic magnesite, a constituent of artificial stone; heated to 1500-1700° as sinter-magnesite serves as fire-proof lining of the furnaces.

Sudeten, region of Waldenburg, Frankenstein,	
Baumgarten /1928/.....	14.506 tons
Austria /1936/:	
Gross Veitsch, Oberdorf, Leoben, Kraubath, Wald, Sunk, Zillertal, Kitzbühel, Radenthein.....	398.000 "

The mined preserves are 20 million tons, the probable ones 60 million tons.

Upper Hungary /1928/ region of Kassa and Jolsva, Ratkószuha etc....	39.329 Tons
/reserves 30 million tons/	

Balkan Peninsula: Rhodope Massif /1937/:	
Gorevnica.....	12.517 "
Brezna	5.260 "
Milicevac	7.145 "

Mercury. Mercury is produced in the Eastern Alps at Schwaz in Istria by the Idria; within the Carpathians quick-silver mines are to be found in the region of Őtösbánya /Kotterbach/, Mernik /Varannó/, in Zalatna; on the Balkan Peninsula at Ripenj, Brajici /between Cacak-Valjevo/ and Bugojno. Realgar ores occur in several smaller places, they are not mined regularly though, because of the low prices in Russia and in America.

Nickel, cobalt, molybdenum and Wolfram ores often occur as accessory minerals in the Eastern Alps, the Sudetenland, in Bihar, as well as in the Northern and Southern Carpathians; however, they are mined unsystematically and depend on conjuncture. The production of these ores is but a few tons per year.

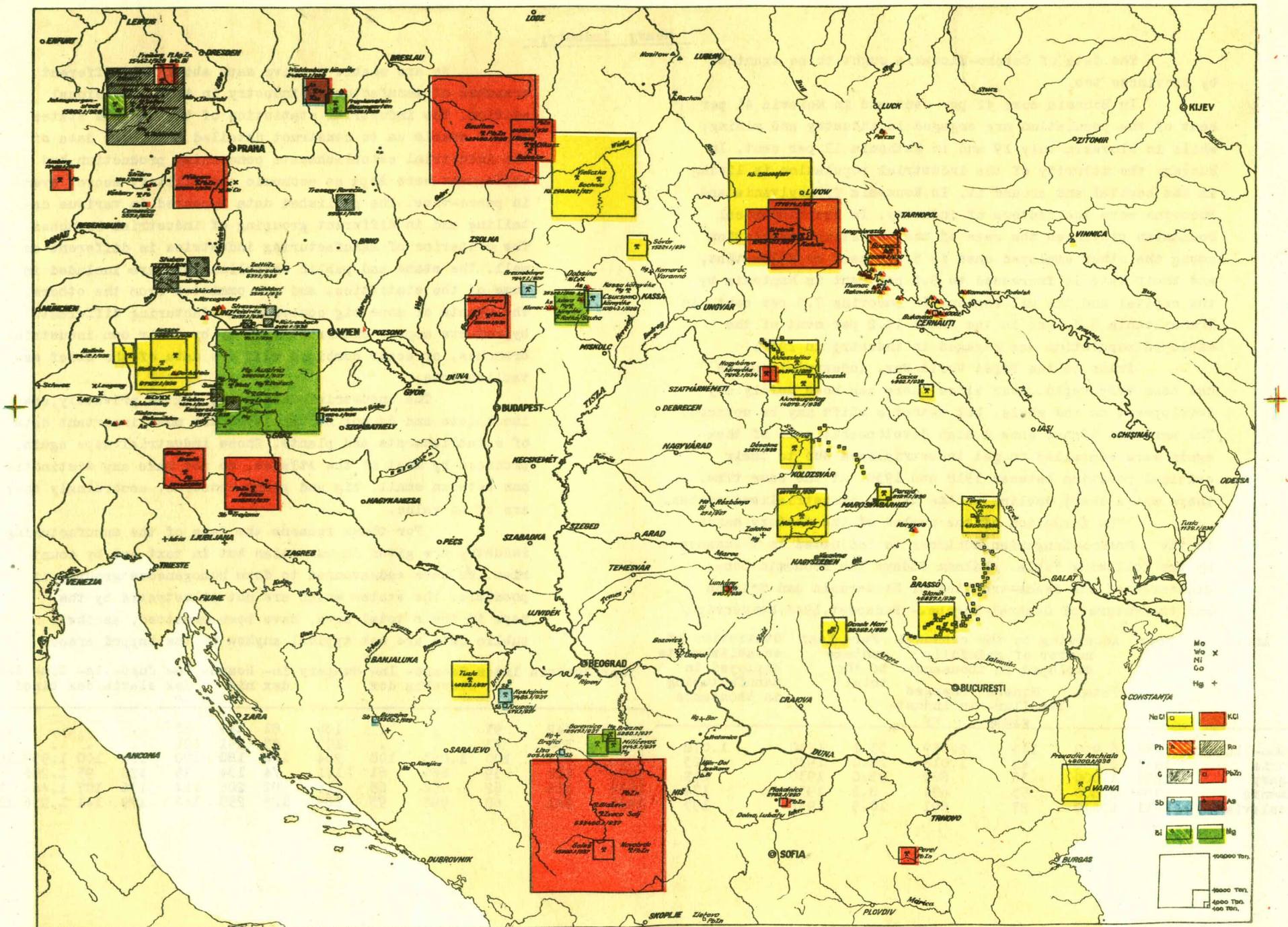
Finally if we cast a glance at the map, we see that the most diversified products are indicated combined in metric tons. The squares of different colour cannot be compared in value to each other. Even from technical point of view of production there are differences among them. For example, the production of mineral salt requires less technical equipment and less special work in mining than the mining carried on in deep veins of ores; again the equipment is greater, for example, in the production of magnesite by open cast. The population density, accessibility, directions of routes, technical equipment, labour conditions are just as important mining economical factors as markets, price conditions, conjuncture.

Apart from the salt-mines of the hilly districts, mining is confined to the highland areas; the expansive plains lying between them are barren; they serve as transportation routes and markets for the mining products.

Our data in lack of uniform statistics date from several years of the period between 1928-1938. We possess very few data as regards the amount of reserves.

By Dr. Francis Szentes.

PRODUCTION OF SALT AND OTHER USEFUL MINERALS



+ 100 Tanno
 □ 1000 Tanno
 □ 10000 Tanno

100 thousand tons

□ mineral salt
 □ potash-salt

□ phosphate
 □ uranium, pitch „blende“

□ * graphite
 □ lead, zinc

□ .S. antimony
 □ .A.S. arsenite

□ .B. Bismut
 □ Mg. Magnesit
 bismouth
 magnesite

Mo. Molybden
 W. Wolfram
 Ni. Nickel
 Co. Kobalt
 +Hg. mercury
 molybdenum
 Wolfram
 nickel
 cobald