

Official No.: C. 18. M. 10. 1939.
Conf. E. V. R. 6.

LEAGUE OF NATIONS

**EUROPEAN CONFERENCE
ON RURAL LIFE 1939**

Technical Documentation

**POPULATION AND AGRICUL-
TURE, WITH SPECIAL REFER-
ENCE TO AGRICULTURAL
OVERPOPULATION**

**CONTRIBUTIONS BY THE INTERNATIONAL
INSTITUTE OF AGRICULTURE**

(DOCUMENT No. 1)

Series of League of Nations Publications

**EUROPEAN CONFERENCE
ON RURAL LIFE**

3

CONTENTS

	PAGE
I. — SOME STATISTICAL DATA ON RURAL DEMOGRAPHY	7
II. — METHODOLOGICAL PROBLEMS ARISING IN THE STUDY OF THE DENSITY OF POPULATION WITH REFERENCE TO AGRICULTURE	18
III. — AGRICULTURAL OVERPOPULATION IN SOME EUROPEAN REGIONS	28
A. — Brief survey of the situation in certain overpopulated regions	28
B. — Symptoms of agricultural overpopulation	48
C. — Remedies for agricultural overpopulation	57
D. — Conclusion	63

POPULATION AND AGRICULTURE,
WITH SPECIAL REFERENCE
TO AGRICULTURAL OVERPOPULATION (*)

(*) This Report has been prepared by Dr. C. J. ROBERTSON, Senior Redactor in the Bureau of Statistics of the I. I. A.

I.

SOME STATISTICAL DATA ON RURAL DEMOGRAPHY

There is no doubt that the conditions of rural life depend largely on the man-land ratio, that is, on the relation in any given region between the number of persons subsisting directly or indirectly from agriculture and the agricultural potentialities of the land utilized. In order to determine this relation in a satisfactory manner it is necessary in the first place to find a realistic statistical expression of each of the elements under consideration. It may then more readily be decided whether the ratio corresponds to such optimum as may be fixed or, if not, in what direction and how far it is removed from the optimum.

The available statistics are not sufficiently extensive and uniform and investigations on this question are not sufficiently advanced to enable the discussion of the problems of rural overpopulation to be at present placed on a sufficiently exact basis. Many difficulties arise in connection with the use of the data for agricultural population or rural population published by the censuses of the various countries. Still greater difficulties are encountered when it is sought to express the productivity of the land in a synthetic form. Finally, the determination of the optimum population is a very complex problem, in which enter not only strictly economic considerations but political and social considerations on which it is difficult to secure agreement.

These different questions, in view of their interest for the problems of rural life, are examined in greater detail in a subsequent section of this report. In this section, taking into account all the qualifications of methodological character that it has appeared desirable to make with regard to the existing statistics, it seems useful to bring together the available data on some fundamental elements of the man-land ratio, in order to see how far it is possible, with due caution, to reach some general conclusions.

* * *

As regards *agricultural population* the following tables give the census data of the European countries for population occupied in agriculture and population depending on agriculture, the latter including both those occupied in agriculture and their dependents. For comparison the data of population in all occupations and of total population are given.

In this table the agricultural population generally includes those occupied in forestry, hunting or fishing but those occupied in fishing have not been included for certain countries (Norway, Sweden, Eire and Portugal) where the number occupied in maritime fishing forms a considerable proportion of the total occupied population.

Members of family helping the head of the family in his occupation are considered as part of the occupied population where the national statistics either include them in the occupied population or give them as a separate group. Women occupied only in household duties are not included in the occupied population. Domestic servants not taking part in agricultural work in the strict sense though employed by persons occupied in agriculture are not considered as belonging to the agricultural population since the majority of censuses place all domestic servants in a separate occupational group and do not include them in that of the head of the family on whom they depend.

TABLE I. — *Population occupied in agriculture* (1) *in European countries* (2)

Country	Year	Occupied population thousand		% population occupied in agriculture to total occupied population
		in agriculture	total	
Germany	1933	9,388	32,622	28.8
Austria	1934	1,004	3,170	31.7
Belgium	1930	638	3,750	17.0
Bulgaria	1926	2,464	3,043	81.0
Denmark	1930	560	1,582	35.4
Spain	1920	4,538	8,094	56.1
Estonia	1934	446	666	67.0
Finland	1930	1,108	1,717	64.5
France	1931	7,704	21,612	35.6
Greece	1928	1,476	2,746	53.8
Hungary	1930	2,031	3,830	53.0
Eire	1926	678	1,308	51.8
Iceland	1930	3) 17	38	44.7
Italy	1936	3) 8,757	18,346	47.7
Latvia	1930	805	1,216	66.2
Lithuania	1923	1,130	1,473	76.7
Norway	1930	3) 336	1,168	28.9
Netherlands	1930	655	3,186	20.6
Poland	1921	10,270	13,523	75.9
Portugal	1930	1,897	3,709	49.0
Romania	1930	8,244	10,543	78.2
United Kingdom:				
Great Britain	1931	1,257	21,055	6.0
Northern Ireland	1926	151	571	26.4
Sweden	1930	1,041	2,872	36.3
Switzerland	1930	413	1,943	21.3
Czechoslovakia	1930	2,675	6,859	39.0
Yugoslavia	1931	5,100	6,478	78.7
Total		74,783	177,120	42.2

(1) Including forestry, hunting and fishing. — (2) The countries are in the French alphabetical order. — (3) Not including fishing.

TABLE II. — *Population dependent on agriculture* ⁽¹⁾ *in European countries* ⁽²⁾.

Country	Year	Population (thousands)		Percentage of the population depending on agriculture in relation to the total population
		depending on agriculture	total	
Germany	1933	13,715	66,029	20.8
Austria	1934	1,842	6,760	27.2
Bulgaria	1926	4,088	5,479	74.6
Denmark	1930	1,109	3,551	31.2
Estonia	1934	663	1,126	58.9
Finland	1930	2,015	3,381	59.6
Hungary	1930	4,499	8,688	51.8
Iceland	1930	3) 39	109	35.8
Italy	1936	3) 18,385	42,445	43.2
Norway	1930	3) 839	2,814	29.8
Poland	1931	19,581	31,196	62.8
Portugal	1930	3,319	6,826	48.6
Romania	1930	13,070	18,053	72.4
Sweden	1930	2,135	6,142	34.6
Switzerland	1930	923	4,066	22.7
Czechoslovakia	1930	5,086	14,730	34.5
Yugoslavia	1931	10,671	13,934	76.6
Total		101,979	235,329	43.3

(1) Including forestry, hunting and fishing. — (2) The countries are in the French alphabetical order. — (3) Not including fishing.

The very relative comparability of these data requires to be insisted upon. It must also be recalled that they refer to each country as a whole and thus in most cases cover very varied regional conditions.

The tables confirm the great significance of agriculture in the economic life of Europe as a whole and at the same time, even if they cannot be taken to indicate the exact rank of each country as regards the relative importance of its population occupied in agriculture, permit the different countries to be grouped in fairly distinct categories.

As regards the part played by agriculture in the European economy — and in consequence the importance of problems affecting European rural life — the data of the first table show that almost half the occupied population of Europe is occupied in agriculture. For the limited number of countries that give figures both of persons occupied in agriculture and of their dependents it may also be stated that almost half the total population depends on agriculture. There is reason to believe that the censuses on which these conclusions are based tend to diminish rather than to exaggerate the real importance of the agricultural population. A not inconsiderable number of those occupied in agriculture or whose occupation is in any case directly connected with agriculture appear in the population censuses under other categories. This is notably the case for

many of those in military service at the time of the census, for Government and other officials engaged in agricultural work and for agricultural workers employed in other industries at the time of the census, which is more often than not in winter.

The relative importance of the population occupied in agriculture in the different European countries is shown in Table III, of which the data, though approximate and imperfect as a basis of comparison, suffice to show that European rural life cannot be regarded as a whole and that there are not merely "two Europes", (1) but at least five.

TABLE III. — *Percentage of population occupied in agriculture (*) in relation to total occupied population.*

Bulgaria	81	Iceland	45
Yugoslavia	79	Czechoslovakia	39
Romania	78	Sweden	36
Lithuania	77	France	36
Poland	76	Denmark	35
Estonia	67	Austria	32
Latvia	66	Germany	29
Finland	65	Norway	29
Spain	56	Northern Ireland	26
Greece	54	Netherlands	21
Hungary	53	Switzerland	21
Eire	52	Belgium	17
Portugal	49	Great Britain	6
Italy	48		

(*) Including forestry, hunting and — except for Eire, Italy and Norway — fishing.

First comes a group in which over three-quarters of the occupied population is engaged in agriculture; this group includes Bulgaria, Lithuania, Yugoslavia, Romania and Poland. Averages such as these indicate a predominance of agriculture practically over the whole of each country. This is "*agrarian Europe*" *par excellence*. Agricultural difficulties in these countries imperil the whole fabric of the State and cannot be neglected with impunity.

Next comes a group in which roughly two-thirds of the population is engaged in agriculture. This includes Estonia, Latvia and Finland and may be termed the *East Baltic group*. The manufacturing and extractive industries account for one-tenth to one-fifth and in the first two countries the bulk of the former are closely connected with agriculture.

In the third group around half of the occupied population is agricultural. This is a group of which the members seem to have little else in common, though

(1) Cf. DELAISI, F., *Les deux Europes*. Paris, 1929.

the presence of Spain, Greece, Portugal and Italy suggests that it might be termed the *Mediterranean group*. It also contains, however, Iceland, Hungary, and Eire. In Spain, Portugal, Hungary and Italy one-fifth to one-third are occupied in manufacturing and extractive industry.

Then comes a group including Czechoslovakia, Sweden, France, Denmark, Germany, Northern Ireland and Norway, in which the percentage engaged in agriculture ranges from two-fifths to one-fourth. Manufacturing and extractive industries, commerce and transport absorb about one-half of the occupied population. These are the *industrial-agrarian* countries. In the majority agriculture is still sufficiently important to have a very considerable weight in national affairs but other interests predominate.

A final group includes the Netherlands, Switzerland, Belgium and Great Britain, countries in which the extractive and manufacturing industries, commerce and transport account for a predominant part (about two-thirds) of the total occupied population and in which the importance of the population occupied in agriculture is consequently relatively limited.

* * *

As regards the second element of the man-land ratio all that can be done with the statistics at present available is to endeavour to determine for each country the area cultivated in the strict sense of the word (arable land and tree and bush crops), the total of area cultivated and permanent meadow and pasture and, lastly, the agro-forestal area as a whole, including uncultivated productive land. The results of these classifications are not uniform, certain marginal classes of land being assigned in some countries to one group, in other countries to another. For example the line of demarcation between meadows included in arable area and those not so included or that between pasture and uncultivated productive land are in practice rather uncertain and both the criteria to be employed and the actual applications in these and similar cases often differ between one country and another. The following table, however, of which the data have for almost all the countries been taken from the International Yearbook of Agricultural Statistics, 1937-38, gives a general and approximate indication of the area and character of the agricultural land in the various European countries.

Save for Norway and Sweden, which have large areas incapable of any agricultural utilization, and for Switzerland and Greece, which have large areas of mountain land, the proportion of agro-forestal land in the widest sense with respect to total land area is fairly uniform for all the countries for which the necessary elements of the calculation are available. This proportion varies from a minimum of 82 per cent. to a maximum of 93 per cent. The relatively inconsiderable differences between some of the countries may depend partly on differences in the respective national statistics in the classification of certain marginal lands of low productivity, which may or may not be included in the agricultural area.

TABLE IV. — *Land utilization in European countries* (1).

Country	Year	Area, in thousand hectares				Percentage of total land area		
		Cultivated area (arable land, tree and bush crops)	Cultivated area, permanent meadow and pasture	Agro-forestral area, including uncultivated productive land	Total land area	Cultivated area (arable land, tree and bush crops)	Cultivated area, permanent meadow and pasture	Agro-forestral area, including uncultivated productive land
Germany	1937	20,202	28,724	43,459	47,071	43	61	92
Austria	1936	2,110	4,357	7,496	8,387	25	52	89
Belgium	1929	1,192	1,907	2,539	3,051	39	62	83
Bulgaria	1936	3,750	...	...	10,315	36	...	...
Denmark	1929	2,686	3,248	3,644	4,293	62	76	85
Spain	1935	19,690	...	...	50,572	39	...	...
Estonia	1937	1,086	2,843	3,773	4,523	24	63	83
Finland	1936	2,564	3,427	²⁾ 28,690	34,848	7	10	82
France	1936	23,204	34,704	50,999	55,999	42	63	92
Greece	1929	2,421	3,585	6,002	12,996	19	28	56
Hungary	1937	5,942	7,569	8,700	9,307	64	81	93
Eire	1937	1,319	4,706	...	6,889	19	68	...
Italy	1936	15,275	21,103	28,550	31,019	49	68	92
Latvia	1937	2,167	3,817	5,564	6,579	33	58	85
Lithuania	1935	2,736	3,876	5,063	5,567	49	69	91
Norway	1937	841	³⁾ 1,032	³⁾ 8,532	30,851	3	³⁾ 3	³⁾ 28
Netherlands	1936	1,065	2,356	2,953	3,293	32	71	90
Poland	1937	19,109	25,585	33,907	38,863	49	66	87
Romania	1937	14,495	18,416	24,752	29,505	49	62	84
United Kingdom:								
Great Britain	1937	4,893	18,533	19,762	22,744	21	81	87
Northern Ireland	1936	454	1,218	1,235	1,356	33	90	91
Sweden	1936	3,771	4,862	27,105	41,024	9	12	66
Switzerland	1936	517	2,198	3,199	4,129	12	53	77
Czechoslovakia	1937	6,029	8,360	12,947	14,051	43	59	92
Yugoslavia	1936	8,095	14,337	22,175	24,754	33	58	90

(1) The countries are in the French alphabetical order. — (2) For forests the area is that of 1923. — (3) Part of the pasture is not included in the agricultural statistics.

When the composition of the agro-forestral area is considered for each country, even according to the larger classes of utilization, very different results are obtained.

With respect to the total agro-forestral area — as indicated in table V — the proportionate importance of the categories under consideration varies from maxima of about seven-tenths for cultivated area (Denmark, Hungary) and for permanent meadow and pasture (Great Britain), and almost nine-tenths for forests and uncultivated productive land (Norway, Finland) to minima of less than one-tenth for cultivated area (Norway, Finland), for permanent meadow and pasture (Sweden, Norway, Finland) and for forest (Great Britain).

* * *

Owing to the differences in the proportions of various land utilizations, with consequent differences in modes of employment of labour, the figures obtained by relating the number of persons occupied in agriculture to the total agro-forestral area do not give any useful indication of equilibrium or disequilibrium between agricultural population and agricultural land in a given country.

TABLE. V. — *Land utilization in percentages of total agro-forestal area.*

Countries	Cultivated area	Permanent meadow and pasture	Forest and uncultivated productive land
Denmark	74	15	11
Hungary	68	19	13
Romania	59	16	25
Poland	56	19	25
Lithuania	54	22	24
Italy	54	20	26
Czechoslovakia	47	18	35
Belgium	47	28	25
Germany	46	20	34
France	45	23	32
Greece	40	20	40
Latvia	39	30	31
Northern Ireland	37	62	1
Yugoslavia	37	28	35
Netherlands	36	44	20
Estonia	29	47	24
Austria	28	30	42
Great Britain	25	69	6
Switzerland	16	52	32
Sweden	14	4	82
Norway ⁽¹⁾	10	2	88
Finland	9	3	88

(¹) Part of the pasture is not included in the agricultural statistics.

Nor are the figures obtained by relating the number of persons occupied in agriculture either to the cultivated area or to the total of uncultivated area and permanent meadow and pasture conclusive (see table VI). If the area cultivated is small the density of population occupied in agriculture is an excessively high figure for those countries with a small proportion of cultivated area with respect to permanent meadow and pasture and an excessively low one for those in which the extent of permanent meadow and pasture is relatively large. If the total of cultivated area and permanent meadow and pasture is taken the picture is distorted in a respectively opposite sense. Neither in the one case nor the other do the figures allow of comparisons and conclusions regarding the actual relations between the number of persons occupied in agriculture and the agricultural potentialities of the country.

Some writers have taken a high proportion of cereal crops, relatively low proportions of feed crops other than cereals, low unit-yields of cereals or low density of livestock with respect to total of cultivated area, permanent meadow and pasture, as symptoms of excessive agricultural population. It has therefore been considered useful to calculate for the various countries the proportions of the area cultivated to cereals or to feed crops other than cereals to the total cultivated area, the numbers of cattle and of pigs per 100 hectares of cultivated land, permanent meadow and pasture and the average unit-yields of cereals. The results are given in tables VII and VIII.

TABLE VI — *Number of persons occupied in agriculture (1) per square kilometre.*

Country	Cultivated area	Cultivated area, permanent meadow and pasture
Germany	46	33
Austria	48	23
Belgium	53	33
Bulgaria	66	...
Denmark	21	17
Spain	22	...
Estonia	41	16
Finland	43	32
France	33	22
Greece	61	41
Hungary	34	27
Iceland	51	14
Italy	57	41
Latvia	37	21
Lithuania	41	29
Norway	40	33
Netherlands	61	28
Poland	54	40
Romania	57	45
United Kingdom:		
Great Britain	26	7
Northern Ireland	33	12
Sweden	27	21
Switzerland	80	19
Czechoslovakia	44	32
Yugoslavia	63	36

(1) For the years to which the data of population occupied in agriculture and those of land utilization refer see tables I and IV respectively. The countries are in the French alphabetical order

The countries with the highest percentages of their cultivated area under cereals are Romania, Yugoslavia, Hungary, Greece and Bulgaria. Whether this is evidence for pressure of population on the land and necessity for devoting a large proportion of the available area to food crops, as is sometimes stated, is doubtful. Much also depends certainly on climatic suitability and economic structure and policy. Romania, Yugoslavia, Hungary and Bulgaria are great cereal exporters, partly owing to their large areas on which climate and soils and, in the past, market conditions have favoured concentration on maize or wheat. The preference of a dense population for food crops may also, of course, be an element in the situation. The obverse of this picture is seen in the very low percentages of area under feed crops other than cereals in these same countries. At the other end of the scale are the countries of maritime climate or relatively infertile soils — Norway, Switzerland, Northern Ireland, Eire, Finland, Sweden — with low percentages of cereals and high percentages of feed crops.

TABLE VII. — *Proportion of cultivated area under certain crops and density of livestock in European countries* (1).

Countries	Percentages of total cultivated area		Numbers of livestock per 100 hectares of cultivated area, permanent meadow and pasture	
	Cereals	Fodder crops other than cereals	Cattle	Pigs
Germany	56	19	71	83
Austria	55	18	54	65
Belgium	51	17	88	52
Bulgaria	67	6	...	...
Denmark	50	43	93	III
Spain	42	5	...	...
Estonia	49	20	22	13
Finland	36	52	55	14
France	46	25	45	20
Greece	67	5	28	17
Hungary	68	14	23	35
Eire	28	58	84	20
Italy	45	16	34	15
Latvia	47	27	32	10
Lithuania	51	21	30	31
Norway	22	69	...	...
Netherlands	52	10	109	71
Poland	60	10	41	30
Romania	78	5	23	6
United Kingdom:				
Great Britain	40	41	43	21
Northern Ireland	24	61	63	43
Sweden	40	64	61	27
Switzerland	23	63	71	40
Czechoslovakia	58	20	59	43
Yugoslavia	76	4	28	22

(1) The countries are in the French alphabetical order.

In the more distinctly agrarian countries like Hungary, Romania, Estonia, Yugoslavia, Lithuania, Latvia, Italy, Poland the densities of cattle and pigs with respect to area of cultivated land, permanent meadow and pasture are low. A similar situation exists in Spain and Bulgaria, though for these countries the absence of data for pasture prevents figures being given. High densities of cattle are also found in countries like Belgium, Germany and the Netherlands, with a relatively large proportion of cultivated area under cereals and a relatively low proportion under feed crops other than cereals but where industrial and commercial development favours the use of imported feeds and of industrial byproducts for the feeding of cattle.

As regards unit-yields of wheat, rye and maize, the agrarian countries with high density of agricultural population — Bulgaria, Greece, Yugoslavia and Po-

TABLE VIII.. — *Average unit-yields of cereals in European countries (1) in 1933-37*
(quintals per hectare)

Countries	Wheat	Rye	Barley	Oats	Maize
Albania	11.1	11.8	11.4	9.9	14.4
Germany	22.2	17.1	20.9	19.9	—
Austria	16.3	14.7	17.3	14.9	24.1
Belgium	26.5	23.9	26.1	26.5	—
Bulgaria	11.9	10.6	13.3	9.0	12.8
Denmark	31.3	17.3	28.4	25.9	—
Spain	9.1	8.6	11.8	8.7	16.7
Estonia	10.9	13.5	9.1	9.5	—
Finland	17.3	15.4	14.1	14.7	—
France	15.3	11.6	14.3	14.0	15.0
Greece	9.1	8.3	9.2	8.0	9.8
Hungary	13.9	11.3	13.5	12.6	18.5
Eire	24.6	18.6	25.1	24.5	—
Italy	14.3	13.7	10.7	12.3	20.1
Latvia	13.2	13.7	10.8	11.2	—
Lithuania	11.8	12.0	11.9	10.7	—
Luxembourg	17.9	16.1	14.9	16.4	—
Norway	19.4	18.3	19.4	20.2	—
Netherlands	29.6	23.3	28.7	23.9	—
Poland	11.8	11.1	11.9	11.5	10.2
Portugal	8.8	6.8	6.0	4.3	7.0
Romania	9.1	9.3	7.4	8.2	9.9
United Kingdom	22.8	16.1	20.6	20.4	—
Sweden	23.6	19.4	20.1	18.2	—
Switzerland	22.2	20.5	18.6	20.5	29.0
Czechoslovakia	17.3	16.2	17.1	16.4	19.6
Yugoslavia	11.1	8.3	9.7	8.9	16.9

(1) The countries are in the French alphabetical order.

land — have low unit-yields. While there are many reasons of a cultural character for such correlation, it must be admitted that climatic factors may also be dominant. The lowest wheat yields, for instance, are in Greece, Portugal, Spain, all at least in part with a rather arid Mediterranean climate and in the Eastern and Southeastern European countries, such as Romania, Estonia, Bulgaria, Latvia, Lithuania and Poland, in which unreliability of precipitation may be a serious factor. The same may be said concerning the low rye yields in Poland, Yugoslavia, Bulgaria and Romania and the low maize yields in Romania and Bulgaria.

It would thus appear that none of the factors considered suffices to characterize with certainty the actual man-land ratio in the different countries; only rather vague indications can be given, requiring to be verified in each case by a careful analysis not only of the demographic factors but of the underlying geographical and economic conditions.

* * *

Finally another factor of great importance, a dynamic element in the man-land ratio, is the movement of the population. As indices of this movement are taken the net reproduction rates as calculated by R. R. Kuczynski for a number of European countries.

When the net reproduction rate, based on present fertility and mortality, is unity, that is, when 1,000 females have 1,000 female children, the existing population is being replaced. The following international table, compiled by Kuczynski, shows that in the "agrarian" countries of Eastern Europe and in the "Mediterranean" countries the population is being more than replaced. In Iceland and the Netherlands, which are also more than replacing their populations, low deathrates rather than high birthrates are responsible.

Net reproduction rates (1).

Above 1.2	Above 1.0 but not above 1.2	Above 0.8 but not above 1.0	Not above 0.8
Bulgaria	Eire	Czechoslovakia	Austria
Greece	Iceland	Denmark	Belgium
Italy	Lithuania	Finland	England and Wales
Portugal	Netherlands	France	Estonia
Romania	Poland	Germany	Norway
Yugoslavia	Spain	Hungary	Sweden
		Latvia	Switzerland
		Luxembourg	
		Northern Ireland	
		Scotland	

Here, again, the data are averages for whole countries. It is well-known, however, that the birthrates among rural populations are in general higher than those among industrial and urban populations, so that, unless rural deathrates are sufficient to cause a correspondingly higher waste, the net reproduction rates in the more predominantly agricultural regions will be above the respective national averages.

(1) KUCZYNSKI, R. R.: The Balance of Births and Deaths. *Geography*, vol. 22, 1937, p. 22-28; GLASS, D. V. and BLACKER, C. F.: Population and Fertility. Population Investigation Committee; London, 1939.

II.

METHODOLOGICAL PROBLEMS ARISING IN THE STUDY OF THE DENSITY OF POPULATION WITH REFERENCE TO AGRICULTURE

In the preceding section there have been indicated the difficulties of placing on a statistical basis the problem of the density of population with reference to agriculture. These difficulties and the questions involved, in regard to agricultural or rural population, the extent, utilization and productivity of agricultural land and the definition of optimum population, are examined in the present section. It has also seemed useful to add some observations on the importance for researches in rural demography of regional studies and local surveys such as are being carried out in several countries.

Agricultural population and rural population.

A clear distinction must be made between agricultural population and rural population.

The definition of agricultural population is, in theory, fairly simple. In the most restricted sense it includes all persons actually occupied in agriculture but in a larger sense it includes in addition the dependent members of their families.

The conception of rural population is more vague. The rural population consists of the total population of districts considered as "rural" but the differentiation of "rural" from "urban" or "industrial" districts is more or less arbitrary. In practice an administrative criterion is adopted in some cases based on the total population of the commune, in other cases based on the degree of agglomeration of the population or on the relative importance of the agricultural population.

The Committee (*) entrusted by the International Statistical Institute with the definition of rural population decided in favour of the last criterion. It proposes, in fact, to define rural population, that is, as distinct from agricultural population, as the total population of all communes, or whatever may be the administrative areas, designated as rural. The designation of rural depends on the proportion of the total population dependent on agriculture in the given administrative area. Rural communes are defined as those in which over 60 per cent. of the total population is dependent on agriculture; mixed communes are those in which from 40 to 60 per cent. are so dependent; urban communes are those in which less than 40 per cent. are dependent on agriculture.

The meeting of the International Statistical Institute (Prague, 1938) that discussed the report recommended that at least the three groups above-mentioned

(*) BUNLE H., Rapport de la Commission pour la Définition de la « Population Rurale ». *Revue de l'Institut International de Statistique*, 60. 1938, n° 2, pp. 229-234.

should be adopted in the census but expressed the opinion that the proposed differentiation should be abandoned, leaving to those using the censuses the choice of definitions suitable for their respective purposes.

This solution would present undoubted advantages, especially from the international point of view, were the occupational censuses everywhere carried out uniformly and were they thus capable of providing comparable data, particularly in regard to agricultural population. On the contrary, however, these censuses present serious differences in their conception.

In part these differences are of a general character, related to certain fundamental principles in the organization of occupational censuses. Several countries endeavour to group individuals according to occupation, whether remunerated directly or indirectly or not remunerated, or even, when necessary, according to the occupation of the family; others take into account principally or solely the population with directly or indirectly remunerated occupation. Only in the first case is it possible to obtain data of agricultural population in the widest sense, namely, including members of family dependent on persons occupied in agriculture.

On the other hand, many countries group individuals according to the industry to which they are attached, independently of the character of their work, while other countries group them according to individual occupation. For the present purpose the difference between the results of these two methods is less important than in other industries; the persons classed under agricultural occupations, in fact, generally fall under the industrial rubric agriculture. However, the coincidence is not perfect.

Variation in the age limit of gainfully occupied population is also a difficulty in international comparison. While Greece and Italy, for example, adopt a lower limit of ten years and Eire one of twelve years, Denmark adopts fourteen years and Norway and Sweden fifteen years as the lower age limit.

In addition to factors reducing the value of international comparisons for all branches of economic activity, there are factors having a serious effect in the case of agriculture in particular. As the League of Nations Commission on the Statistics of Gainfully Occupied Population remarked in its report ⁽¹⁾, the difficulty of obtaining a complete and exact estimate of agricultural population is the principal obstacle to international comparison of gainfully occupied population.

This difficulty is due principally to the fact that members of the family of a person occupied in agriculture are in many cases also occupied in agriculture but in a very variable degree. It is very difficult to lay down rules and still more so to apply them, for the attribution to the occupied population or to other categories—housewives or members of family without occupation, for example—of persons belonging to this large and heterogeneous group. A similar difficulty is presented by persons occupied in domestic work or agricultural holdings but also assisting in the work in the fields, as regards whom it is necessary to decide whether they should be placed in the category of domestic workers or

(1) *Statistiques de la Population Active*. League of Nations, Genève, 1938, p. 8.

in that of those occupied in agriculture. The solutions of these problems differ greatly between one country and another and have a very considerable influence on the results and value of comparisons.

The question of members of family assisting the head of the family may be neglected if agricultural population is taken in the widest sense, including both those actually occupied in agriculture and their dependents; this total, however, cannot be established for many countries where, as already indicated, the census is limited to those persons occupied with direct or indirect remuneration, who are classed according to industry.

The branch of economic activity corresponding to "agriculture" may be defined more or less comprehensively in the different countries according as there are included or not forestry, freshwater fishing and certain agricultural industries, for example.

In the present condition of the statistics comparisons of the data for agricultural population in different countries and in some cases even within the same country can be made only with much reserve and very great care. The same applies and with even greater force to comparisons of rural population.

In this domain efforts for the improvement of the statistics from the international point of view must evidently be intensified. It may be hoped that a useful contribution to this effect may be made by the recommendations that the Committee of Statistical Experts to the League of Nations has recently addressed to the various Governments for the adoption of certain common principles in the carrying out of the coming censuses of population.

Area, utilization and productivity of agricultural land.

The second element in the man-land ratio, in the sense here adopted, consists of the land utilized agriculturally. It is necessary not only to know the total area and its distribution between various uses but to determine its actual productivity by methods capable of general application and of assuring comparable results for all countries and regions.

As regards the distribution of the area utilized agriculturally, the available statistics for many countries allow of the determination of the area of arable land, tree and bush crops, permanent meadow and pasture, forest and cultivated productive land. It would, however, be dangerous to assume that these categories are in all cases similarly constituted.

In particular the inclusion of certain types of meadow in arable land or in permanent meadow and pasture, of certain uncultivated lands in fallow - the latter forming part of the arable land - or in uncultivated land may be made according to different criteria.

Knowledge of the total area utilized agriculturally and its distribution between the larger categories of land utilization gives only a first and very summary indication of the productivity of a given region. As regards productivity of lands comprised in the same category there are frequently great differences between one country and another and within a given country. As an example may be mentioned the difference in the evaluation of "pasture", as understood in

the British statistics, according as England and Wales or Scotland is concerned; in the latter pasture is very largely rough hill grazing not at all comparable with the higher-quality pastures in England. The difference in productivity may be still greater when land belonging to different categories is concerned.

It is thus necessary to consider whether and how it may be possible to obtain for lands utilized for agriculture in different regions and different countries comparable statistical data taking into account their productivity, in the sense of actual and not of potential productivity. Some attempts in this direction have been made in certain countries.

J. Poniatowski⁽¹⁾ has made a calculation for Poland of the total agro-forestral area, using nominal coefficients to convert non-arable land into terms of arable. The coefficients he adopts are as follows: Arable land = 1; orchards and gardens = 3; meadows = 0.4; pasture = 0.2; forests = 0.15. To obtain the total productive area for a given country such coefficients are then multiplied by the area of each of these categories. No doubt coefficients of a similar character can be elaborated for each country and even for each region within the separate countries.

Obviously the most reliable index of actual productivity is production, taking into account seasonal variations, due to meteorological or other factors, that may be eliminated by using averages or some system of "normals" such as that adopted in India. Given the multiplicity and variety of agricultural production it is very difficult to reduce it to a uniform expression enabling the total productivity of a region to be determined and comparisons between different regions to be made.

Reductions of this kind are possible if account is taken of the production of crops used for similar purposes, such as food or feed crops respectively. An attempt has been made in Denmark, for example, to express the quantities of grass eaten in the fields as number of grass-days per cow, based on the reports of the milk testing associations, these values in turn being converted to equivalents in barley. ⁽²⁾ The crop-unit is 100 kilograms of barley and its equivalents in kilograms of other crops are as follows: oats 120, meslin 110, other cereals 100, dried sugarbeet pulp 100, dried mangels 110, dried potatoes 100, hay 250, straw 500. The conversion of crops other than grass and seed crops into units corresponding to the nutrition value of 100 kilograms of barley is generally practised in the Fennoscandian countries. In Finland fodder units equivalent to one kilogram of mixed concentrated feed are also adopted.

For food crops the calorie has sometimes been adopted as common denominator, taking into account the number of calories supplied by each of the products considered.

⁽¹⁾ PONIATOWSKI, J.: Le problème du surpeuplement dans l'agriculture polonaise. *L'Est Européen Agricole*, No. 17, 1936, pp. 21-60.

⁽²⁾ WARMING, J.: Trends in agricultural production in Denmark (Problems of Population: Proc. II Gen. Ass. Intern. Union Pop. Problems, 1932, pp. 59-61).

A basis lending itself to much more general application for the determination of productivity may be found in the price of the products obtained. However, when the endeavour is made to express the productivity in terms of value a new set of complications intervenes. In areas where a large proportion of the crops is used on the holding, either as food or as feed, the calculation of their value can in any case only be very approximate. It may be possible to achieve a certain degree of success by taking typical cash crops as a measure for the entire productivity of the whole. Market values, however, change from year to year and even within a given crop season, not only because of the variations in the relation between the demand and supply but because of monetary changes and changes in marketing organization and in Government regulation of trade by taxes, protective duties, subsidies or other means. When international subsidies or other means. When international comparisons have to be made the difficulties due to the variability of prices and the multiplicity of the factors by which they are affected may become insurmountable.

The price and rent of land are to a large extent, even when readily available for a given period, which is not always the case, subject to similar disadvantages as measures of productivity.

In a few countries data exist for the yield of various land taxes based on what is assumed, largely on the basis of practical experience in the various districts, to be the normal productivity of the land. But when the differences in administrative method of taxation in different areas are considered it becomes obvious that the tax measure is a very imperfect one when comparisons between different areas must be made.

It has thus to be recognized that it is not at present possible to measure the productivity of the land according to internationally applicable standards.

It is clear that this is a very large field for research, in which collaboration between statisticians and many other experts is necessary.

The factors determining productivity fall within the competence of agricultural geography. They comprise not only primarily natural factors such as soil and climate but many human or cultural factors such as technical knowledge, available capital and labour and price relations, and they must all be assumed to be constant during the period of the calculation. The question at issue is how to measure their combined effect. The International Geographical Congress of 1938 took an initiative in this domain, drawing attention to the need for much study in order to resolve the difficulties that are met with in the endeavour to compile indices of productivity. (1) Obviously everything should be done by those interested in the economic basis of rural life and its wider social bearings, particularly as regards the demographic aspects, to encourage and follow up this initiative.

(1) See particularly in the *Comptes Rendus du Congrès International de Géographie*, 1938, Tome II. Section III b. the following papers: GOODSON, J. B.: The appraisal of agricultural productivity (pp. 189-199) and HUNTINGTON, ELLSWORTH: The productivity of the soil (pp. 200-210), as well as the paper by the latter entitled "Agricultural Productivity and Pressure of Population" in *The Annals*, vol. 198, 1938, pp. 73-92.

Optimum population.

Before any real progress can be made in purposive research on the man-land ratio, not only must agricultural population be clearly defined and agricultural area and productivity be calculated in some more or less satisfactory way but some clear idea of optimum population is necessary.

It is obvious that some conception of optimum population is implied in the terms overpopulation and underpopulation. From the agricultural point of view the optimum is the best man-land ratio. In regions where the population is mainly dependent on agriculture and departs very markedly from the optimum, the economic and social conditions of rural life will be unsatisfactory. In Europe the departure from the optimum is generally towards excess and many regions are commonly regarded as agriculturally overpopulated. While there is a consensus of opinion that there is in a number of these regions an excess of agricultural population, there is, however, no definite criterion of overpopulation even as regards a single region and still less when different regions and different countries are compared.

It would be beyond the scope of this report to enter in any great detail into a discussion of the optimum theory of population. Since the definition of the optimum is, however, an essential element in the study of rural demography with a view to discovering how far rural difficulties are due to unsatisfactory relations between the agricultural population and the land, it is necessary to indicate some of the ways in which the discussion of the optimum overlaps with the problem under consideration.

In the first place it must be pointed out that the present discussion refers in every case to actual rather than potential conditions; secondly, that it refers to a certain class of the population, namely, the agricultural population; and thirdly, that the problem of the optimum must be looked at from the regional point of view, always taking into account, of course, the external relations of the region.

From whatever point of view and as regards whatever social class or region, some definition of what is meant by the optimum is necessary. According to Carr-Saunders (1) "for any area under any given conditions this is the point at which the average real income per head is greatest." Fairchild (2); on the other hand, considers that the standard of living, which is, after all, the essential expression of the degree to which the population in a given area is approaching or receding from the optimum, should be measured by expenditure rather than by income since the latter may be in large part absorbed by savings and working expenses. When these factors are taken into account, the difference from the "real

(1) CARR-SAUNDERS, A. M.: Some aspects of the population problem. *Geography*, Vol. 18, 1933, pp. 202-204. See also *idem*: Population. London, 1925, ch. 5.

(2) FAIRCHILD, H. P.: Optimum Population (Proc. World Pop. Conference, London, 1927, pp. 72-85).

income" criterion is not so great as at first appears. He also emphasizes the importance, as an index, of that proportion of the expenditure devoted to cultural requirements as distinct from the basic essentials such as food, shelter, clothing and fuel. To ensure that a given level of consumption is maintained there must of course be a certain apportionment of capital. Only a few of the many components in the standard of living can be objectively measured in the sense that the calories of foodstuffs, for example, can be measured. The determination not only of what are the basic essentials but, still more, of what are to be regarded as the cultural necessities must, as Penrose (1) points out be determined by the method of consensus, that is, by some more or less exact measure of the common opinion.

Gini (2) has criticised what may be called the British and American school of thought on the optimum as not giving sufficient weight to non-material and subjective elements. To some extent such factors may enter into what Dwight Sanderson terms the "subsistence values of farm life", in which he includes not only the food, fuel, shelter and home-made goods produced on the farm but also forms of recreation and leisure-time activities as contrasted with commercial amusements. In the United States elements commonly used for the measurement of the standard of living include electric light and heating, laid-on water supply, telephone, radio, automobile and facilities for participation in organized recreation. When these standards are compared with those of even the most advanced European areas it becomes clear how far the optimum is a regional, or at least a national, matter.

From a national point of view the definition accepted for the optimum may depend largely not only on social policy but on political policy. According to the prevalent social ideals of the Government the optimum aimed at may be the highest level of comfort for the population as a whole or only for a privileged class. Class differences are thus another obvious complication in any estimates of communal welfare. Each class has, in the statistical sense, its own mode of comfort.

A large population may be encouraged for military purposes on the excuse that to ensure future optimum conditions present security must be guaranteed. The importance of large numbers has also been emphasized by Gini (3) from the economic standpoint, particularly with reference to markets, transport developments and land reclamation, as well as from the standpoint of ensuring the wide diffusion of a particular culture. Also, as has been pointed out by another Italian writer (4), it may from the national standpoint ultimately be worth while to sacrifice existing standards of comfort in order to carry through the transition from one type of economy, such as the agricultural, to another, such as the industrial.

(1) PENROSE, E. F.: *Population Theories and their Application*. Stanford University, 1934.

(2) GINI, C.: *Le basi scientifiche della politica della popolazione*. Catania, 1931.

(3) *Op. cit.*

(4) RUGIU, G.: *Teoria della popolazione e politica demografica (Trattato elementare di Statistica*. Vol. II, *Demografia*, Milano, 1933).

The optimum in a country striving for autarky will obviously differ greatly from that in an area enjoying the benefits of access to all sources of supply. The definition of the optimum, it will be seen, thus depends very largely on political and social ideals.

As all the factors in the man-land ratio are dynamic, the optimum itself must also be dynamic, that is, it is always unstable. Most of the discussion on the optimum has been concerned with the quantity rather than the quality of the population. It is assumed that the cultural standards of the population, including, for example, agricultural skill and organization, remain constant. On the contrary, the population factor, like the land factor, changes in value as well as in quantity. Both sides of the man-land ratio are unstable. This instability may be illustrated by the way in which the factors on either side react on each other. Increased skill brings about an increase in resources. The accepted standard of living rises and the higher cultural level resulting from the greater comfort brings a further increase in skill. Whether the optimum population rises or falls it would seem impossible to state on deductive grounds. Much statistical and other analysis of the facts is necessary. As the optimum itself, in the absence of any exact statistical measure, can only be vaguely defined, the statistical position is on the whole at present far from satisfactory. This is not to say, however, that the conception must be abandoned. While world or national optima may be unattainable measures, the combination of many lines of research in smaller regions or even in certain national territories as a whole, may make it possible to arrive at certain measurements of trends in the various factors concerned.

Trends and tendencies have constantly to be studied in order to decide whether particular elements that are generally accepted as critical for the regional standard of living are rising or falling in importance. The synthesis of such information should at least indicate, though possibly not with precision, whether conditions are improving or the reverse, that is, whether trends are in the right direction or not. This information, taken into consideration along with population data, should indicate roughly whether population is moving toward or away from the optimum.

The results of such studies may be of the greatest value not only in the solution of such rural problems as are now under discussion but also in the advancement of the optimum theory.

At present, to determine even the existence of overpopulation in a given region we must, in the absence of any statistical criteria either of the optimum or of departures from it, particularly in the direction of overpopulation, rely on the consensus of opinion and accept as guides what are commonly regarded as symptoms.

Regional studies and local surveys.

Before real progress can be made towards something more than the vague general statements so far current as regards the relationship between agricultural population and the land not only must much preliminary statistical definition

be carried out but intensive regional studies must be made by geographers, sociologists and economists in close collaboration and with the assistance of many other specialists. It is very difficult if not impossible to appraise the regional situation without familiarity with the conditions on the spot, not only with the land, its present utilization and potentiality, but with the people, their capacity and their mentality and the economic, social and political organization of their work. Given the great differences between regions, as regards both their physical conditions and their human element, not only in different countries but within the same country, special study in the field must be accorded to each region. Conditions must be studied not only in the regions where standards of living and the whole relationship between population and land are unsatisfactory but in those in which these conditions may be regarded as exemplary, in order that the experience of the latter may be used for the guidance of the former.

Too much of the literature on this subject, extensive as it is, is devoted to generalizations regarding countries as wholes. In practically no country is the condition of the agricultural population in its entirety either good or bad; on the contrary, conditions of agricultural workers like those in other occupations vary very greatly with class and with region. When data for whole countries are assembled these differences are largely neutralized and the results obscure the problems that are being considered. The general adoption of the regional method is essential for advance in research on the man-land ratio and its adoption in population studies may also be expected to make possible a much more accurate appreciation of the problems of the optimum.

As an example of the possibilities of more localized collaborative study in agricultural communities work now being done in an Eastern European country may be taken. In Romania Professor Dimitrie Gusti of București, working on lines closely akin to those established by Frédéric Le Play and by Patrick Geddes in studying the trilogy of Folk, Place and Work, has organized field investigations since 1925 by groups of experts and students trained in collaborative research. Each field group includes about forty members, amongst whom are economists, agronomists, foresters, medical and veterinary experts, architects, welfare workers and folklorists. Together these form a monograph-squad (*echipă monografică*). The results of their work are published in the *Arhiva pentru știința și reforma socială* and in *Sociologie Românească* ⁽¹⁾. These field investigations are carried on in the summer months. There are also student squads (*echipe studențești*) consisting of from eight to fifteen members and working for three successive years in the same village. Their professional qualifications are similar to those of the monograph-squads; they include not only students but experts from the Ministries who are devoting their summer vacations to the work. The activities of these groups are supervised by the staff of the Prince Carol Cultural Foundation, with which Professor Gusti is also associated, or by the University

(1) See MOSELY, P. E.: A New Rumanian Journal of Rural Sociology. *Rural Soc.*, vol. 2, 1937, pp. 457-465; IDEM: The Sociological School of Dimitrie Gusti, *Soc. Rev.*, vol. 28; 1936, pp. 149-165

of București or the Romanian Social Institute. In 1936 there were 47 squads comprising 477 members, at work. The work consists in first of all making a social survey of the village, on the lines adopted in greater detail by the monograph-squads. The squads do not limit their activities to study but give practical assistance to the peasants and in so doing secure the cooperation of the latter in addition to training them more effectively along lines most necessary for the solution of their own problems. Cooperation is enlisted from the more active peasants and from local professional men and these are trained for local work.

There are obviously great possibilities in other countries besides Romania for collaboration of the type above described, not only amongst experts and students but between these and the agricultural population on the spot. The success obtained by regional survey movements, particularly in Great Britain, in enlisting the support of school teachers and, through them, of school children, in the villages as well as elsewhere, in the study of local conditions is promising. It is a well-known fact, discovered in more than one country, that the schoolchildren may be utilized as missionaries in introducing new ideas into otherwise backward homes and villages. In the more technical field what can be done by enlisting the enthusiasm of the young is demonstrated by the striking success of the Land Utilization Survey in Great Britain, which has been carried out, under expert supervision from a central headquarters, in the main by schoolchildren. The carrying out in this way of such work of social importance is also in harmony with modern educational theory.

III.

AGRICULTURAL OVERPOPULATION IN SOME EUROPEAN REGIONS

The conditions of rural life in a particular region may be unfavourably affected by either excess or deficiency of agricultural population with respect to the agricultural potentialities. In several parts of Europe agricultural underpopulation exists, at least for certain periods of the year. However, in the regions where the agricultural problem is most acute, the population appears generally to be above rather than below the optimum. It would seem useful, therefore, to examine in greater detail the question of agricultural overpopulation in certain European regions.

In the absence of a satisfactory statistical basis the existence of overpopulation can be indicated only through certain phenomena generally recognized as symptomatic. The present report passes under review, in what does not claim to be other than summary fashion, certain regions in which such symptoms are generally considered to exist.

In the first place it has been sought to group these regions according to what appears the most important factor in the overpopulation.

After a description of the conditions in certain regions belonging to the above groups, the real or supposed symptoms of overpopulation, as they are met with in these regions, are passed under review. The principal symptoms discussed are the small size of agricultural holdings, the high proportion of cereals or other food crops with respect to arable area, the low unit-yields, the low densities of cattle and pigs, undernutrition, and cultural stagnation.

Finally some possible remedies are examined, particularly emigration, industrialization and the development of secondary industries. Only in this last chapter have the potential as well as the actual resources of the various regions been taken into account, whether as regards the land or as regards the technical equipment of the population.

A. — BRIEF SURVEY OF THE SITUATION
IN CERTAIN OVERPOPULATED REGIONS.

Two large groups may be distinguished: regions of unfavourable natural conditions and regions in which the difficulties are due to human or cultural factors. The latter group includes regions in which the agricultural population is very dense and in which the community is in very large degree dependent on agriculture and regions in which the agrarian structure is unsatisfactory, besides others with special characteristics. While in the discussion of each region the apparently predominant factors bringing about overpopulation or the tendency to overpopulation are emphasized, it is recognized that in every region a complex of interacting factors is at work.

Regions with adverse natural conditions.

The European regions in which adverse natural conditions are especially apparent as factors in rural maladjustment are generally mountain lands. A series of such regions is found on the Atlantic borders of Europe, in the Western Highlands and Islands of Scotland, the west of Eire, Brittany in France, Galicia in Spain, Minho and Trás-os-Montes in Portugal; the Dinaric provinces of Yugoslavia and the mountain areas of Italy, both Alpine and Appennine, in this respect present analogous features.

The Western Highlands and Islands of Scotland. — This region, comprising the county of Argyll and the western sections of the counties of Inverness, Ross and Cromarty, and Sutherland, is one of rugged topography, exposed to Atlantic storms that bring high precipitation. To the scarcity of level land are added the disadvantages of difficult drainage conditions and poor, acid soils. Pasture is the predominant land utilization and consists mainly of mountain grasses (1).

Sheep-farming was developed in the nineteenth century not only on the unoccupied lands but on much of the area formerly held by smallholders, who were evicted and, from the middle of the century, emigrated in large numbers to Canada, Australia, New Zealand, the United States and Chile. The following table shows the decrease in the population of the four "crofting counties":

	1861	1931	Decrease
Sutherland	25,246	16,100	9,146
Ross and Cromarty	81,406	62,802	18,604
Inverness	88,888	82,082	6,806
Argyll	79,724	63,014	16,710
<i>Total</i>	<i>275,264</i>	<i>223,998</i>	<i>51,266</i>

The remaining smallholders comprise crofters, cotters and squatters. The crofters are supposed to have at least 10 acres (4 hectares), held directly from the landlord or from large tenants, and have rights of common grazing. There has, however, been much subdivision. The cotters and squatters settle on the crofts of others, the former benefiting by subdivision but the latter having no land and no legal rights. In 1935 there were 8,000 smallholders with not more than 5 acres (2 hectares) and the same number with from 5 to 15 acres (2 to 6 hectares) (2). Only subsistence crops, consisting of cereals and potatoes, are grown and unit-yields are greatly reduced by excessive precipitation. The area of all crops has decreased since 1914 and food, including cereals, meat and dairy products, must now be imported into the region. There are few towns or local industries to absorb the surplus population and, despite the Acts of

(1) WOOD, H. J.: *An Agricultural Atlas of Scotland*. London, 1931.

(2) SUTHERLAND J.: *Land Settlement and Industry*. (The Highlands Committee: The Highlands and the Highlanders. Glasgow, 1938).

1886 and 1911 aimed at assisting crofters, the population has continued the decline begun in the first half of the last century. Subsidiary occupations, such as fishing, both herring and inshore, and rural industries, including the local tweed industry, have also declined and the mechanization of agriculture has removed the demand from the Lowlands for seasonal labour in harvesting. Personal services in connection with the luxury sports of deer-stalking, grouse-shooting and angling benefit only a small minority and that in a way, that is frequently socially degrading and in any case the first-named has greatly diminished in importance. In the Islands fishing was, until the competition of the trawler became overpowering, the principal industry and crofting subsidiary. Many of the fishermen are now, however, receiving public assistance.

Since the War of 1914-18 the emigration of the younger elements in the population has increased, while the older elements subsist largely on remittances, on public assistance and partly on the short seasonal tourist trade. The proportion of gainfully occupied to total population is lower than in other parts of Scotland. The older age-groups of the unoccupied population show a relative increase. Though the birthrate is rather above the average for Scotland, the relatively small number of women of reproductive age is bringing about a rapid reduction in the number of children below 14 years of age. Despite their extreme poverty the older elements refused until recently to abandon their crofts, to leave their native districts or work in industrial enterprises, the croft being to them not merely an economic element in their life but also being bound up intimately with their *Wellanschawung*. The Government has taken over a number of sheep farms for the purpose of enlarging existing crofts or making new ones, the sheep being transferred to the crofters under a co-operative system; the purchase of sheep, however, has proved a loss to the Government without being a profit to the crofters and the average croft, even under Government control, remains below subsistence size ⁽¹⁾ ⁽²⁾.

Western districts of Eire. — Like the Western Highlands and Islands of Scotland, the mountainous metamorphic areas of Donegal, Mayo, Connemara and Kerry in the west of Eire are exposed to heavy rains and strong winds from the Atlantic and on the better-drained slopes have only a thin soil, covered with rough pasture and at best suitable only for sheep. Only in some of the valleys is pasture suitable for cattle or is there sufficient shelter to allow forest to grow ⁽³⁾. In 1936 the percentages of agricultural land under pasture, mostly of the rough kind, were in Galway, Mayo, Kerry and Donegal 71, 69, 67 and 60 respectively. Hay, oats and potatoes are the only other crops of much importance. In the three years 1934-36 the yields of oats in Donegal and Mayo were 22.2 and 23.3 against 24.2 quintals per hectare for Eire as a whole.

⁽¹⁾ The State of the Highlands. *Planning* No. 81. 8 September 1936.

⁽²⁾ For a general account of the problem of the Scottish Highlands and a suggestion for a Regional Planning Board see QUICKEV, H.: *A Plan for the Highlands*, London, 1936.

⁽³⁾ STAMP, I. D.: *An Agricultural Atlas of Ireland*. London, 1931.

In contrast to the Western Highlands and Islands of Scotland, this is a region of relatively high population density. In Donegal and Mayo the densities of "country population" (living outside towns and villages of 200 or more inhabitants) to agricultural area ("crops and pasture") are respectively 102 and 93 per square kilometre, and are also high along the southern Ulster border. Densities of population gainfully occupied in agriculture with reference to cultivated area are only 85 for Mayo, 75 for Sligo and 70 for Donegal; the figure for Eire is 45. The high densities in Mayo and Donegal are accompanied by high percentages—45 and 42 respectively—of persons engaged on holdings of from 1 to 15 acres (0.4 to 6 hectares) to the totals engaged on all holdings, percentages that rank high above those in any other county. There is a rather higher percentage of arable on the small holdings than on the agricultural land as a whole, but the still high percentage of rough grazing on these heavily populated holdings means great congestion and severe poverty. In the north, in Donegal, there are no towns of 2,500 inhabitants or over, while elsewhere in this western fringe there are very few towns of that magnitude. Coastal fishing as a means of subsistence is decreasing in importance.

In the last intercensal period, 1926-36, the greatest decreases in total population were in Connacht and the three Ulster counties, areas in which congestion is most notable. In each of these counties except Galway, of which, however, a large proportion is outside the most congested area, the decrease was over 5 per cent. Kerry, also in the congested area, had also a decrease of over 5 per cent. Other counties with decreases of this magnitude were Clare and Longford. The decline in the total population of Eire, which has decreased at each census since 1841, was only 0.12 per cent. from 1926 to 1936; from 1911, the last prewar census, it was 5.46 per cent. The relative check to decrease in total population is due to the practical cessation of emigration, formerly the solution of the problem set by the low productivity of the Irish land. That this falling-off in emigration is not entirely due to external causes is indicated by the fact that the quota of immigrants from Eire allowed to enter United States has not been filled in any year since its introduction (1). This illustrates the commonly observed phenomenon that in periods of general economic depression migration does not increase but decreases. Unless, however, there is either a revival of emigration or an improvement of agricultural conditions within the country, the check in coming years to the decline in the birthrate that has occurred in the recent past will aggravate the problem of congestion. At present the heavy decline in the population of congested areas must be explained by migration to the larger towns, of which Dublin in the 1926-1936 period showed an increase in population of 16.07 per cent.

Brittany. — The Armorican peneplain, composed largely of schists and granites, is also a region of poor and impermeable soils, strong winds and high

(1) Saorstát Eireann, Census of Population, 1926. Vol. 10, General Report. 1934.

precipitation. In the départements of Finistère and Morbihan 20 to 30 per cent. of the area is waste land, partly due to destruction of the soil and partly because of the marsh areas. In Morbihan cereals occupy 58 per cent. of the arable against 46 per cent. for France as a whole. There is a relatively high percentage given over to buckwheat, rye and potatoes, though wheat remains the leading cereal. The yield of wheat in 1935 in Morbihan was only 10.5 quintals per hectare against the average of 14.5 for France; in the other four départements of Brittany yields were also below this average. Though the density of livestock per 100 hectares of agricultural area is high—cattle 87 and pigs 36 in Morbihan against 45 and 20 respectively for all France—the animals are small owing to the lime-poor soil and to the dependence on rather poor pasture rather than fodder crops.

The highest densities of population gainfully occupied in agriculture to cultivated area are in Morbihan, with 58.9 the square kilometre, and Finistère, with 57.6, against 33.2 for France as a whole. One-third of the holdings are under 10 hectares in size. This is a region in which large holdings occupy the greater part of the area. On the coast fishing, market-gardening, especially early vegetables, and the tourist industry offer very important means of subsidiary, and, in many cases, even principal occupation but conditions in the interior are poorer. The density of total population to total area in Armor—the coastlands—is 150 to 200 while in the interior—Arcouet—it is less than a quarter of this ⁽¹⁾.

The birthrate in Brittany is above the average for France. In Morbihan in the decade 1921-31 it was 235 per 10,000 of the 1926 population, in Brittany as a whole 219, while the average for France was only 186. The highest natural increase is in Finistère but that département had also the highest net emigration. While in France as a whole the one-child family is commonest, the modal family in Morbihan, Finistère and Côtes du Nord has two surviving children. In Brittany the highest loss of population was in Côtes du Nord. Large families are frequent in the coastal population, especially on the south coast, but there are in these districts many subsidiary occupations, especially in the deep-sea and coastal fisheries, while there is much part-time work in the shellfish and sardine industries ⁽²⁾.

In this, as in the other regions, the rate of emigration is independent of the birthrate. On the whole emigration now exceeds natural increase in Brittany. The emigrants comprise not only agricultural labourers, including farm domestics, but many who have become small tenants in other parts of France. The opening of communications by rail with the Paris Basin has enabled a large seasonal migration to take place from the interior districts, the so-called Beaucerons working on the cereal crops from May to October. Migration also takes place to urban centres, not only to Rennes, Le Havre and Angers but to Paris. Very large numbers of female migrants from this region are absorbed as domestic servants in Paris ⁽³⁾.

⁽¹⁾ MUSSET, R.: *La Bretagne*. Paris, 1937.

Spanish Galicia. — In Spain a comparable area is found in Galicia, where again very poor soil, a rather humid climate and relative isolation have resulted in agricultural poverty. In this region population is however, rather dense and the fragmentation of the agricultural land, characteristic of much of Spain, has been carried to extremes. On the coast fishing is an important subsidiary means of subsistence and, as in Brittany, population is there denser, but in the interior, where the population depends on the relatively infertile podzols for its living, nutrition is far from satisfactory. Rye, potatoes and cabbages are the principal food crops while the cattle supply butter and cheese and calves, generally sold. In the province of Lugo 48 per cent. of the holdings are smaller than 3 hectares, in Coruña 72 per cent. and in Pontevedra even larger proportions (*).

In this region too, emigration is the only relief. There is normally a large seasonal migration to Castilla for the harvesting of cereals in July and to Aragón for the vintage. Previously there was a large overseas migration, also of a seasonal character, to Argentina for the maize and wheat crop, to Cuba for the cane crop and to Brazil for the coffee picking.

Trás-os-Montes and Minho (*). — The neighbouring areas of Trás-os-Montes and the higher sections of Minho in Portugal show similar conditions. Here, too, the bulk of the area consists of heath-covered granitic uplands, exposed to heavy rains. Only in some of the river valleys are good soils to be found. The principal crops are rye, oats, potatoes and cabbages, though in the more favoured areas maize, vines, olives and other fruit trees are grown. In Trás-os-Montes the population is very sparse but in Minho, with more favourable conditions, it is dense and fragmentation is extreme, there being very many dwarf holdings smaller than 3 hectares; the system of inheritance has accentuated this process. The percentage of rural population to total population rises to 65.3 in Vila-Real and 63.2 in Bragança (the two districts making up Trás-os-Montes), the highest proportions in Portugal. Not far below are the percentages for the two districts of Minho—61.6 for Viana-do-Castelo and 59.9 for Braga. The high birthrate and the absence of alternative means of living, have made not only Trás-os-Montes but the upland areas of Minho centres of emigration both to the south and to the colonies.

Dinaric region of Yugoslavia. — In Yugoslavia the symptoms of overpopulation are most clearly marked in the mountainous Zetska and Primorska banovinas of the west. Much of this region in the northwest is karstic, the agriculturally utilized polja being separated by mountain crests, while towards the southeast is a country of high plateaus deeply entrenched by the valleys.

(*) DOBBY, E. H. G.: Galicia: A Little-Known Corner of Spain. *Geogr. Rev.* vol. 26, 1936, pp. 555-580; *Idem*: Agrarian Problems in Spain, *ibid.* vol. 26, 1936, pp. 177-189.

(*) See especially LAUTENSACH, H.: Portugal, II. Teil: Die portugiesischen Landschaften. *Peterm. Mit.*, 1937, Erg.-Heft 230.

precipitation. In the départements of Finistère and Morbihan 20 to 30 per cent. of the area is waste land, partly due to destruction of the soil and partly because of the marsh areas. In Morbihan cereals occupy 58 per cent. of the arable against 46 per cent. for France as a whole. There is a relatively high percentage given over to buckwheat, rye and potatoes, though wheat remains the leading cereal. The yield of wheat in 1935 in Morbihan was only 10.5 quintals per hectare against the average of 14.5 for France; in the other four départements of Brittany yields were also below this average. Though the density of livestock per 100 hectares of agricultural area is high—cattle 87 and pigs 36 in Morbihan against 45 and 20 respectively for all France—the animals are small owing to the lime-poor soil and to the dependence on rather poor pasture rather than fodder crops.

The highest densities of population gainfully occupied in agriculture to cultivated area are in Morbihan, with 58.9 the square kilometre, and Finistère, with 57.6, against 33.2 for France as a whole. One-third of the holdings are under 10 hectares in size. This is a region in which large holdings occupy the greater part of the area. On the coast fishing, market-gardening, especially early vegetables, and the tourist industry offer very important means of subsidiary, and, in many cases, even principal occupation but conditions in the interior are poorer. The density of total population to total area in Armor—the coastlands—is 150 to 200 while in the interior—Arcouet—it is less than a quarter of this (1).

The birthrate in Brittany is above the average for France. In Morbihan in the decade 1921-31 it was 235 per 10,000 of the 1926 population, in Brittany as a whole 219, while the average for France was only 186. The highest natural increase is in Finistère but that département had also the highest net emigration. While in France as a whole the one-child family is commonest, the modal family in Morbihan, Finistère and Côtes du Nord has two surviving children. In Brittany the highest loss of population was in Côtes du Nord. Large families are frequent in the coastal population, especially on the south coast, but there are in these districts many subsidiary occupations, especially in the deep-sea and coastal fisheries, while there is much part-time work in the shellfish and sardine industries (1).

In this, as in the other regions, the rate of emigration is independent of the birthrate. On the whole emigration now exceeds natural increase in Brittany. The emigrants comprise not only agricultural labourers, including farm domestics, but many who have become small tenants in other parts of France. The opening of communications by rail with the Paris Basin has enabled a large seasonal migration to take place from the interior districts, the so-called Beaucerons working on the cereal crops from May to October. Migration also takes place to urban centres, not only to Rennes, Le Havre and Angers but to Paris. Very large numbers of female migrants from this region are absorbed as domestic servants in Paris (1).

(1) MUSSET, R.: *La Bretagne*. Paris, 1937.

Spanish Galicia. — In Spain a comparable area is found in Galicia, where again very poor soil, a rather humid climate and relative isolation have resulted in agricultural poverty. In this region population is however, rather dense and the fragmentation of the agricultural land, characteristic of much of Spain, has been carried to extremes. On the coast fishing is an important subsidiary means of subsistence and, as in Brittany, population is there denser, but in the interior, where the population depends on the relatively infertile podzols for its living, nutrition is far from satisfactory. Rye, potatoes and cabbages are the principal food crops while the cattle supply butter and cheese and calves, generally sold. In the province of Lugo 48 per cent. of the holdings are smaller than 3 hectares, in Coruña 72 per cent. and in Pontevedra even larger proportions (1).

In this region too, emigration is the only relief. There is normally a large seasonal migration to Castilla for the harvesting of cereals in July and to Aragón for the vintage. Previously there was a large overseas migration, also of a seasonal character, to Argentina for the maize and wheat crop, to Cuba for the cane crop and to Brazil for the coffee picking.

Trás-os-Montes and Minho (2). — The neighbouring areas of Trás-os-Montes and the higher sections of Minho in Portugal show similar conditions. Here, too, the bulk of the area consists of heath-covered granitic uplands, exposed to heavy rains. Only in some of the river valleys are good soils to be found. The principal crops are rye, oats, potatoes and cabbages, though in the more favoured areas maize, vines, olives and other fruit trees are grown. In Trás-os-Montes the population is very sparse but in Minho, with more favourable conditions, it is dense and fragmentation is extreme, there being very many dwarf holdings smaller than 3 hectares; the system of inheritance has accentuated this process. The percentage of rural population to total population rises to 65.3 in Vila-Real and 63.2 in Bragança (the two districts making up Trás-os-Montes), the highest proportions in Portugal. Not far below are the percentages for the two districts of Minho—61.6 for Viana-do-Castelo and 59.9 for Braga. The high birthrate and the absence of alternative means of living, have made not only Trás-os-Montes but the upland areas of Minho centres of emigration both to the south and to the colonies.

Dinaric region of Yugoslavia. — In Yugoslavia the symptoms of overpopulation are most clearly marked in the mountainous Zetska and Primorska banovinas of the west. Much of this region in the northwest is karstic, the agriculturally utilized polja being separated by mountain crests, while towards the southeast is a country of high plateaus deeply entrenched by the valleys.

(1) DOBBY, E. H. G.: Galicia: A Little-Known Corner of Spain. *Geogr. Rev.* vol. 26, 1936, pp. 555-580; *Idem*: Agrarian Problems in Spain, *ibid.* vol. 26, 1936, pp. 177-189.

(2) See especially LAUTENSACH, H.: Portugal, II. Teil: Die portugiesischen Landschaften. *Peterm. Mit.*, 1937, Erg.-Heft 230.

On the mountains only the summer grazing of sheep is possible, while in the valleys and polja oats and barley are grown, with some fruit trees on the lower slopes. The pastures have only a low capacity for livestock, still farther reduced by overgrazing (¹). In Primorje the density of cattle to productive area is only half that for Yugoslavia as a whole, being 17 against 35 per square kilometre in 1931. In Zeta, on the other hand, with 39, the density is above the general figure. The cattle are a poor mountain breed, giving at best only low yields of milk. The grazing areas have also been reduced by the pressure of population, at least in the plateau region of the southeast. On the densely populated coastal and valley areas, small and dwarf holdings predominate. In Primorje the density with respect to arable area is 301 and in Zeta 264 (1931) (²). Of the holdings in Primorje 13.78 per cent. are insufficient to cover the food requirements of the occupier and in Zeta 59.5 per cent. The League of Nations report on "Nutrition in the Various Countries" contains striking evidence of the scarcity of food in these regions (³). In 1932 in 129 arrondissements, comprising a population of 4,567,000, more than half of the total peasant families had not enough food to last them until the next harvest. In 83 of these arrondissements, with 2,524,000 population, the area and yields of agricultural crops are insufficient to feed the local population. These are the so-called passive arrondissements. They have a lower percentage of arable to total area than the averages for the respective banovinas; in Zeta this percentage is 6.25, in the passive arrondissements against 9.39 for the whole banovina. In Zeta there are only 23.98 hectares of arable land per 100 population in the passive arrondissements against 31.70 in the banovina. Not only are unit-yields in these arrondissements too low for food requirements, the production of cash crops, such as fruit, olives or wine, is insufficient for the purpose of buying the necessary supplies. While in Primorje the coastal districts find subsidiary occupation in fishing and the tourist trade, in these regions as a whole emigration is the only outlet for the surplus population. Internal migration is directed to the coastlands or to the lowlands of the great rivers to the north and northeast. Seasonal migration for harvesting on the plains can be carried out before the crops are ripe in the mountains (⁴). Before the War there was a large emigration to the United States and subsequently outlets were found in Australia and Latin America. A feature of this emigration was the frequency with which the migrants returned to purchase land with the savings accumulated abroad, with the result that prices of land soared and working peasants could not obtain land (⁵).

(¹) MILOJEVIĆ, B. Ž.: Le surpeuplement de la région dinarique montagneuse. *Bull. Soc. belge d'Etudes géogr.* (republished in *I. Rapp. Comm. surpopulation*. Union Géogr. Intern., 1934).

(²) FRANGEŠ, O.: Über das Problem der relativen Übervölkerung in Jugoslawien. *Archiv Ministers-twa poljoprivrede*, vol. 5, 1938 (in Croat, with summary in German).

(³) Nutrition. Vol. 3, Nutrition in the Various Countries. League of Nations, Genève, 1936.

(⁴) MILOJEVIĆ: *op. cit.*

(⁵) GOLL, H.: Das jugoslawische Küstenland als Wirtschaftsraum. Wien, 1932.

Regions of adverse natural conditions with demographic balance.

That it is possible to bring about a satisfactory man-land ratio in regions of difficult natural conditions is demonstrated by the Fennoscandian countries – Finland, Sweden and Norway – and by Iceland and The Faeroes, all countries of unfavourable climate, soil and, for the most part, location.

It cannot be said that in these countries any area suffers from agricultural overpopulation in such a way as to produce serious poverty. In the more infertile areas, however the difficulties of securing a living from the soil are sufficient to lead to a fairly large emigration to countries where life is easier. There are no high densities of population and the agricultural population is concentrated, as far as the more mountainous regions are concerned, in the valleys or on the coasts. Much of the area is under forest, which, like fishing in the coastal areas, is a very important subsidiary means of subsistence.

In Norway 80.7 per cent. of the holdings are not more than five hectares in size, not including areas of forest or of mountain meadow and pasture. The existence of rights of pasturage or of timber makes the question of whether a holding is self-sufficient or not a very difficult one; even the larger peasants depend on the forests for the maintenance of their standard of living. In Sweden the situation is similar. On the whole the area of forest or pasturage necessary as an adjunct to a given amount of arable land increases northwards. The density of population is correlated with the percentage of open country as distinct from forest. The principal centre of emigration from Sweden is Värmland. Finland has in the past had one of the highest emigration rates in Europe; its principal centre of emigration was the Bothnian provinces. In the country as a whole two-fifths of the holdings are less than three hectares in size, and there are many landless labourers. Emigration rose to a maximum early in the century.

Altogether, in these countries, though the agricultural population must struggle for a living in physical conditions of severe difficulty, it cannot, thanks partly to industrial and commercial initiative and high standards of social organization and, in Fennoscandia, partly to emigration, be said to be excessive.

Regions with very great dependence on agriculture and with high birthrate.

As the table in an earlier section shows, there is in Europe a tendency to greater dependence on agriculture eastwards, so that there is a belt of States on the eastern and southeastern borders of Europe in which two-thirds or more of the gainfully occupied population is agricultural. In Bulgaria the percentage rises to 81, in Lithuania and Yugoslavia it is 79 and in Poland 76. Unless there are large areas unutilized but relatively easily convertible to agricultural purposes, such a degree of dependence means, with increasing population, great pressure on the land as a means of subsistence. If this applies to each of these countries as a whole, it applies with greater force to special regions within them. In fact, these are in large part countries in which on European standards the rate of increase of population remains exceptionally rapid.

One of the most striking features of the demographic map of Europe is the increase in birthrate and net reproduction rates toward the east and towards the Mediterranean. Kuczynski's figures of net reproduction rate, that is, the extent to which existing females replace themselves by surviving female children, show rates higher than unity for Bulgaria, Romania, Yugoslavia, Lithuania, Poland, Greece, Portugal, Italy, and Spain (*).

How far the differences in rate of population increase are of a genetic character and how far they are cultural is a problem that presents great difficulties. In any case, the situation remains that in certain countries and particularly in certain regions of those countries the pressure of population on the land appears to be due predominantly to human fertility rather than to other elements in the man-land ratio. When, as in some of these regions, the natural conditions of land utilization such as climate and, to a large extent, soil, are also adverse, the maladjustment is seriously aggravated and calls for the most drastic modifications in the cultural elements of the ratio, such as agricultural technique and social and economic organization. Among the countries that in whole or in part suffer from agricultural overpopulation due predominantly to high natality are Lithuania, Poland, Carpatho-Ukraine, Slovakia and Bulgaria.

The Subcarpathian Lowland of Poland. — In Poland there is a very well-marked geographical boundary running diagonally across the country from north-west to south-east. Poor as the agricultural population is in the north-eastern half with its drier climate, shorter frost-free period, poor soil and lower cultural development, the condition of much of the population in a number of regions south-west of this line is, despite the moister climate, the longer frost-free period, the on the whole good or average soil and the more advanced cultural development, even worse (*).

The densest agricultural population with reference to cultivated area is found in the Subcarpathian Lowland, stretching along the northern base of the Carpathians, through Kraków, Lwów and Stanisławów. In the województwo of Kraków densities of agricultural population (including dependents) with respect to cultivated area are over 100 in 13 out of 17 districts, rising to over 130 in seven districts and to over 150 in two, Bochnia and Zywiec. In 26 districts of the województwo of Lwów the density is over 100 in all save three, over 130 in six, and over 150 in two. Of 10 districts of the województwo of Stanisławów three have densities above 130, the maximum of 146 being found in Sniatyn. This is a zone of rich loess soils, with high percentages of wheat and fodder crops to total arable area and a dense population of dairy cattle. (*) Unit-yields, however, are low and there is a constant deficit of wheat with reference to the dense population.

(*) See page. 17.

(*) See GORZUCHOWSKI, S.: Some Aspects of Rural Poland (Polish Countrysides. *Amer. Geogr. Soc. Spec. Publ.*, No 20, 1937, pp. 90-113).

The following table shows the average yields of wheat and rye for 1928-37 in quintals per hectare in four of the districts with highest population density, with the yield of all Poland for comparison.

	Wheat	Rye
Poland	11.8	11.2
Bochnia (Kraków)	9.6	10.5
Krosno (Lwów)	9.1	9.9
Brzozów (Lwów)	8.6	9.7
Nowy-Sacz (Kraków)	5.1	9.1

From one-half to two-thirds of the agricultural holdings are smaller than 2 hectares in size and from 80 to 90 per cent. are smaller than 5 hectares. The area in holdings of not more than 2 hectares is 20 per cent. of the total while that in holdings of over 2 hectares but not more than 5 hectares is 27.8 per cent. in Kraków and 23.2 per cent. in Lwów. The former Austrian inheritance laws favoured excessive division of holdings. There is a very great dispersion of parcels.

The effects of agricultural overpopulation are accentuated by the relatively poor development of other industries in this region. Generally over 75 per cent. and in some parts over 85 per cent. of the population is agricultural. It is from this zone that Polish transoceanic emigration has mainly derived. Previous to the Great War it was directed mainly to the United States of America but, with the check to emigration into that country, was diverted principally to Canada and Argentina.

Since the establishment of the Republic and the development of a national economic policy the growth of the extractive and manufacturing industries, particularly in the years immediately preceding 1929, and the stimulus to urbanization have led, in Poland as a whole, to a certain decrease in the proportion of the population dependent on agriculture. A decline in the birthrate and a rise in the deathrate have acted in the same direction. In 1931 those occupied in agriculture made up, together with their dependents, 60.6 per cent. of the total population.

Oberländer calculates the surplus agricultural population of Poland in 1931 as 5,158,000 gainfully occupied in agriculture and 8,455,000 dependent on agriculture, that is, 43 per cent. of the population dependent on agriculture. For Kraków he calculates the excess of active agricultural population as 66.5 per cent., for Lwów as 62.3 per cent., for Stanisławów as 60.2 per cent, and for Tarnopol as 57.6 per cent. Over half of the agricultural holdings are insufficient for family subsistence. As most of this excess population remains on the family holdings, it forms a hidden unemployment. (*)

Agrarian reform has been carried out in Poland as the partitioning of the large estates, of which 2,535,600 hectares were broken up in 1919-1938, and 826,300 hectares, mainly in the western and central województwos, were still to

(*) OBERLÄNDER, T. : Die agrarische Übervölkerung Polens. Berlin, 1935.

be redistributed under the agrarian reform law. (1) In this way it has proved possible, for example, to settle a large number of peasants from the overcrowded southern provinces in Pomorze. There are also available about 1,300,000 hectares of collective and other estates that might be utilized for increasing the size of very small holdings. The process of redistribution includes both the internal migration of surplus population to new holdings, and the consolidation of parcels.

Emigration is calculated to have reduced the 1921-31 natural increase of the population by 40 per cent. The great prewar emigration to the United States was only partly replaced by increased postwar facilities for emigration to France, Canada and Argentina.

Southeastern districts of Lithuania. — In the southeastern districts of Lithuania high natality is accentuated in its effects by the physical conditions of the country, which is here of an infertile morainic character and suffers from a severe climate with from five to six months winter. About 35 per cent. of the holdings are smaller than 8 hectares and small holdings are particularly prevalent in Trakai and Ukmergé, the districts of densest rural population with reference to cultivated area and both emigration areas, in the east. (2)

The following are the numbers of rural population (excluding towns of 2,000 and more inhabitants) per square kilometre of cultivated area (not including holdings of one hectare and under) in certain districts of the southeast and for Lithuania as a whole:

<i>Lithuania</i>	67
Trakai	75
Ukmergé	75
Alytus	71
Utena	70
Zarasai	68
Rokiskis	67
Vilkaviskis	64
Seinai	58

Unit-yields are low. Little fertilizers are used. The following table gives the yields of rye in quintals per hectare for 1933-35 for Lithuania as a whole and for certain southeastern districts:

<i>Lithuania</i>	12.4
Alytus	10.4
Seinai	10.2
Trakai	9.6
Ukmergé	11.4
Utena	9.3
Zarasai	8.8

(1) JAZOWIECKI, A.: La Question démographique et l'agriculture en Pologne. *Rev. Intern. Agric.* Vol. 29, 1938, pp. 370-380 E.

(2) PAKSTAS, K.: L'émigration lituanienne et ses causes. *C. R. Congr. Intern. Géog.* 1938, tome II, sect. III a, pp. 51-64.

In these eastern districts conditions of nutrition and health and the general cultural level are unsatisfactory. The chief centres of emigration are in the southeast, particularly in the districts of Alytus and Vilkaviskis, which are also districts of high birthrate. In other important emigration districts of the southeast, such as Trakai, Rokiskis and Utena, this correlation is not so clear. There is a seasonal summer emigration to Latvia, where large holdings and small families result in a demand for labour. Permanent emigration is mainly to Klaipeda, with the development of industry at that port, and overseas, principally to Brazil, Argentina and North America. (1)

Carpatho-Ukraine. — The rump territory of Carpatho-Ukraine consists almost entirely of mountain land, with skeletal soils on the greater part of the area and a band of podzols on the Subcarpathian hills. By far the greater part of this area is in the fodder zone, according to the Czechoslovak system of agricultural zoning. Only a narrow strip of the cereal zone, broader in the Borsava basin, remains north of the new frontier. Forests, principally beech, cover half the area. In the fodder zone less than half of the area is cultivated and of this less than half is arable. Pasture and meadow cover about one-third of the area; they include the *poloniny* or alps above the forest line. Sheep and the grey-brown Carpathian cattle are reared for milk. The small arable area is used for subsistence crops.

Within the former boundaries of Podkarpatská Rus there was at the 1930 census 70.6 per cent strictly agricultural population, including dependents, to the square kilometre of cultivated area. The following table gives the density of the strictly agricultural population, including dependents, per square kilometre of cultivated area, in 1930, in those districts remaining within the new frontiers.

Chust	101
Iršava	141
Perečin	125
Rachov	60
Svalava	99
Tačovo	121
Vel'ky Berezny	125
Volove	63

The high figure in Iršava may be related to the fact that the district lies in the cereal zone. Unit-yields of wheat are, however, exceptionally low, having been only 6.8 quintals per hectare in the year of the agricultural census. The percentage of cereals to total arable area was 70 against 61 for all Czechoslovakia in 1930. Taking the same district as an example, the numbers of cattle and of pigs per square kilometre of agricultural area are also very low, only 38.7 and 26.9 respectively, against 69.4 and 35.8 for Czechoslovakia (former frontiers).

(1) PAKSTAS, K. *Op. cit.*

The proportion of small holdings of not more than 5 hectares in size is over three-quarters. This proportion is uniform throughout the country. Emigration was formerly in the main to Hungarian towns or to other foreign countries, particularly Belgium, France, Canada, Argentina and the United States. About nine-tenths of the emigrants were under 40 years of age (¹). Seasonal movements are linked particularly to the cereal harvest in July and August and the lifting of sugar-beet in the autumn in Moravia, Bohemia or (before the War of 1914-18) Hungary. That postwar migration was not sufficient to counteract the effects of high birthrate was shown by the increase in density between the 1921 and 1930 censuses. It is also indicative that while Bohemia showed an increase in total population between 1921 and 1930 of only 6.5 per cent. the population of Carpatho-Ukraine increased by 20.0 per cent. despite emigration.

In the eastern section of the Tisza plain an area of very high density has been transferred to Hungary.

Slovakia. — As in Carpatho-Ukraine the rural population in Slovakia showed a continued increase in the intercensal decennium 1921-30. The proportion of the total population depending on agriculture is highest along the northern mountain-rim and in the west. The northern Carpathian area mostly forms part of the fodder zone, while the west lies in the cereal and potato zone and the sugar-beet zone. Of the cereal zone there remain within the new frontier only a small section north of Bratislava and, further east, narrow strips bordering the foothills.

The most important area of high density is in the northwest, on the Moravian border, comprising the following districts in the upper Váh basin, the strictly agricultural population, including dependents, to the square kilometre of cultivated area being given:

Považká Bystrica	171
Mesto Kysucke Nove	150
Púchov	145
Vel'ká Bytča	137
Žilina	135

The predominant soil types here are podzolic sandy loams and the area lies in the cereal and potato zone according to the Czechoslovakian classification. Myjava, further to the southwest, with a density of 127, also belongs to this zone. The moderate climate allows good crops of barley and wheat to be obtained while on the poorer gravelly soils of the higher areas rye, oats and potatoes are grown. Cereals cover 50-60 per cent. of the arable area in these districts. On the mountains pasture and meadow are sufficient to support a fairly dense cattle population. Lower down the Váh valley, on the alluvial loams and brown forest soils south of Trenčín, sugar-beet becomes the dominant crop and high population densities (Nové Mesto nad Váhom 141; Trenčín 120) are supported with greater ease.

(¹) THIRRING, G.: Les mouvements d'émigration dans l'ancienne Haute-Hongrie. *Journ. Soc. Hongr. Stat.*, vol. 10, 1932, pp. 282-323.

The poor development of agricultural and other industries, apart from localized wood and textile industries in some of the basins in Slovakia, as in Carpatho-Ukraine, accentuates the pressure to migrate. In the years 1922-30 the percentage of migration to 1930 population was 4.8 in Slovakia against 2.5 in Carpatho-Ukraine, 1.2 in Moravia and 1.0 in Bohemia (in all cases the old frontiers). In proportion to population, the heaviest emigration has been from Nitra and Trenčín. High birthrate is again the dominant factor. In Slovakia as a whole, despite emigration, the increase in total population in 1921-30 was 11.1 per cent. against 6.5 per cent. in Bohemia. The emigration movement from Slovakia, which began in the decade following 1880, when the competition of American cereals began to be severely felt in Czechoslovakia, has been on similar lines to that from Carpatho-Ukraine (*).

Bulgaria (*). — Bulgaria is more dependent on agriculture than any other country in Europe. In 1934, including dependents, no less than 78.53 per cent. of the population was agricultural, and this figure shows only a slight decline from the 80.88 per cent. of 1910 and the 81.11 of 1887. Though since the War of 1914-18 industries such as flour milling textiles, cement and coal-mining have undergone appreciable development and there has been an influx of population into the five largest towns, almost four-fifths of the population still remains in the compact villages characteristic of the countryside or in the clusters of farmhouses south of the Rhodope, on the north slope of the Stara Planina, and in the mountains west of Sofia. Even in the small towns the greater part of the population depends on agriculture. Of the total agricultural population in 1926 the proportion gainfully occupied was 60 per cent. This great dependence on agriculture is unfortunately accompanied by relatively poor soils, a somewhat irregular climate and a high birthrate, a combination of circumstances that make agricultural overpopulation a problem of great severity.

The country has on the whole a low and rather irregular precipitation, the area lying immediately south of the Danube having, in fact, a transitional steppe climate, while a broader zone of the Danube platform further south has a transitional continental climate. Rainfall is frequently torrential and hail in June and July causes much damage. Crop yields in the principal areas, that is, the Danube platform, thus undergo great fluctuations. The soils are poor in nitrogen and phosphoric acid. A remarkably large proportion of the arable area is left fallow. There is little manuring, partly because manure is scarce, owing to the relatively small number of livestock and their rather poor feeding, to the system of grazing and to the burning or selling of dung to the garden areas. Im-

(*) See POHL, J.: La dépopulation des campagnes en Tchécoslovaquie après la guerre mondiale *C. R. Congr. Intern. Geogr.* 1938, tome II, sect. III a, pp. 76-82.

(*) See especially BATAKLIYEV, I.: La Production agricole en Bulgarie en relation avec le sol et le climat. *C. R. Congr. Intern. Geogr.* 1938, tome II, sect. III, b, pp. 174-188. — MOLLOFF, J. S. ed.: Die sozialökonomische Struktur der bulgarischen Landwirtschaft. Berlin, 1936 (particularly KIROFF, K.: Klimatische Charakteristik Bulgariens, pp. 9-20; STRANSKI, I. T.; Die Böden, pp. 21-30; WAŻAROW, P. Die Bevölkerung Bulgariens, pp. 49-66; EGOROFF, P.: Die Arbeit in der Landwirtschaft, pp. 131-160).

plements are on the whole primitive, there being relatively few iron ploughs. Capital is scarce, the country having suffered from three wars in a period of fifteen years. With the growth of population there has been an extension of the sown area, unit-yields remaining stationary and very low.

Taking the country as a whole, the higher densities of agricultural population, including dependents, to cultivated area are in the higher-altitude areas of the southwest and centre.

Remarkably high densities are found in the hill country between the Rhodope and the Greek frontier, in the valleys tributary to the Arda. This is an area of medium-podzolized forest soils, low in humus and nitrogen, and of skeletal soils, both poor types but warm, friable and easily worked. In some places these soils are, however, relatively rich in potash and calcium and this, together with the Mediterranean features of the climate, particularly in the eastern and western sections of the belt, make the region suitable for the production of tobacco, especially of the high-quality *Jebel-basma* type which was stimulated in the years following the War of 1914-18 by the temporary decline in Greek and Turkish production.

The highest densities of agricultural population, including dependents, with respect to cultivated area are in Ardino (483), Zlatograd (420) and Smolyan (341). High figures are also found to the east of this in Krdzhali, Momchilgrad and Krumovgrad (all over 250) and to the west, as far as the middle Struma valley, in Dyevin, Nevrokop, Svyaty Vrach and Petrich. Tobacco is the most valuable crop grown in the south. As the only other crop possibilities are the poorer cereals and potatoes and the region has not the great advantage of having urban markets for secondary products and surplus labour, conditions would, but for the tobacco crop, be extremely unsatisfactory. In the period 1924-34 this was, however, except for Svyaty Vrach, in the Struma valley, which had a net immigration, an area of heavy emigration on balance. The emigration in this period was most marked in Krumovgrad and Tsvailovgrad, in the Arda valley.

The following table shows the yields of wheat in 1932-33 in quintals per hectare in four of the most densely populated districts, in comparison with the average for the country as a whole:—

Bulgaria	12.04
Smolyan	9.08
Zlatograd	9.00
Krdzhali	8.04
Ardino	5.10

The Bulgarian Upland belt, extending from Trn and Sofia southward along the Yugoslav frontier is one of podzols and skeletal soils, relieved by the alluvium and rendzinas of the Kyustendil, Radomir and Dupnitsa basins. In the Sofia basin itself black humus-high clays occur. Density of agricultural population, including dependents, rises to 136 in Dupnitsa.

There is a heavy net emigration from the rest of the Upland to Sofia and the more densely populated sections depend on the metropolitan market, to which they supply vegetables and fruit; the meslin, rye and oats crops, which are dominant in this region, are insufficient for local requirements.

From the Sofia basin east-north-eastward along the line of the Stara Planina as far as Preslav, and over the central section of the Danube platform as far as Svishchov, similar densities extend, rising to over 130. This is a zone of forest podzol loams on the Stara Planina, with brown forest loams to the north, while, where it extends farther north, it traverses the chernozoms and chestnut steppe soils of the Danube platform. Between the Stara Planina and the Sredna Gora and Sarnina Gora the alluvial soils of the Karlovo and Kazanik basins have a similar density. Kazanik has a density of 120. Gabrovo and Kazanik are distinguished from other parts of the region by having a net immigration, the former being in a coal basin and having woollen and cotton industries and the latter having a particularly intensive agriculture, famous for its production of roses for essential oil.

Similar densities—between 100 and 120—are also found in the tectonic depression of the Maritsa from Ikhtiman through Pazardzhik and Plovdiv to Borisovgrad and Khaskovo. Here the only centre of immigration is the town of Plovdiv.

On the greater part of the Danube platform densities are lower—below 100. This is the principal wheat, barley and maize area, the wheat crop being mainly for export, the maize for food and feed within the country. Almost no manures are used and unit-yields are low in comparison with those in other countries, precipitation being low and variable. This is an area of net emigration except for Nikopol, Pleven, Kudrat and the town of Russe. The lowest densities in Bulgaria occur in Varna and the southeast, from Burgas as far west as Stara Zagora, but this too is an area of net emigration.

The proportion of holdings not larger than 5 hectares increased from 57.0 per cent. in 1926 to 63.1 per cent. in 1934. Of the total population permanently occupied in agriculture 46 per cent. were in 1926 on holdings of not more than 5 hectares and a further 32 per cent. of holdings of from 5 to 10 hectares. It is estimated that hardly 53 per cent. of the available agricultural labour is occupied and that there is a surplus of from 700,000 to 1,000,000, though only 250,000 of these are actually unemployed, larger amounts of labour being utilized than would correspond to the very low crop yields. In Bulgaria emigration is a characteristic feature not only of the areas with a very dense population but from those which are not so densely populated and relatively more fertile. Much of the migration has been to the towns for the purpose of supplementing the earnings of the small holdings. With increasing restrictions on migration abroad, the movement to the towns was intensified. In Bulgaria there is a surplus of men over women but the proportion of women to the total population occupied in agriculture rose from 49.04 per cent. in 1910 to 52.45 per cent. in 1926, partly because of loss of manpower in war and partly because of greater emigration of males to the towns or abroad. Emigration abroad has been stimulated by the difficulties due to three wars, by the influx of refugees in particular and

the agricultural crisis. Of the total net emigration of 44,260 to foreign countries in 1927-34, about 10,000 went to South America. Romania, Hungary, Austria and Czechoslovakia were the European countries absorbing the most of the other emigrants.

Regions subjected to influx of refugees.

Mass migration under compulsion of physical or political calamity is distinguished by some writers as an exodus rather than an emigration. Such wholesale movements of population, owing to their sudden character and the rarity with which areas open for pioneer settlement in mass are available, result in serious maladjustments of the man-land ratio in the regions of immigration to which they are directed. Europe after the War of 1914-18 and its immediate aftermath supplied two striking examples of such refugee movements, affecting Bulgaria and Greece respectively. Both are countries relatively poor in natural resources and had already very high density of agricultural population to cultivated area; in respect to density they head the list amongst European countries ⁽¹⁾ and are also in the group of countries with highest net reproduction rate ⁽²⁾. Refugee settlement thus rendered an already serious situation more acute.

According to the report ⁽³⁾ of the Refugees Survey carried out by Sir John Hope Simpson, Bulgaria ⁽⁴⁾ has received in all 251,309 emigrants as a result of the Great War; 121,677 of these were from Greece, the others from Turkey, Yugoslavia and Romania. On the other hand the 30,000 Greeks who left Bulgaria as a result of the Convention signed in 1919 at Neuilly were mostly town-dwellers, so that they left no vacant land for the newcomers. The little vacant land available required drainage, irrigation or deforestation ⁽⁴⁾. In Greece the special effects of the influx are more readily isolated, the settlement of the refugees having apparently brought about overpopulation in central Macedonia.

Central Macedonia. — According to the preliminary report ⁽⁵⁾ on refugees the ten years of wars from 1913 to 1923 led to an immigration of 1,300,000 refugees from Turkey, Bulgaria, and the U. S. S. R., of whom 47 per cent. were agricultural. The greatest immigration took place after the destruction of Smyrna in September 1922, which resulted in the arrival of nearly a million refugees in a few months. On the other hand, by the subsequent exchange agreement, only 370,000 Moslem Turks had left Greece by October 1934. The Refugee Settlement Commission settled 170,000 agricultural families, comprising over 650,000 individuals in Greece, mainly in Macedonia and Thrace.

⁽¹⁾ See table on page 14.

⁽²⁾ See table on page 17.

⁽³⁾ SIMPSON, J. H.: *Refugees: Preliminary Report of a Survey*. London, 1938.

⁽⁴⁾ *Idem*: *The Refugee Problem*. London, 1939, p. 25.

⁽⁵⁾ SIMPSON, J. H.: *Refugees: Preliminary Report of a Survey*. London, 1938.

In central Macedonia the soil on the plains is of average quality while on the slopes it is rather poor and dry. The refugees received 12.5 stremmes on the plain and 21 stremmes on the slopes, in all 33.5 stremmes (3.3 hectares), of arable with an additional 2.3 hectares of pasture, for each family of four. Most of these refugees took up the traditional but irrational system of cropping of the region, which consists of growing cereals, mainly, oats, barley and maize, year after year without rest and without manure. The result is that the fertility of the soil has been exhausted. The heavy mortality and incapacity due to malaria had an inevitably depressing affect on efficiency.

The very unreliable climate reduces the average yield and makes the position still more precarious as regards food and feed. Wheat yields only 9 quintals per hectare and maize only 15.5. The bulk of the production is consumed on the holdings, only a small surplus of cereals and a calf being generally available each year for sale. Only in certain districts do some villages specialize in more profitable cash-crops such as tobacco, vegetables and fruit.

The deficit on the cereal-growing holdings has been met by means of casual labour on the drainage and other reclamation works that have had to be carried out on the swampy and malarious plains, while small domestic industries have also offered an additional means of subsistence. The pressure of population on the land since the influx of refugees has resulted in the reclamation of much land that was previously either entirely undeveloped or used only for grazing. (1)

Overpopulation due to agrarian structure.

Central and Southern Spain (2).—Agriculture in the centre and south of Spain in dominated by *latifundios*. Holdings over 250 hectares in size occupy 46 per cent. of the area surveyed in the Región Betica, (Jaén, Córdoba, Sevilla, Cádiz, Huelva) 43 per cent. in the Región Penibética (Granada, Málaga), 39 per cent. in the Región Manchega (Ciudad Real, Toledo, Albacete) and 36 per cent. in the Región Extremeña (Salamanca, Cáceres, Badajoz); in Cádiz, Ciudad Real and Sevilla they occupy over half the area. Latifundia are thus at their maximum in Andalucía. To this predominance of large estates corresponds a large class of very poor seasonal labour, much of it entirely landless, and the rest occupying only extremely small holdings. In 1930 holdings up to 10 hectares in size numbered 99.58 per cent. of the total in the Región Castellano-leonesa, where they made up 66.08 per cent. of the area surveyed; in all the area surveyed (27 provinces) 98.06 per cent. of the holdings were not more than 10 hectares and they cover 35.72 per cent. of the area. In these areas about three-quarters of the fields are less than 0.2 hectares in size.

(1) ALIVISATOS B. B.: *La Réforme Agricole en Grèce*. Paris, 1932; BOYAZOGLU, A. J.: *L'Economie rurale de la Grèce d'après guerre*. Paris, 1931.

(2) See especially CARRIÓN P.: *Los Latifundios en España*. Madrid, 1932; DOBBY, E. H. G.: *Agrarian Problems in Spain*. *Geogr. Rev.*, vol. 26, 1936, pp. 177-189.

With such an agrarian structure and its accompanying economic risks and with the severe climate that prevails over much of central Spain, resulting in great fluctuations in unit-yields that are in any case, owing to the poor soils and extensive, one-crop system of the *latifundios*, very low, agrarian distress is very severe, under-nutrition is prevalent, and bad sanitary conditions are accentuated by agglomeration of the population in the large villages. Before the War of 1914-18 there was a large seasonal emigration, especially from Leon, Salamanca, Zamora, Cáceres, and Badajoz, to Argentina for the maize and wheat harvests, to Cuba for the cane-cutting and to Algeria. From the more northerly areas emigration was directed partly to the industrial centres of Catalunya, partly across the frontier to France, where it was mainly absorbed by the vineyards of Hérault and Roussillon or by the mines, factories and public works in the centre and north.

Poznanía. — In Poland the high percentage of emigration from Poznanía and Mazowsze would also appear to be due largely to the agrarian structure, though this is an area where the technical conditions of agriculture are very different from those in the Spanish regions just discussed. Though the prevailing soils—podzols and alluvial—of the gently undulating plain of Great Poland are not very fertile there is a high percentage of arable, which, with skilled methods, is made to give high unit-yields of sugar-beet and wheat (¹). There is a wheat surplus despite the relatively small area under the crop and the fairly dense population. Holdings of over 100 hectares cover more than half the area. The system of agriculture, partly through the economic organization of the large estates and partly through the seasonal character of the demand for labour, results in seasonal alternations of labour shortage and excess, with local unemployment and low wages. While industrial development is fairly large and only from 60 to 70 per cent. of the population is agricultural, emigration is the most important outlet for the surplus. Permanent emigration is directed principally to France; formerly the large seasonal emigration was to Germany.

Hungary (²). — In Hungary 69 per cent. of the holders have not more than 5 joch (2.9 hectares), that is, not enough for family subsistence. A further 15 per cent. have not more than 10 joch (5.8 hectares). A distinction is made between the small farmers, who have enough land for family requirements, and the dwarf landowners, who generally have not enough. It is from the latter class together with the landless, that the migrants are drawn; thanks to increasing birth control the numbers of the small farmers remain nearly constant. Since the beginning of the century there has been a great movement of the landless and the dwarf landowners on the Alföld to settle on the communal land (*tanya*), either in the capacity of agricultural labour for the farmers in those

(¹) See GORZUCHOWSKI, S.: Some Aspects of Rural Poland (Polish Countrysides, *Amer. Geogr. Soc. Special Publ.* No. 20, New York, 1937, pp. 90-113).

(²) See BEYNON, E. D.: Migrations of Hungarian Peasants. *Geogr. Rev.*, vol. 27, 1937, pp. 214-228.

areas or simply as squatters. The Great Alföld is a region for the most part of sands and alluvial loess with chernozom and the principal crops are wheat and maize. The holdings received as the result of the agrarian reform were not more than 5 joch (2.9 hectares) in extent and consequently inadequate for subsistence. One consequence of this has been the growth of a system akin to share-cropping, and accompanied by much indebtedness.

Without taking into account the territories recently taken over from Czechoslovakia, the comitats with the largest numbers of agricultural population, including dependents, to the square kilometre of cultivated land are as follows:

Zala (Dunántul)	92
Heves (Eszak)	85
Zemplén (Eszak)	78
Sopron (Dunántul)	76

The highest population densities are in the west and it is from the western comitats, in particular Veszprém, Zala, Vas and Somogy, that migration to Budapest and to America has taken place. Women are predominant in the urban migration.

A Western European region of dense agricultural population: Eastern Flanders.

High density of agricultural population, accompanied by signs of overpopulation, is found, under conditions very different from those in any of the groups already considered, in Eastern Flanders, which has long been a region of emigration. Here, in Western European conditions and in a highly industrialized country with a dense net of communications, the general social and geographical relations of agriculture cannot be compared with those in the other regions in which there appears to be agricultural overpopulation.

Eastern Flanders is the area of densest agricultural population in Belgium. The following table shows the densities of agricultural population excluding dependents per square kilometre of cultivated land.

Eastern Flanders	70
Antwerpen	61
Brabant	57
Limburg	45
Western Flanders	42
Hainaut	37
Liège	29

Here there is the highest percentage of holdings under 5 hectares and there is much fragmentation.

Soils are sandy and poor or only moderately fertile, particularly in inner Flanders as distinct from the coastal belt, where fertile alluvial soils of recent formation are found. In Eastern Flanders, rye and potatoes are dominant crops. For good yields these sandy soils require much manuring and chemical fertilizers and much labour. The occupiers use the greater part of their cereal and other crops for feed and obtain their cash income mainly from livestock.⁽¹⁾ The densities of cattle and of pigs are high, being respectively 142 and 150 against 100 and 68 per square kilometre of cultivated area for Belgium as a whole.

Since 1880 immigration into Belgium on the whole has exceeded emigration but the "communes agricoles" have lost ground by migration. Seasonal emigration, particularly to France in spring and summer for the brick works and the sugarbeet crop, a migration composed almost entirely of male landless labourers, is principally from Eastern Flanders. These are the so-called "Franschmans". There are relatively fewer "communes industrielles" in Eastern Flanders than in Western Flanders, and the "rural population" is also much more predominant in Eastern Flanders. There is also a migration to the urban and industrial centres of Belgium such as the Borinage, the Campine, the Charleroi and Liège coal basins, the Namur, Amblève and Ourthe quarries, the metallurgical district of Athus and the slate quarries of Luxemburg. A large part of the population travels every day or every week to industrial areas not only in Belgium but in France. Many migrants have settled permanently in France and there has also been a certain emigration to North America⁽²⁾.

B. — SYMPTOMS OF AGRICULTURAL OVERPOPULATION.

The object of this chapter is to bring together some of the features that are common to at least several of those regions in which there appears to be agricultural overpopulation.

The actual density of agricultural population is not in itself a sign of how far that population departs from the "optimum". The following table shows how great the variations are, even allowing for differences in statistical method, between the "overpopulated" regions of various countries.

The differences in natural and cultural conditions between the various countries are so great that international comparison may readily be misleading. The same caution applies to a certain extent to interregional comparison within the same country. As the optimum remains somewhat vague and unstable a summing up of certain common features of these apparently overpopulated regions may serve to indicate what may be regarded as symptoms of agricultural overpopulation.

⁽¹⁾ BLANCHARD, R.: Flanders. *Geogr. Rev.*, vol. 4, 1917, pp. 417-433; FROST, J.: *Agrarverfassung und Landwirtschaft in Belgien*. Berlin, 1909.

⁽²⁾ RONSE, E.: *L'Emigration saisonnière belge*. *Geot. n. d.*; NICOLAI, E.: *La dépopulation des Campagnes*. Brussel, 1919.

*Agricultural population (including dependents) per square kilometre
of cultivated area, in certain districts.*

Ardino (Stara Zagora)	483	Zala (Dunántul)	92
Zlatograd (Plovdiv)	420	Heves (Eszak)	85
Dupnitsa (Sofia)	136	Zemplén (Eszak)	78
Kazanlk (Stara Zagora)	120	Sopron (Dunántul)	76
Bulgaria	98	Hungary	68
Primorje (1)	301	Mayo (Connacht) (3)	85
Zeta (1)	264	Sligo (Connacht) (3)	75
Yugoslavia (1)	151	Donegal (Ulster) (3)	70
Považka Bystrica	171	Eire (3)	45
Mesto Kysucke Nove	150	Trakai (4)	75
Púchov	145	Ukmerge (4)	75
Vel'ká Bytča	137	Alytus (4)	71
Slovakia	81	Utena (4)	70
Bochnia (Kraków)	150 +	Lithuania (4)	67
Zywiec (Kraków)	150 +	Eastern Flanders (3)	70
Lwów (2 districts)	150 +	Belgium (3)	43
Sniatyn (Stanisławów)	146	Morbihan (3)	59
Poland (2)	79	Finistère (3)	58
Iršava	141	France (3)	33
Perećin	125		
Vel'ká Berežny	125		
Tačovo	121		
Carpatho-Ukraine	103		

(1) Total population with reference to arable area. — (2) Not including Wilno and Silesia. —

(3) Not including dependents. — (4) Population outside towns of 2000 or more inhabitants; cultivated area not including holdings of not more than one hectare.

Small size of agricultural holdings.

A common feature of these regions in which there is pressure on the available agricultural land is the great reduction in size of the typical holdings by successive subdivision, resulting in the so-called "dwarf" holdings. Another feature that is common to many of these regions is fragmentation of the holdings, the dispersion of individual holdings in small parcels, owing partly to the endeavours of the holders to supplement their small areas by the acquisition of further pieces of land. Not only are the holdings too small for economic operation, they are too small for subsistence. Comparison between different regions as to actual size of holdings is for several reasons not very fruitful. In the first place is the statistical difficulty that the various countries do not in every case adopt the same size categories and in their censuses may even omit all holdings below a certain size, say one hectare. Then, while on the one hand the productive capacity of the land may obviously vary greatly between

region and region and subsidiary sources of income may or may not be present, on the other hand standards of living also vary greatly. It is not possible, therefore, to generalize as regards the size of holdings necessary for subsistence of a family, even assuming that the size of family were a constant, which it is not. Nevertheless, a figure taken in a number of countries as the size of holding roughly necessary for subsistence is five hectares, a system of mixed husbandry in which cereal crops are dominant being generally assumed.

As far as the regions that have been considered in the previous chapter are concerned, the most severe conditions of subdivision are those in the Subcarpathian Lowland of Poland, where from 80 per cent. to 90 per cent. of the holdings are smaller than five hectares and from one-half to two-thirds are smaller than two hectares. In Carpatho-Ukraine (old frontiers) three-quarters of the holdings are less than five hectares and in Slovakia (old frontiers) 65 per cent. Though the lowest category given in the Spanish statistics is that up to ten hectares, the severe climate of the central meseta probably places that figure near the minimum required for family subsistence. In that case the situation in the 27 provinces comprised in the cadastral survey of that country is even worse than in the Eastern European regions, for no less than 98 per cent. of the holdings are smaller than ten hectares, and in the Región Castellano-leonesa even 99.58 per cent. In the Galician region of difficulty the district of Coruña has 72 per cent. of its holdings under 3 hectares. In Hungary 69 per cent. of the holdings are not more than 2.9 hectares in size and the proportion under six hectares is about 85 per cent.; the holdings established under the agrarian reform, which have an area of not more than three hectares, have proved in practice to be generally inadequate and to involve the necessity of finding subsidiary means of subsistence. The same result has followed from the adoption in Central Macedonia of 3.3 hectares as the amount of arable land (with an additional 2.3 hectares of pasture) for a refugee family of four. In the Western Highlands and Islands of Scotland the standard of roughly 4 hectares adopted on paper by the Government as the crofter holding has in practice been reduced by the existence of squatters and cotters on the croft. In Eire the congested districts of Mayo and Donegal show 45 per cent. and 42 per cent. respectively of holdings less than six hectares, while in Brittany one-third are less than ten hectares. In Lithuania 35 per cent. of the holdings are smaller than eight hectares.

Within a particular country the areas of apparent agricultural overpopulation show in general a higher proportion of smaller holdings than the average for the whole country. The figures for Slovakia may be taken as illustration.

	% holdings under 5 ha.
Slovakia (old frontiers)	65.2
Považská Bystrica	70.3
Púchov	71.4
Veľká Bytča	71.7
Žilina	72.5

In Bulgaria comparison of a densely populated region such as Plovdiv shows the same phenomenon, the percentage of holdings not above 10 hectares in 1934 being 20.7 in that region against only 13.5 in Bulgaria as a whole.

High proportion of arable area under cereals or other food crops.

It is sometimes stated that one symptom of agricultural overpopulation is a high percentage of food crops, or a high percentage of cereal crops, in the total arable area.

The statistics of all the regions that have been discussed witness to the high proportions of cereal crops or of food crops in general. The interpretation of this as a sign of agricultural overpopulation, however, is, though plausible, open to doubt. In the first place the disproportionate utilization of the arable land for cereals is in some of these regions, especially in Hungary and Bulgaria and on the Spanish meseta, favoured by the climate. Reasons of national commercial policy may also in some countries dictate a high proportion of area under cereals. Lack of good communications may also operate, especially in some mountain regions, in causing a high proportion of the available arable area to be under food crops. In such a case low unit-yields may be an additional argument for putting the largest possible area under food crops. In other regions the alternative use of cereals for feed rather than food, a matter for the elucidation of which statistics are unfortunately not available, may vitiate the argument. In Eastern Flanders, for example, the greater part of the cereal crops is certainly utilized as feed. In the regions that have been classed as having adverse natural conditions — the Western Highlands and Islands of Scotland the western districts of Eire, Brittany, Spanish Galicia and the neighbouring districts of Portugal, the Dinaric lands of Yugoslavia — it is also true that practically all the arable land is utilized for crops — cereals or potatoes or both — classed as human subsistence crops, but in these regions the large areas of rough grazing have provided an easy source of feed for livestock. These large areas of pasture, poor as it generally is, have discouraged a more rational utilization of the small arable area. It remains true, of course, that decreased reliance on these pastures of low capacity and the cultivation on the arable of a certain proportion of feed crops, for which, at least in the regions of the Atlantic borderlands, the climate is suitable, would improve not only livestock but the yields of food crops from the arable. The gradual introduction of arable animal husbandry in the agriculturally overpopulated regions of Eastern Europe would also no doubt raise the total productivity of the land. In the Subcarpathian Lowland of Poland for example, the cropping system consists of rye and wheat sown in the autumn, oats, barley and potatoes in the spring, while in the following year the land is fallow.

While the evidence is open to different interpretations when international comparisons are made, it remains significant that within a number of countries and over areas in which the natural conditions and the proportions of cereals used respectively for food and feed probably do not vary considerably, the

percentage of the arable under cereals is definitely higher in the regions of overpopulation.

In Bulgaria, for example, the district of Krdzhali, with a density of agricultural population to cultivated area of 280, has 83 per cent. of its arable area under cereals against the 72 per cent. for Bulgaria as a whole. Something similar is seen in Carpatho-Ukraine, where the district of Iršava (density 141) had 69.6 per cent. of its total arable under cereals in 1930 against the 60.7 per cent. of the then Czechoslovakian Republic.

To this high percentage of cereal crops there corresponds on the other hand a low percentage of arable feed crops other than cereals. In the district of Krdzhali above mentioned this percentage falls to 3 against 17 for Bulgaria as a whole; in that country Zlatograd, also in the densely-populated southern region, offers a further example with only 9 per cent.

Low unit-yields.

As regards unit-yields, the most widely-grown cereal, wheat, may be taken as illustration. That low unit-yields are common to practically all the regions under consideration is shown by inspection of the statistics. In not all cases, however, are the unit-yields in the apparently overpopulated regions lower than the averages for the respective countries.

Amongst the regions with adverse natural conditions, Brittany shows in Morbihan a wheat yield of 11.9 quintals per hectare against the average of 15.9 quintals for France as a whole in 1932-36. Unit-yields in the other regions of the same group are also low. In Eastern Europe the agriculturally overpopulated regions show in every case the same phenomenon. In Poland for 1928-37 the four districts given in the table on page 37 have an average of 7.6 quintals against the national average of 11.8 quintals a hectare. In Lithuania for winter wheat in 1933-35 the average for the six southeastern districts given in the table on page 38 was 11.2 quintals against the average of 13.1 quintals for the whole country. In Carpatho-Ukraine the densely-populated district of Iršava had in the year of the agricultural census (1928) a yield of 6.8 quintals per hectare against the averages of 11.1 and 18.6 for Podkarpatská Rus and Czechoslovakia. In Bulgaria the four densely-populated districts given in the table on page 42 had an average yield of 7.8 quintals against the all-Bulgarian average of 12.0 quintals.

In the regions of adverse natural conditions, whether of soil or climate, as is the case on the Atlantic fringe of Europe, from the Western Highlands and Islands of Scotland in the north, through the western districts of Eire and Brittany, to the northwestern regions of Spain and Portugal, the low unit-yields of wheat may be due largely to these conditions and have little direct connection with the density of the population. Similarly, in the Eastern European regions especially, while soil and climate may be more suitable for wheat and even go far to explain the important part it plays in land utilization, the oscillations of climatic factors from year to year may be responsible for great irregularity in unit-yields and also for lowering the average.

That the low average yields in the Subcarpathian Lowland of Poland are partly due to climatic fluctuations is shown by the percentage deviations from the average unit-yield of wheat in 1928-37, which were 19.8 in Lwów and 17.7 in Kraków, against 12.7 in Poland as a whole. The following are the absolute data of wheat yields for the period 1928-37 for Lwów and Kraków:

	In quintals per hectare	
	Lwów	Kraków
Average	9.6	9.6
Maximum	11.7	11.4
Minimum	4.8	4.9

That these fluctuations do not entirely explain the low level of unit-yields is demonstrated, however, by the fact that even the maxima for Lwów and Kraków, respectively 11.7 and 11.4 quintals per hectare, remain below the average yield for all Poland, which in the same period was 11.8 quintals per hectare.

In Bulgaria in the ten years ending 1935-36 the percentage deviation from the average unit-yield of wheat for the same period was 14.4. The following table gives the average, maximum and minimum for the ten years for winter wheat:

	Quintals per hectare	Percentage deviation from average
Average 1926-27/1935-36	11.30	—
Maximum 1930-31	14.11	24.9
Minimum 1928-29	8.42	25.5
Average deviation	1.63	14.4

All these East European countries and, to a still greater extent, the regions under discussion, have a very high percentage of their total population dependent on agriculture. From this point of view a study made from a slightly different angle by V. Klonov is of great interest. On the basis of data for seventeen countries (Europe and the U. S. S. R.) Klonov has investigated the correlation between unit-yields of cereals and percentage of population living by agriculture. For these seventeen countries he finds a negative correlation. In other words unit-yields of cereals are lower in the more purely agricultural countries than in the more industrialized countries (¹). The greater dependence on the soil and the consequent pressure of agricultural population in certain districts are no doubt, for some of the reasons already discussed, important factors in lowering the unit-yields. Not only does the high proportion of cereals and the low proportion

(¹) KLONOV, V.: Le développement de l'industrie et la densité de la population en tant que facteurs du progrès dans l'agriculture. *Actes XVI Congr. Intern. d'Agric.* Budapest, 1934, Vol. 2, pp. 91-96; *idem*, Recherche statistique sur la relation entre la productivité agricole et la densité et structure de la population *Statistický Obzor*, vol. 18, 1937, pp. 31-46 (in Czech, with summary in French).

of feed crops mean an unsatisfactory system of rotation, with inadequate recuperation of the soil, but the greater cost of commercial fertilizers and of machinery in less industrialized countries, especially in those regions which, like many of the overpopulated regions under discussion, are somewhat distant from the main lines of communication, has the effect of reducing the possibilities of technical improvement. The general low standard of living in the more purely agricultural countries, especially in the more densely-populated areas, also involves lower skill, the general cultural standard being severely affected by the struggle for mere subsistence from the soil. The absence of stimulus from industrial and urban markets towards improvement in the product of agriculture may also be adduced as a factor in the situation. There is, in short, a vicious circle, the low yields of agriculture being one of the factors preventing that accumulation of capital necessary for the introduction of technical improvements and the general raising of the standard of living.

Low density of livestock.

For the same reasons as make for uncertainty in the statistical determination of actual feed consumption it is difficult to relate the density of livestock to the other elements in the regional set-up. In any case, not only the numbers of stock but their quality for work, milk or meat must be taken into account. Though sometimes mentioned as criteria of agricultural overpopulation, livestock figures are therefore unreliable as such.

The difficulty of measuring pastoral resources through the great variations in the quality of grazing has already been discussed in the methodological section of this report. In the mountainous regions the livestock population depends on the extent and quality of the pasture and very little, if at all, on the cultivated area. In general, therefore, the number of livestock is not directly related, at least negatively, to the density of agricultural population on the cultivated area. In one respect, however, the number of livestock may in such regions be diminished by increasing density of human population. A good instance is afforded by the Dinaric region of Yugoslavia, where, owing to the pressure of the agricultural population on the available land, the area of valley settlement, that is to say, the area on which food and not feed is being grown, is steadily encroaching on the pasture area.

Morbihan, the département with highest density of agricultural population to cultivated area in Brittany, has densities of cattle and pigs of 87 and 36 respectively per square kilometre of agricultural area against corresponding figures of only 45 and 20 for France as a whole, but in Brittany, as in the Dinaric region of Yugoslavia, the breeds are poor and low-yielding.

As for Yugoslavia, Primorje has a low cattle density with reference to productive area, having only 17 against the national average of 35; on the other hand Zeta has a figure of 39, higher than the average. In Eastern Flanders another situation is met with as regards cattle, high densities being there related to intensive indoor feeding.

The situation in the Eastern European regions is more interesting with reference to agricultural population. The following table shows the densities of cattle and pigs in the districts of densest agricultural population in Czechoslovakia at the 1930 census:

	Cattle per sq. km. agric. area	Pigs per sq. km. agric. area
Czechoslovakia (old frontiers)	69.4	35.8
Slovakia	36.1	26.5
Bystrica Považská	44.2	26.2
Bytča Vel'ká	45.7	27.6
Púchov	48.0	26.5
Žilina	39.0	24.1
Carpatho-Ukraine	34.9	21.6
Iršava	38.7	26.

The interest of this example is that, as has already been demonstrated, these are at the same time districts not only of low livestock densities but of high proportion of cereals. The coincidence of these two "symptoms" would appear to indicate that in such a case, at anyrate, the high proportion of cereals is not due to their utilization for feed but to the necessity of using as much of the area as possible for food crops.

Low livestock densities react on unit-yields of cereals and other crops through the scarcity of manure. All the elements in the situation are thus intimately interrelated.

Undernutrition.

Whether or not they can be related to agricultural overpopulation, the features discussed in the preceding sections of this chapter — the small size of agricultural holdings, the high proportion of cereal crops to total cultivated area, the low unit-yields and the low densities of livestock — and found to be common in the regions of apparent overpopulation are of the greatest significance in that they all lead to what is ultimately the summing-up of unsatisfactory regional conditions, namely undernutrition, which, when chronic, may itself be taken as one of the most important indices of overpopulation. In the regions of adverse natural conditions undernutrition reflects the severity of the struggle for subsistence, in those of dense agricultural population it is the outward sign of the "hidden unemployment". The effect of the low unit-yields is aggravated by the great oscillations seen to be common to many of these regions. Where practically a cereal monoculture prevails, as in large parts of Poland and Spain, the effects of a bad harvest are disastrous. The misery caused by years of poorer unit-yields in these marginal and submarginal regions is accentuated by the general difficulty in obtaining cheap food from outside, whether through relatively unsatisfactory communications or through lack of other crops with which to obtain the necessary cash for purchases. The prevalent small size

of the holdings, at the best often below that necessary for subsistence, whether food or cash crops are grown, is felt even more severely when the unit-yields of the food crops are even lower than usual.

The low densities or poor quality of the livestock add to the seriousness of the situation. It is now well known that large sections of the population in practically every country in Europe are inadequately supplied with the so-called protective elements in their food. In many of the overpopulated districts the peasants' food supply consists practically entirely of cereals or potatoes with cabbage, a food supply lacking in minerals and vitamins. The position is all the more serious in those regions where conditions of soil or climate permit only poorer cereals such as rye or buckwheat or oats to be grown. In many areas of Central and Eastern Europe maize is the preponderant diet, in some cases being even preferred by the peasants, because of its easier preparation at home. When to this is added the fact that, owing to the relatively small numbers or poor quality of the cattle, not only is the meat supply very small but the milk supply is inadequate both in quantity and quality, the seriousness of the situation as regards nutrition is apparent. In fact in the majority of the overpopulated regions the consumption of milk, butter, eggs, poultry, green vegetables and fruit is very small. In some cases such supplies of protective food as are available are greatly reduced by the necessity of selling them in order to obtain the cash for necessary purchases from outside. The case of Scotland is to the point, as is shown by the following quotation from the Report of the Committee on Scottish Health Services, in July 1936. "In some places fish, which could supply a valuable addition to the diet, appears almost to have gone out of fashion; in others fresh eggs and other products of the croft are bartered or sold for less nutritive articles from the shops and vans; and in most places more fresh vegetables for family consumption could be grown on the crofts" (1). In some of these regions there is sheer quantitative inadequacy of food. According to the League of Nations Report on "Nutrition in the Various Countries" more than half the peasant families in 129 arrondissements in the Dinaric region of Yugoslavia in 1932 had insufficient food to last them until the next harvest. In Poland the daily calorie consumption by peasants is only 2,223 in Little Poland against 4,355 in Pomorze and the proportions of vegetables and fruit, meat and animal fat other than fresh milk are low (2).

Cultural stagnation.

It is a well-known social phenomenon that beyond a certain level of social degradation and misery there is no longer a response in the form of an energetic struggle against the unfavourable conditions, but, on the contrary, an apparent loss of this capacity of reaction, and the sinking into a state in

(1) Quoted in *Planning*, No. 81, 8 September 1936, p. 5.

(2) STANIEWICZ, W.: Report presented on behalf of the Polish Government to the Fourteenth Assembly-General of the I. I. A., 1938 (reprinted in *L'Est Européen agricole*, July, 1938).

which all hope is abandoned and social conditions are dragged down in a vicious spiral to the lowest depths. The conditions common to many of these agriculturally overpopulated regions have as one of their main results, it has been seen, a state of chronic undernutrition, which in turn means disease and general loss of vitality. Together these conditions eat away what remains of the spirit of enterprise. The backwardness of cooperative organization in most of these regions is characteristic. It is often accentuated by poor communications, with consequent difficulty of finding markets and lack of adequate cultural contacts with the outside world. The low productivity due to adverse natural and cultural conditions prevents capital being accumulated and technical skill being developed to bring about the necessary improvements. At the same time, the absorption of all available surpluses by excessive population is perpetuated by the tendency to a higher birthrate (¹).

The general stagnation is accentuated by the dysgenic effects of emigration. It is the younger and more enterprising element that is stimulated by the hard conditions to leave these regions while the old, the decrepit or the relatively unintelligent are left behind.

C. — REMEDIES FOR AGRICULTURAL OVERPOPULATION.

Emigration.

In the past the most general means of alleviating the difficulties caused by overpopulation has been emigration, temporary or permanent. Emigration has, in fact, been regarded as the principal symptom of overpopulation. It is of course, a phenomenon of wider scope than the relief of overpopulation. That emigration occurs from regions where labour is in demand shows its independence of overpopulation. Nor is either overpopulation or emigration necessarily related to relatively high birthrates, though these are characteristic of a number of regions discussed. On the other hand, the fact that in times of economic difficulty emigration is smaller cannot be adduced as evidence of its independence from overpopulation since the decline in emigration is at least partly due to the diminished capacity of other countries to receive immigrants in a time of general economic crisis. Though it does not necessarily mean overpopulation, emigration is in every case a sign that conditions are more attractive, generally from the economic point of view, in other regions. When it becomes practically a mass phenomenon, persistent and on a large scale, it does, however, give good ground for the belief that overpopulation exists, especially when the region of emigration presents a number of the characteristic signs of chronic difficulty that have been discussed in the preceding chapter.

Though not always clear-cut, especially in countries whose emigrants tend to return after having accumulated a certain amount of savings, the most im-

(¹) See table on page 17.

portant distinction is that between temporary emigration and permanent emigration. A more easily defined distinction is that between the two types of temporary emigration, the seasonal and the non-seasonal or pluriennial. Both these classes of temporary emigrants remain essentially part of the population of their home region, particularly in the former case. Their emigration is only a means of eking out the inadequate resources obtainable in their own districts.

Large seasonal migrations have especially characterized Italy, Spain, Slovakia, Carpatho-Ukraine, Poland and, to a much less extent, Lithuania, Yugoslavia, Brittany and Eastern Flanders. These migrations are dependent on the harvest work in the countries or regions of immigration. From Slovakia, Carpatho-Ukraine and Poland they were mainly directed, before the War of 1914-18, to the Central European regions of large-scale cereal and sugar-beet production and the migrants were largely females. This movement was subsequently greatly restricted by frontier changes and by the effects of the agrarian reforms in certain countries. The seasonal movement from Lithuania and from Eastern Flanders and Northern Spain was to neighbouring countries, principally Latvia in the first case and France in the others. The seasonal migrations from Brittany and the Dinaric region of Yugoslavia have been mainly absorbed within the respective national territories. In a number of these cases, the regions of emigration being mountainous or having conditions that otherwise retard the ripening of their own crops, it is possible for emigrants to return in time to carry out harvesting operations in their own regions. From Italy and Spain, on the other hand, seasonal migration ranged overseas, particularly for the cereal harvests in Argentina and North Africa and for the cane-cutting in Cuba. The seasonal harvesting movements are only the most imposing migratory currents from the regions of agricultural overpopulation. Many other currents, connected in the regions of immigration not with agriculture but with other industries, might be mentioned.

Temporary emigration of a non-seasonal pluriennial character has been especially important in the Mediterranean countries. The return of the native, with his accumulated savings, to buy land, even at inflated prices, has in the past been a characteristic feature of emigration regions in these countries. The influence of these returned emigrants may be very great not only because of their relative wealth but, and this is a more important dynamic factor, because of technical knowledge they may have gained during their residence abroad.

From other regions this pluriennial emigration is practically non-existent. Emigration, if not merely seasonal, is permanent. The emigrant may retain a sentimental attitude towards the home country but does not wish to return there save as a visitor who may regard its hard conditions of life with relative indifference. Such is the case with the countries of north-western Europe, the Fennoscandian lands and the regions of the Atlantic fringe. It also applies to Eastern European countries. To the latter the emigrant rarely returns, even as a sentimental visitor. Nevertheless it is perhaps particularly in these regions that to some extent even the permanent emigrants continue to influence the population situation by their remittances to relatives remaining at home.

These remittances may be an essential element in making possible the continued subsistence of a large section of the population in a given region of emigration. Such is the case, for instance, in the Western Highlands and Islands of Scotland.

Permanent emigration not only relieves the pressure on the land within the home region, it has a selective action on the residual population. Its effects on the age structure of the population from the point of view of reproduction have also got to be studied.

More is involved than the correction of an actual unsatisfactory man-land ratio or the immediate restoration of equilibrium between population and resources and reduction of the numbers depending on the available food supply. In some of the regions considered, emigration may be sufficiently developed and the factors operating in the opposite direction, such as the birthrate, may be sufficiently weak in proportion as to remove, almost entirely or even entirely, actual overpopulation, as in the Fennoscandian countries and, almost, in the Western Highlands and Islands of Scotland and possibly in Brittany. The continuous operation of emigration may be necessary, however, to preserve the balance so attained and, in countries at the other end of the scale, it cannot offset the rate of reproduction. Emigration is a selective agent and tends to remove the best and the younger elements. In Carpatho-Ukraine, for example, nine-tenths of the emigrants are under 40 years of age. Its effects on the age structure of the population, particularly in reducing the number of potentially child-bearing females, may have effects more far-reaching than is immediately apparent. Deathrates, marriage-rates and birthrates in the residual population are all affected. After a certain point not only is the surplus of active population removed but the decreased proportion of active to passive or dependent population increases the difficulties of maintenance for those who remain, especially in those regions where natural conditions, such as climate and soil, are very unfavourable. In some regions not only the short-run reduction of population pressure but a possible long-run diminution in numbers below the optimum may have to be considered.

In its effects on the qualities of the residual population, emigration has a more immediate effect and may, as been emphasized in the preceding chapter (1), be a highly dysgenic factor, bringing about cultural stagnation. In short, emigration has not only a immediate but a continuing dynamic action on the residual population.

Industrialization.

The effects of industrialization in raising the standards of agriculture within the same country have already been discussed (2). How far it can increase the capacity of agriculture to absorb population by increasing the markets for agricul-

(1) See pages 56-57.

(2) See pages 53-54.

tural products within a particular country is a question that is intimately bound up with its whole national economy. There must be taken into account not only the enlargement of the market for agricultural products but possibly the cheapening of the commodities consumed by the agricultural population, whether for the purpose of further production or not. The whole field of discussion as regards commercial policy is thus opened up. It would be beyond the scope of the present report to follow up this line of argument. A few of the more direct effects of industrialization within a given country may, however, be mentioned. The transition from subsistence to cash agriculture is generally accelerated. This in turn affects the whole crop system, together with the numbers of livestock. The percentage of cereals to total arable area tends to be reduced, that of fodder crops to be increased, as do the numbers of cattle and of pigs per unit area of agricultural land. The area under industrial crops is also increased. These phenomena have been observed since the War of 1914-18 in Central and Eastern Europe (*). In this connection, however, it may here be repeated that the general picture of European agrarian-industrial relationships already outlined shows the operation of other and sometimes more powerful factors besides the degree of industrialization in determining these indices (**).

Improved transport facilities within the country, nowadays especially by the extension of motor transport, have the effect of bringing national markets in the towns and industrial areas nearer to the agricultural producer and so stimulating greater intensity of production. At the same time it should be noted that they also stimulate migration, both seasonal and permanent, and especially migration to the towns, at least in those areas where the urban centres are too distant to allow of employment combined with continued residence in the rural districts. Belgium offers the classical example of the intimate interpenetration of rural and industrial areas such as to allow a large proportion of the population to continue living in the country and even to be partly occupied in agriculture but yet to take employment in the towns and industrial areas. On the other hand a development that tends to diminish the mobility of labour between agriculture and other industries is the reduction in the demand for unskilled labour as the technical evolution of industry proceeds.

Another highly important factor influencing the whole problem is rural electrification. This may be the means not only of encouraging the development of certain industries in the rural districts, but of adding very much to the amenities of rural life. Some of the Western European regions in which natural conditions are adverse to agriculture but in which water-power is abundant offer specially good examples of these possibilities. On the side of large-scale industry the chemical and wood-pulp industries, especially developed in the Fenno-scandian countries, may be cited. Amongst the industries taken up in the agrarian countries of Eastern Europe, the commonest and perhaps the most success-

(*) See Frangeš, O.: L'industrialisation des pays agricoles du Sud-est de l'Europe. *Rev. Econ. Intern.*, vol. 3, 1938, pp. 27-78.

(**) See Chapter I.

ful are the textile industries, for which the labour required is relatively unskilled, at least as far as the production of the coarser textiles is concerned. In view of the low cultural level to which agricultural overpopulation tends to drag the regions that suffer from it, industries that are more exigent in their labour requirements are less likely to succeed (¹).

The endeavours of these countries to bring about a more balanced national economy may, apart from questions of commercial policy, be justified by the creation of larger home markets for their agricultural products, and by the lessening of the pressure of population on the land. The relation of agricultural to total population is a question involving the widest issues of national policy, both commercial and social, and cannot be discussed only in relation to the man-land ratio. Nor is it within the control of single States, partly because of natural conditions, partly because of international relations, both economic and political.

Secondary industries.

Apart from emigration the traditional method of eking out subsistence in regions of agricultural overpopulation has been by secondary, very largely domestic, industries. The woodworking industries of Central Europe are well known, as are also in certain regions lace-making, embroidery and so on. These industries are largely in the hands of the women though in the winter months part of the male population may in some cases also be engaged. The fact that they tend easily to become sweated industries makes them of doubtful advantage. They may be regarded as historically antecedent to industrialization proper. The industrial and commercial revolutions have not only brought cheap manufactures to the rural districts, they have also in large part weakened or killed these secondary rural industries. Significant developments are, however, possible in the revival of domestic industries as well as in the extension of large-scale industry to the countryside, by means of rural electrification.

In the coastal areas, such as the Western Highlands and Islands of Scotland the west of Fife, Brittany and Dinaric Yugoslavia, fishing was, at least until recently, a very important secondary industry and in some areas even took precedence over agriculture. The advent of trawl fishing has, however, to a large extent taken away this secondary means of livelihood. In Central Europe and in Fennoscandia forest industry plays a similar part and in some of the regions under discussion, such as the Western Highlands of Scotland, might play a much greater part. The tourist industry might be of much greater importance than it is at present in most of these regions. So far only Brittany may be said to it is at present in most of these regions. So far, amongst the regions discussed only Brittany and sections of Dinaric Yugoslavia may be said to have any very well developed exploitation of its potentialities in this respect. Unsatisfactory communications and lack of enterprise amongst the residual populations of these regions are amongst the principal obstacles to the development of tourism. They are not, however, insuperable obstacles.

(¹) See pages 56-57.

Reform of the agricultural structure.

In certain countries the unsatisfactory distribution of the agricultural land has resulted in excessive pressure of the agricultural population on unnecessarily small proportions of the available land. The agrarian reforms that followed the War of 1914-18 did much in a number of countries to remove this factor but in some cases, particularly Poland and Bulgaria, the amount of land available for redistribution was insufficient to meet the requirements if all the dwarf holders and the landless proletariat are to receive sufficient for family subsistence. According to Oberländer the surplus agricultural population of Poland in 1931 was 5,158,000 active population and 8,455,000 including dependents (¹). In Bulgaria it is estimated that 37 per cent. of the available agricultural labour is unoccupied, there being a surplus of a quarter million actually unemployed and up to 900,000 if the hidden unemployment is included (²). With proportions such as these the problem is vaster than can be coped with by redistributing all the available land in these countries. In any case it is clear that redistribution of land must be accompanied by measures to ensure better unit-yields and generally higher intensity of production, especially with a view to encouraging the production of more dairy products, poultry, vegetables and fruit in order to improve the standards of nutrition, particularly in those areas in which the agricultural population must be self-subsistent. In this connection the suggestion made in the Final Report of the Mixed Committee on the Relation of Nutrition to Health, Agriculture and Economic Policy (³) that the Danish system of arable animal husbandry, in which cereals, partly grown on the farm and fed to animals, should be more widely adopted, has an especially important application in those overpopulated regions in which cereals occupy a very high proportion of the cultivated area. In addition more leguminous feed crops should be grown. In general, indeed, a greater development of "mixed farming" is necessary. The introduction of larger proportions of livestock products, vegetables and fruit in the agricultural output might not only be a means of bringing about better nutrition but would at the same time raise the general standards of agriculture, bringing about better crop rotations, assisting in soil conservation and improvement and absorbing more of the superabundant labour that is at present the only resource in which these regions are rich. No regions will benefit more than these from "the marriage of Health and Agriculture" and this is, in fact, what is involved in these instances by that rationalization of agriculture that is the necessary complement of agrarian reform.

(¹) OBERLÄNDER, T: Die agrarische Übervölkerung Polens. Berlin, 1935.

(²) EGOROFF, P. P.: Die Arbeit in der Landwirtschaft (MOLLOF, I. S.: Die Sozialökonomische Struktur der bulgarischen Landwirtschaft. Berlin, 1936, pp. 131-159).

(³) Final Report of the Mixed Committee on the Relation of Nutrition to Health, Agriculture and Economic Policy. League of Nations. Genève, 1937, p. 183).

D. — CONCLUSION

The standard of living in the agriculturally overpopulated regions is not merely temporarily what may be regarded in their respective countries as sub-marginal, it is chronically one of extreme poverty. The problems of these depressed agricultural regions are obviously so complicated and the methods by which relief has been sought have been so imperfect, while the results of agrarian reform and of other partial legislative attempts at amelioration have proved so inadequate, that some more special and at the same time more far-reaching method of attack is called for in order that their populations may be rescued from chronic deterioration. The social importance of finding a thorough remedy is perhaps especially vital in those regions which have in the past been, to their own loss, by selective emigration, reservoirs of energy and enterprise for other regions and even other countries.

Positive, constructive planning is required. The problem is not merely one of "decrowding" but of development. The object of this report is not to make recommendations but it may be suggested as a practical measure that Regional Planning Boards should be set up in each country to deal with these special regions on the most comprehensive lines. Piecemeal treatment has failed. An executive authority with all-round powers to coordinate the partial interests is required if the necessary reconstruction is to be carried through. The building up of essential social services provides at the same time work for the unemployed. While the plans for permanent development are being perfected, public works for the immediate amelioration of living conditions can be initiated to absorb the surplus labour. The rise in the standards of living of these rural populations would be cumulative, not only economically through the eventual lowering of the costs of the industrial products they buy but also socially through the elimination of the dysgenic features in their present situation by demographically healthier conditions.

The problem should thus be envisaged as a unified whole, as a problem of human geography in the widest sense, in which the economic and social aspects of each region are integrally related.