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POLSKIEJ AKADEMII NAUK

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INTERNATIONAL GEOGRAPHICAL UNION
COMMISSION ON WORLD LAND USE SURVEY

LAND USE STUDIES IN EAST-CENTRAL EUROPE

THE REPORT OF THE REGIONAL SUBCOMMISSION

Prepared by
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WARSZAWA 1968

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2 **Zadania i metody współczesnej klimatologii**, art. 10, s. 196, zł 24,—
3 **Wybrane zagadnienia krasu**, s. 164 + ryc. nlb., zł 24,—
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2 Praca zbiorowa — **Z metodyki badań osiedli o funkcjach centralnych**, s. 125 + ryc. i tab. nlb., zł 24,—
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4 **Geografia stosowana** — Część III

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INTRODUCTION

Reports on land use studies in East-Central Europe were compiled for the Chairman of the Commission on World Land Use Survey by J. KOSTROWICKI already twice in 1960 and 1964 and then published in a summarized form in the IGU Newsletter.

As from 1960 land use studies have greatly expanded in East-Central Europe, therefore such an abridged report could not give a proper idea about their present status and scope. For this reason, besides a brief report sent to the Commission chairman, a more extensive one has been compiled on the basis of the reports by various institutions and persons who had sent them to the present author before 1960, 1964, and 1968 International Geographical Congresses.

In particular the reports by following institutions or persons made for individual countries were used to compile the present report:

BULGARIA:

1960 — Institute of Geography of the Bulgarian Academy of Sciences.

CZECHOSLOVAKIA:

1960 — Economic Institute of the Czechoslovak Academy of Sciences, Department of Economic Geography.

1964 — Dr V. HAŬFLER and Dr K. IVANIČKA

1968 — Prof. K. IVANIČKA

GERMAN DEMOCRATIC REPUBLIC:
1960, 1964, 1968 — Prof. W. ROUBITSCHEK

HUNGARY:
1960 — Geographical Institute, Hungarian Academy of Sciences
1964, 1968 — prof. G. ENYEDI

POLAND:
1960, 1964, 1968 — Prof. J. KOSTROWICKI

RUMUNIA:
1964, 1968 — Prof. V. TUFESCU and Dr. I. VELCEA

YUGOSLAVIA:
1960 — Prof. S. ILEŠIČ
1964 — Prof. V. KLEMENČIČ, Dr M. MILOJEVIČ
1968 — Prof. V. KLEMENČIČ

Moreover, a number of publications were explored to find out the data relevant for the studies concerned. The report was supplemented by an extensive bibliography of the land use studies and maps published in East-Central Europe, arranged according to countries they concern. All the reports differ greatly in their scope, details and data etc, not all of the references contain all the bibliographical details. The title of each paper in the original language is followed by the title of its English (Sum:) or French (Res:) summary. When no such summary is available, the second title is the English translation of the original, made either by the reporter or by the present author.

Prof. JERZY KOSTROWICKI
Chairman of the Regional Subcommission

GENERAL INFORMATION

Although land use studies in East-Central Europe have their roots in the interwar period, they have been carried out and greatly developed after World War II, stimulated by the British example set by the late Professor L. DUDLEY STAMP, a great geographer, an unforgettable master and organizer, a magnificent man.

The work started first in Poland and Yugoslavia, after a short time, however, it had to be limited or given up due to the shortage of means and trained staffs in that difficult post-war period. Hungary came in their wake. Similar studies were started quite independently in Rumania and Bulgaria.

Close contacts with the International Geographical Union, the participation in the XVIII[th] International Geographical Congress in Rio Janeiro in 1956, and at the meeting of the IGU Commission on World Lond Use Survey brought about a new development. Besides his more extensive paper on the Polish Studies, a brief report was presented by J. KOSTROWICKI at the Commission meeting on the land use studies in East-Central Europe and the USSR (see 6). In result J. KOSTROWICKI was elected a regular member of the Commission as the representative of that group of countries.

In the period between 1956—1960 a considerable progress was made in land use studies in Poland. The IGU Commission method was developed and adapted to Polish conditions, in such a way that it acquired a specific character. At the same time closer contacts were established between East-Central

European countries and certain consensus as to the need for cooperation was reached.

In June 1960 a conference of geographers of East Central European countries and the USSR was organized in Poland. Principles, methods and techniques of land use mapping and study, as well as scientific problems arising from the survey, were discussed on several sessions following reports supplied by the representatives of individual countries. Then, during the field study Polish methods were presented and various categories of land use demonstrated with the detailed land use maps in hand. At the final meeting a resolution was adopted which stressed the importance of land use studies both for scientific and practical purposes.

Furthermore it was resolved that closer cooperation should be undertaken and experiences between individual countries exchanged. This should include providing each other with the published results of the studies, further discussions of common problems or methods. In order to improve and to unify methods and techniques of research, the exchange of scholars and research groups to carry on together field work in some selected points of individual countries should be organized. The proceedings of the Conference were published (15) as well as various reports by other participants (8, 10, 19) and the reviews of the proceedings (5, 25).

The report sent to the IGU Commission on World Land Use Survey and presented at the Commission meeting in Stockholm, in 1960, contained already a number of information on the progress in the land use studies in East-Central Europe and the USSR (for the summary see 13). A similar report was also offered to the Commission meeting held during the Xth Pacific Science Congress in Honolulu, Hawaii in 1961 (see the report 23).

In spite of the fact that for most countries concerned, the Warsaw conference was hardly anything more than the initial stage in land use studies, the meeting proved to be an

important step towards their further development and a more intensive cooperation in the field of land use studies.

The exchange of individual scholars and teams of field-workers was included into agreements on the scientific cooperation concluded between the Academies of East-Central European countries. In the years 1960—1964 Polish field workers went to Bulgaria, Hungary and Yugoslavia; at the same time the groups of Yugoslav, Czechoslovak and Soviet geographers made their work in Poland. In addition, several individual geographers from East-Central European and other countries came to Poland to study the land use methods indoor or on field, at the Department of Agricultural Geography, Institute of Geography, Polish Academy of Sciences, where the land use studies were eventually concentrated.

In the period 1960—1964 land use studies greatly expanded in Yugoslavia (particularly in Slovenia) and in Czechoslovakia (particularly in Slovakia) where the Polish methods were introduced with some minor modifications. In Hungary more simplified methods were applied. Land use studies were started also in Rumania. In some other countries land use maps were treated as an accessory tool in regional studies of agriculture. In the German Democratic Republic, on the other hand, few land use studies were made with the predominance of the detailed studies of distribution of particular land uses or crops. At the same time in Czechoslovakia, East Germany, Hungary and Rumania some methods of assessment of natural conditions of agriculture were experimented.

Experiences gained from studies abroad and discussions with foreign geographers influenced the Polish methods. Certain modifications were introduced making them more flexible and more universal.

In May 1964 the Second Land Use Conference of the East-Central European and Soviet Geographers was organized in Budapest. Several Hungarian geographers and agricultural economists participated. Ten papers supplied by representatives of eight countries reported considerable progress in land use

studies. The Yugoslav and Czechoslovak reports presented the scientific results of their detailed land use surveys. The Bulgarian one explained the profile method in land use studies. The Rumanian and Soviet representatives spoke on the methods and problems of the assessment of natural conditions of agriculture. The GDR paper reviewed the distribution of the livestock breeding in East Germany. The Poles gave the account on the changes in land use methods between 1960—1964 and the discussion of the methods of elaboration of materials collected by the land use survey. The organizers of the Conference gave a general account of the problems arising from land use studies in Hungary (For the proceedings of the Conference see 22).

An opportunity was also given to the participants to study some problems of Hungarian agriculture of the western, southern and central parts of the country on field.

The problem of a uniform, more general and simplified land use map covering all countries of East-Central Europe was also discussed. Polish geographers were asked to prepare a project for discussion at the next 3rd land use conference.

As the evidence of the growing cooperation we may note the fact that the proceedings from that conference were published in Budapest, the colour maps inserted into the volume, were printed in Bratislava, Czechoslovakia and the key of symbols in Warsaw (see also the reports on the conference (1, 7, 21).

The resolution adopted unanimously confirmed the usefulness of cooperation, revealed by the growing number of research works and publications on land use in particular coutries, after 1960. At the same time the resolution stressed that the closer and more effective cooperation would call for establishing a supranational body responsible for the encouragement, and coordination in the field of land use studies in the countries concerned. Consequently, a regional sub-commission within the IGU Commission on World Land Use Survey was set up with Professor J. KOSTROWICKI

elected as its chairman. The following persons were proposed as deputy chairmen (d) or members of the subcommission by the IGU National Committees of the seven respective countries:

Bulgaria: Prof. dr I. IORDANOV (d), dr V. VELEV
Czechoslovakia: Prof. dr K. IVANIČKA (d) dr. Z. HOFFMANN
German Democratic Republic: Prof. dr W. ROUBITSCHEK
Hungary: Prof. dr G.ENYEDI (d), dr T. BERNAT
Poland: Prof. dr J. KOSTROWICKI, dr W. BIEGAJŁO
Rumania: Dr I. VELCEA (d), Prof. dr V. TUFESCU, dr H. GRUMĂZESCU, dr N. BARBU
Yugoslavia: Prof. dr V. KLEMENČIČ (d), Prof. dr I. CRKVENČIČ

At the meeting of the IGU Commission in London, August 1964 the progress in land use studies in the countries concerned was reported not only by J. KOSTROWICKI (see the summary of the written report 24), but also by G. ENYEDI (Hungary) and K. IVANIČKA (Czechoslovakia) as well as by Professor M. GLAZOVSKAYA (USSR) who had since become a regular member of the Commission on World Land Use Survey. For this reason the present report does not contain the information on Soviet studies, which will be given separately.

Between 1964 and 1968 cooperation expanded furthermore. Eight groups of Polish research workers visited Yugoslavia, Czechoslovakia, Bulgaria and Rumania and made there field studies together with local geographers. A special more effective technique of land use studies was elaborated for the countries with large-scale, socialized agriculture and put to the test in common studies in Bulgaria and Rumania. All together between 1960—67, 12 Polish expeditions made detailed land use surveys in 67 units (18 in Bulgaria, 9 in Czechoslovakia, 2 in Hungary, 10 in Rumania and 20 in Yugoslavia (see 2, 2 a,

3, 4, 17, 26, 27). Some of their results are already published. At the same time 9 groups of foreign: Bulgarian, Czechoslovak, East-German, Hungarian and Soviet geographers carried out their field work in Poland, not to mention numerous individual scholars from East-Central Europe as well as from Belgium, Great Britain, USA, North Vietnam, China, etc, who took part in the Polish land use studies. Similarly the Hungarian and Slovak geographers carried out their field work in Yugoslavia.

In the same period a trend was observed which started with a paper by J. KOSTROWICKI read to the XIX International Geographical Congress, Stockholm in 1960 (14). It aimed at connecting the elaboration of material collected by land use studies with agricultural typology. Following this line several studies based on the land use survey were made. As early as in 1962 the idea of presenting together the results of common field studies arose. Finally, a large volume containing 15 case studies of the 5 Polish, 5 Yugoslav, 3 Hungarian and 2 Bulgarian units, together with an introductory article on methods of the land use survey itself and on methods of elaboration of materials collected and a summarizing article which presented an attempt at the typological classification of agriculture in East-Central Europe was published in 1965 (16. See also the review of the volume by S. ILEŠIČ 12).

Several international or national meetings organized starting from 1964 contributed also to the development of land use studies.

In September 1964 geographers from East-Central Europe assembled in Halle (German Democratic Republic) to discuss various problems and methods of agricultural geography. A number of Hungarian and East German agricultural economists participated. Professor D. GRIBAUDI (Italy), the vice-president of the International Geographical Union, and several West-German geographers took part in the meeting (20). The proceedings were published in German (28).

A meeting organized by the Committee on Areal Development of the Polish Academy of Sciences at which practical implications of land use studies were discussed, was held in the Spring of 1965.

At the end of 1965, a symposium on agricultural geography took place in Maribor, Yugoslavia. Several general papers as well as numerous results of a number of land use studies made in Yugoslavia were there presented (for the proceedings in Yugoslav languages with English summaries see 29).

The symposium of Rumanian geographers on agricultural geography, held in Craiova in 1967, contributed towards further development of land use studies in Rumania.

The 3rd land use conference of geographers from East-Central Europe and the USSR is planned to be held in Yugoslavia in 1968.

A sign of the growing cooperation between East-Central European countries in the field of land use studies is also provided by the fact that authors of various nationalities and places of publication of their studies enumerated in the bibliographies enclosed to the present report are intermingled with each other.

References

1. L. ARMAND. Budapeshtskaya konferentsiya po ispolzovaniyu zemel (6—10 maya 1964 g.). Budapest Conference on Land Utilization (May 6—10, 1964) *Izvestia Akademii Nauk SSSR*, 1964, 5, p. 98—101.

2. W. BIEGAJŁO. Badania Zakładu Geografii Rolnictwa w 1964 roku na terenie Słowacji. (Investigations of the Department of Agricultural Geography in Slovakia 1964). *Przegląd Geograficzny* 37, Warszawa 1965, 4, p. 755—756.

2a. W. BIEGAJŁO. Sodelovanje med geografii Jugoslavije in Poljske na področju preučevanja izrabe zemlje. (Res: La collaboration entre les géographes yougoslaves et polonais sur les problèmes de l'utilisation du sol). *Geografski Vestnik*, Ljubljana, 19, 1967, p. 161—163.

3. W. BIEGAJŁO. Z badań użytkowania ziemi w Macedonii. (Sum: Research on Land Use in Macedonia). *Przegląd Geograficzny* 40, Warszawa 1968, 1, p. 171—178.

4. W. BIEGAJŁO, W. TYSZKIEWICZ. Badania użytkowania ziemi w Rumunii: (Sum: Investigations of Land Utilization in Rumania). *Przegląd Geograficzny* 39, Warszawa 1967, 3, p. 635—639.

5. A. CHRISTOFORETTI. Land Utilization: Methods and Problems of Research (the revue). *Sociologa*, São Paulo 26, 1964, 4.

6. Commission on an Inventory of World Land Use. Report on the Meeting of the 18th August 1956. (in) Union Géographique Internationale. Comptes Rendus du XVIII-e Congrés International de Géographie. Rio de Janeiro 1956. V. 1. Actes du Congrès. Rio de Janeiro 1959, p. 241—242.

7. G. ENYEDI. A Nemzetközi Földrajzi unio földhasznositási bizottságának üleése Magyarországon. (The Land Use Conference of the International Geographical Union in Hungary). *Különlenyomat Magyar Tudományos Akadémia Társadalmi-Történeti Tudományok-Osztályának Közleményei* 13, 4, Budapest 1964, p. 451—456.

8. D. GOLOVKIN, S. I. SILVESTROV, L. N. SOBOLEV. Mejhdunarodna Konferentsiya po metodam izoucheniya ispolzovaniya zemel organizovana polskimi goeografami. (International Conference on Methods of Land Use Studies Organized by Polish Geographers). *Izvestia Akademii Nauk SSSR. Seria geogaficheskaya* 1960, 6, p. 118—121.

9. S. ILEŠIČ. Mednarodna proučitev kmetijskega izkoriščanja tal. (International Investigations on Land Utilization). *Geografski Vestnik* 24, 1952.

10. S. ILEŠIČ. Mednarodna konferenca za metode proučevanja izrabe tal na Poljskem. (Res. Confèrence internationale sur les méthodes des recherches sur l'utilisation du sol, tenue en Pologne). *Geografski Vestnik* 32, 1960, p. 278—280.

11. S. ILEŠIČ. Dosedanje smeri in rezultati mednarodne agrarne geografije. (Present Day Trends and Results of International Agricultural Geography). *Geografski Obzornik* 12, 1965.

12. S. ILEŠIČ. Land Utilization in East Central Europe. Case Studies. (the review). *Geografski Vestnik* 38, 1966, p. 167—170.

13. J. KOSTROWICKI. Brief Summary of the Report on Land Use Studies on East-Central Europe and the USSR. *The IGU Newsletter* 11, 1960, 1/2, p. 41—42.

14. J. KOSTROWICKI. Land Use Survey as a Basis for Geographical Typology of Agriculture. *Przegląd Geograficzny* 32, 1960, Suppl. p. 169—183.

15. J. KOSTROWICKI (ed). Land Utilization. Methods and Problems of Research. Proceedings of the International Seminar. Poland 30.V.—8.VI.1960, 250 p.

16. J. KOSTROWICKI. (ed). Land Utilization in East--Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, 498 p.

17. J. KOSTROWICKI, W. BIEGAJŁO. Badania Zakładu Geografii Rolnictwa IG PAN na terenie Jugosławii w latach 1962—1964. (Sum: Investigations Carried out in Yugoslavia in

1962—1964 by the Department of Agricultural Geography of the Polish Academy of Sciences Geographical Institute). *Przegląd Geograficzny* 37, Warszawa 1965, 4, p. 697—702.

18. V. MIHĂILESCU. Land Utilization in East-Central Europe. Case Studies. (the review). *Studii şi Cercetarii de Geologie, Geofizica şi Geografie. Seria Geografie* 14, 1967, 1.

19. W. ROUBITSCHEK. Agrargeographische Tagung in Warschau 1960. (Agrogeographical Conference in Warsaw, 1960). *Petermanns Geographische Mitteilungen* 104, 1960, p. 297.

20. W. ROUBITSCHEK. Agrageographische Tagung Halle 1964. Arbeitsergebnisse der Agrargeographie und ihre Nutzanwendung für die sozialistische Landwirtschaft. (Agrogeographical Conference Halle 1964. The Achievements of Agricultural Geography and its Practical Application for the Socialist Agriculture). *Wissenschaftliche Zeitschrift. Martin-Luther Universität Halle-Wittenberg. Math.-Nat. Reihe* 16, 1967, 2. *Mitteilungen für Agrargeographie, landwirschaftliche Regionalplanung und ausländische Landwirtschaft* 12—19, p. 153—156.

21. W. ROUBITSCHEK. II Bodennutzungskonferenz der europäischen sozialistischen Staaten in Budapest 1964. (Land Use Conference of the European Socialist Countries in Budapest 1964). *Petermanns Geographische Mitteilungen* 1965, 3.

22. B. SÁRFALVI. (ed). Land Utilization in Eastern Europe. Studies in Geography in Hungary 4. Budapest 1967, 88 p.

23. L. D. STAMP. Commission on a World Land Use Survey. *The IGU Newsletter* 13, 1962, 1, p. 28—31.

24. L. D. STAMP. A Report on Land Use Studies in East-Central and Eastern Europe, 1960—1964. *The IGU Newsletter* 15, 1964, 1/2, p. 37—40.

25. L. D. STAMP. Land Use Studies in Eastern Europe. *Geographical Review* 54, 1964, 1, p. 115—116.

26. R. SZCZĘSNY. Badania użytkowania ziemi na Węgrzech. (Land Use Investigations of the Department of Agri-

cultural Geography in Hungary). *Przegląd Geograficzny* 37, Warszawa 1965, 4, p. 756—757.

27. W. TYSZKIEWICZ. Badania użytkowania ziemi w Bułgarii. (Land Use Investigations of the Department of Agricultural Geography in Bulgaria, 1966). *Przegląd Geograficzny* 38, Warszawa 1966, 2, p. 327—328.

28. Wissenschaftliche Zeitschrift. Martin-Luther Universität Halle-Wittenberg. Mathematisch-Naturwissenschaftliche Reihe 16, 1967, 2, Mitteilungen für Agrargeographie, landwirschaftliche Regionalplanung und ausländische Landwirtschaft 12—19, p. 159—226.

29. Zbiornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji u Mariboru od 3 do 5 decembra 1964 (Proceedings of the First Yugoslav Symposium on Agrarian Geography in Maribor 3rd to 5th December, 1964). Zbornik posvečen 60 godišnjici rodenja Svetozara Ilešiča. (Proceedings Presented to Svetozar Ilešič on the Occasion of His Sixtieth Birthday). Ljubljana 1967, p. 183.

B U L G A R I A

As early as in 1955—56 an agricultural map of Bulgaria in 1 : 50 000, being a kind of land use map, was started independently by Kartprojekt, Sofia. The principal forms of land use (cultivated land, pastures, forest and idle land) are shown in their extent by colours. On this background circles with sections showing the proportions of various land uses and groups of crops (cereals, fodder cereals, other fodder crops, industrial crops, rice fields, vineyards, gardens, orchards, pastures, forests etc.) are drawn. The number of livestock is shown by figures. The boundaries of collective farms are also marked on the map. The map is printed on simplified topographic sheets. The present coverage of the country by this map is unknown.

The geographers concerned themselves in particular with regional studies which included land use problems and incidentally land use maps (1, 2, 4, 6, 7, 12, 14, 15, 16). T. IORDANOV published however a general land utilization map of Bulgaria (1 : 2 million) in the Oucheben Atlas (3). The investigation methods of collective and state farms were discussed by I. VELCHEV (13). The technique of agricultural profiles (cross-sections) in land use mapping was presented by T. IORDANOV (5). The methods of agricultural mapping by L. LAKOV (10, 11).

In 1960 the first detailed land use mapping by means of Polish method was started by the mixed Bulgarian-Polish group headed by J. KOSTROWICKI and I. VELCHEV. Few

collective farms in Western and Northern Bulgaria were studied. Two Studies were published (8, 9) together with colour land use maps. The cooperation was continued. Some 15 collective farms situated along the two North-South profiles across the Thracian Basin were studied by the mixed Bulgarian-Polish groups headed by T. IORDANOV and J. KOSTROWICKI in 1965 and by. W. BIEGAJŁO and V. VELEV in 1966.

A special simplified method of the survey adapted to large scale farming and based mainly on inquiries at the management offices of the socialized farms and on redrawing of their plans, followed by some supplementary field work was tried out. The method proved to be succesful and was consequently applied in similar studies elsewhere. It is aimed that the material gathered should be elaborated collectively.

References

1. Z. BORISOV. Ikonomgeografska kharakteristika i problemi na selskoto stopanstvo v Sandansko-Petrichkiya podrayon. (Res: Caracteristique économico-géographique et problèmes agricoles de la sous-région de Sandanski-Petritche). *Godishnik na Sofiyskiya Universitet. Biologo-geologo-geografski Fakultet* 54, 1959/69, 3 *Geografiya,* p. 47—99.

2. L. DINEV, V. VELEV. Selskoto stopanstvo v Radomirsko i negovite vazmojhnosti za prevrashchaneto mou v selskostopanska prodovolstvena baza na Dmitrovskiya promishlen rayon. (Res: L'économie rurale de la sous-region de Radomir et les possibilités d'en faire une base de ravitaillement pour la region industrielle de Dimitrovo). *Izvestia na Geografski Institut BAN* 4, 1959, p. 143—186.

3. T. IORDANOV. Karta na ispolzovaniye na zemite v Bălgariya 1 : 2 000 000. (Land Utilization Map of Bulgaria 1 : 2 000 000). (in) Oucheben Geografski Atlas. Sofia 1960.

4. T. IORDANOV. Ikonomgeografski problemi na selskoto stopanstvo u Pazardjishko-Plovidiskoto polie i ogradnite mou zemi. (Res: Problèmes de géographie économique que pose l'agriculture dans la plaine de Pazardjik-Plovdiv et ses terrains limitrophes). *Izvestia na Geografski Institut BAN* 7, 1963, p. 91—181.

5. T. IORDANOV. The Application of Agricultural Profiles in Land Utilization Maps. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary 4, 1967, p. 59—66.

6. T. IORDANOV, V. VELEV. Selskostopanski problemi v sredniya i istochniya dial na iztochnorodopskoto predplaninsko stapalo i sasednata chast ot dolinata na reka Maritsa. (Res: Problèmes agraires dans la partie moyenne et orientale des replats prémontagneux du Rhodope oriental et la partie adjacente de la vallée de Maritza). *Izvestia na Geografski Institut BAN* 4, 1959, p. 109—142. Sofia 1959, p. 109—141.

7. B. IVANOV. Ikonomgeografska kharakteristika i problemi na TKZS v obshchina Izvor (Pernishki okrăg). (Caracte-

ristique économogéographique et les problèmes d'une exploitation collective et de la commune d'Izvor, Rayon de Pernik). *Godishnik na Sofiiskiya Universitet* 47, *Geografiya* 3, 1962/63.

8. J. KOSTROWICKI, S, HAUZER, I. VELCHEV, Z. BORISOV. The Collective Farm of Petărch in the Suburban Zone of Sofia. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 345—372.

9. J. KOSTROWICKI, W. STOLA, I. VELCHEV, Z. BORISOV. The Collectivized Village of Dermantsi in the Northern Foothills of the Balkan Range. (in) Land Utilization in East--Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 373—406.

10. L. LAKOV. Selskostopanski karti na Bălgariya Ouchebniya Geografski Atlas. (Agricultural maps of Bulgaria). *Sbornik statii po kartografii* 2, 1960.

11. L. LAKOV. Obshchite ouchebni selskostopanski karti na Bălgariya i metodikata na tyakhnoto postroyavane. (General Agricultural Maps of Bulgaria and Methods of their Compiling). *Izvestia na Bălgarskoto Geografsko Drujhestvo* 5 (15), 1965, p. 135—144.

12. M. MICHEV. Stopanski usloviya za razvitie na kamenodelstveto vav Vrachansko. (Res. Conditions de géographie économique du developpement des carrières dans la region de Vratza). *Izvestia na Bălgarskoto Geografsko Drujhestvo* 1, (11), 1953, p. 108—200.

13. I. VELCHEV. Opit za razrabotvane metodika na iknomgeografsko prouchvane na TKZS i LDS. (Res: Ètude des exploitations cooperatives agricoles et des fermes d'Etat du point de vue de géographie économique). *Izvestia na Bălgarskoto Geografsko Drujhestvo* 4, (14), 1964, p. 89—106.

14. I. VELCHEV, Z. BORISOV, K. KRASTEV. Loveshka prigradska zona. Ikonomgrafska prouchvane s ogled na sastoyaneto i razpredeleneto na trudovite resursi. (Res: La banlieue de Lovetche, etude économico-géographique sur la situation et la repartition des ressources de la main d'oeuvre). *Godishnik na Sofiiskiya Universitet. Geografiya* 55, 1962, p. 229—258.

15. I. VELCHEV, Z. GUNCHEV, K. KRASTEV. Ikonomgeografska kharakteristika na obshchina Roman z ogled razvitieto i problemite na TKZS „Deveti Septemvri". (Res: Caracteristique économico-géographique et differents problèmes de la commune de Romane en vue du développment et des problèmes de la ferme cooperative „Deveti Septemvri"). *Godishnik na Sofiiskiya Universitet, Geografiya* 3, 54, 1959/60, p. 195—255.

16. V. VELEV. Părvomayska okoliya. Ikonomgeografska kharakteristika. (Res: Geographie èconomique de l'arrondissement de Parvomai). *Izvestia na Geografski Institut BAN*, 3, 1957, p. 69—118.

CZECHOSLOVAKIA

Already before World War II the maps then known as geonomic were attempted to show the natural conditions of agriculture. After the war the maps in 1 : 25 000 scale based on the analyses of soil and climatic conditions and showing the desirable orientations of land utilization were made with boundaries of the principal land uses marked. Almost the whole country was covered with detailed geonomic maps. Generalized geonomic maps in 1 : 200 000 were published for each of the 19 provinces of Czechoslovakia. In a similar way „rayonisation" maps determining the degree of land suitability for certain crops or animal breeding were worked out and published. The work was carried out by the Institutes of Agricultural Economics of the Czechoslovak and Slovak Academies of Sciences (5, 13, 14, 15).

More recently the „delimitation" maps on the scale 1 : 25 000 prepared by a special working group under the auspices of the Ministry of Agriculture were compiled. Five categories of arable lands were marked on the maps according to the gradient of slope, erosion danger and possibilities of mechanization. Different symbols were used to mark meadows, pastures, woods, built-over areas, waters, peat bogs, mining areas, swamps and reserve lands. A transparent map of land improvement was added to each map showing the drained and irrigated areas, wells, etc. The maps were supplemented with the recomendations as to the changes in land utilization (see 7).

The real land use mapping developed particularly in Slovakia under K. IVANIČKA. The Polish method with minor modifications, was used, and large areas covered by the survey. The large map made to the scale 1 : 25 000 was published in 1964 in 1 : 50 000 (8) as an appendix to the monograph of the area of the Slovakian Iron Works Region (9), 123 rural communes were mapped covering 1691 sq. km. The volume contains also a study on a suburban zone of Košice with the detailed colour land use map of the village of Krasna (12). A detailed description of the total work was presented by K. IVANIČKA in his paper read at the Budapest meeting (10).

After 1964 the land use mapping continued to expand in Slovakia. Various scales were used from 1 : 2880 to 1 : 25 000 but maps were published in 1 : 50 000. The studies of the Bratislava center headed by K. IVANIČKA were concentrated around the city itself as well as on the vineyard zone of Male Karpaty. In the first case the territory of 1607 sq. km. was mapped and the results of the survey are in print. In the second case a much more limited territory was surveyed. The territory of the Štiavnica foothills is under study. In addition, land use mapping was carried out in 1 : 5000 in the Žitni Ostrov and Trnavska Hills. In the Prešov center, the Bardejov county (about 1500 sq. km.) was mapped on the scale 1 : 25 000 by M. MIHALY who used the same method. The results are in preparation.

In 1967, a group of Slovak geographers under K. IVANIČKA started comparative studies in Slovenia, Yugoslavia.

Land use studies have recently been connected with typological studies on agriculture. The regionalization of farm economy has been thus aimed. The land use serves as a basis for a number of regional studies of agriculture.

Land use survey was favourably accepted by the Slovak planning authorities and other economic institutions. Some of them such as the Institute of Agricultural Economics, the Agricultural University College and Pedological Laboratory expressed their interest in the survey and the close cooperation

was established. The land use map is generally considered a useful basis for solving manifold economic problems. Regional planning institutions purchased the map of East Slovakian Iron Works Region fo their own use.

Some research studies were also made in Czechoslovakia by mixed Polish-Czechoslovak groups. The studies were started first in Slovakia in the Upper Nitra, and Košice regions under W. BIEGAJŁO and K. IVANIČKA. All together 6 collectivized villages were investigated (1, 3, 4). The studies in Bohemia and Moravia were carried out in 1964 by W. BIEGAJŁO and a group from the Institute of Geography under Z. HOFFMANN, from the Czechoslovak Academy of Sciences and in 1967 by a mixed Czech-Polish group under Z. HOFFMANN and S. HAUZER. A group from the Institute of Geography of the Czechoslovak Academy of Science made also some studies independently in the region South-West of Ostrava, as a part of the larger study on the future coal-mining area. In result of that study propositions were made for the location of industrial plants and new housing districts and plans prepared for the further development of the intensive suburban agriculture (6, 7).

The general land use map based on the new topographic map was compiled in 1964 for the National Atlas of Czechoslovakia. The map presents arable land, meadows, pastures, built-over and mining areas, waters, etc. The detailed maps 1 : 25 000 were generalized and photographically reduced to the scale of 1 : 1 million.

Apart of land use mapping the detailed survey of natural conditions of agriculture was started at the Institute of Soil Science of the Slovak Academy of Sciences. The Survey comprises the relief, substratum, soils, erosion, climatic factors, vegetation cover, etc. Some 25 thousand hectares have already been mapped and about 4 thousand hectares are under elaboration. For various needs the maps are prepared in the three different scales 1 : 10 000, 1 : 50 000 and 1 : 200 000. The survey of total Czechoslovakia is to be completed by 1970.

1. W. BIEGAJŁO, J. PAULOV. Studium využitia zeme na priklade obce Velké Blahovo na Žitnom Ostrove. (Sum: Study of Land Utilization Exemplifield by the Village Vel'ke Blahovo in Žitny Ostrov). (in) Aspects of the study of Regional Structure. *Acta Geologica et Geographica Universitatis Comenianae, Geographica* 6, Bratislava 1966, p. 255—248.

2. W. BIEGAJŁO, N. HANZLIKOVA. The commune of Kačice. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary 4, Budapest 1967, (a colour land use map out of the text).

3. W. GADOMSKI. Użytkowanie ziemi i rolnictwo w Kotlinie Koszyckiej na przykładzie spółdzielni Drienovec. (Sum: Land Utilization and Agriculture in the Košice Basin, East Slovakia. The Case of the Drienovec Collective Farm). *Dokumentacja Geograficzna,* Warszawa 1966, 2/3, p. 25—48.

4. W. GADOMSKI. Z badań nad użytkowaniem ziemi w regionie górnej Nitry, Spółdzielnia Nitranske Sučany. (Sum· Land Utilization in the Upper Nitra Valley, Slovakia. The Case of the Collective Farm of Nitranske Sučany). *Dokumentacja Geograficzna,* Warszawa 1967, 1, p. 5—26.

5. F. HAMERNIK. Rayonisace zemědělske výroby v ČSR. (Zoning of Agricultural Production in Czechoslovakia). Vědeckě Prace Vyzkumného Ústavu Zěmědělské Ekonomiky v Praze 2, 1957, p. 21—46.

6. Z. HOFFMANN. Arbeitrsrichtungen und-ergebnisse der Agrargeographie in der ČSSR. (Trends and Achievements of Agricultural Geography in Czechoslovakia). *Wissenschaftliche Zeitschrift. Martin-Luther Univ. Halle-Wittenberg* 16, 1967, 2, *Mitteilungen für Agrargeographie, landwirschaftliche Regionalplanung und ausländische Landwirthschaft* 12, p. 179—182.

7. Z. HOFFMANN. The Recent State of Land Utilization Research in Czechoslovakia (in) Land Utilization in Ea-

stern Europe. Studies in Geography in Hungary 4, Budapest 1967, p. 35—36.

8. K. IVANIČKA. (ed) Land Utilization of the Region of the East-Slovakian Iron-Works. Bratislava 1964 (a colour map 1 : 50 000).

9. K. IVANIČKA. (ed) The Geography of the Region of the East-Slovakian Ironworks. Bratislava 1964, 428 p.

10. K. IVANIČKA. The Land Utilization Map of the Košice Region (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary 4, Budapest 1967, p. 37—44.

11. Z. LAZNIČKA. Plochy využiti země v intravilanu mèsta Brna. (Sum: The Land Use Areas in Brno). *Zprávy Geografickeho Ústavu ČSAV* 7, 1964, p. 16—18.

12. J. PAULOV. Primetská Agrozona Košic. (Sum: The Agricultural Beltline of Košice). (in) The Geography of the Region of the East-Slovakian Ironworks. Bratislava 1964, p. 231—256, with a calour land use map of the village Krasna on Hornad.

13. L. SOBOTKA. Základy teorie a metodíky rayonisace zemědělské výroby. (Theoretical Foundations and Methods of Agricultural Zoning). *Sbornik Československe Akademie Zemědělských Ved. Zemědelska Ekonomika* 6, 1957, p. 441—454.

14. L. SOBOTKA.: Souhrn — Rayonisace zemědělské výroby v lidovédemokratickém Československu. (Zoning of Agricultural Production in People's Democracy of Czechoslovakia). *Sbornik Československe Akademie Zemědelských Ved. Zemedelska Ekonomika* 6, 1957, p. 557—576.

15. V. VRBENSKÝ, F. HAMERNIK, a kol. Přirodni podminky zemědělské výroby. Rayonisace rostlinne výroby. Rayonisace živočišne výroby. (Natural Premises of Agricultural Production. Zoning of Crop Growing. Zoning of Livestock Breeding). *Sbornik Československé Akademie Zemědělských Ved. Zemědelska Ekonomika* 6, 1957, p. 455—556.

G E R M A N
D E M O C R A T I C
R E P U B L I C

Few land use studies in the sense of the IGU Commission were made in the GDR. Several studies on natural conditions of agriculture together with the assessment maps were made already in the early fifties, with the boundaries of the principal land uses marked. Their generalization is the Agricultural Atlas of the GDR (14) showing in 67 sheets in 1 : 200 000 and 1 : 750 000 the assessment of natural conditions of agriculture for the whole country, together with the recomendations as to their proper utilization. The studies on agricultural geography were considerably developed after 1963, when the Department of Applied Agricultural Geography and Agricultural Regional Planning was set up under prof. W. ROUBITSCHEK at the Faculty of Agriculture, the University of Halle. Numerous studies on individual land uses or crop distributions, agricultural production, livestock breeding, etc. (1, 4, 18, 20, 21, 22, 23, 24, 25, 26, 27, 29) with detailed colour maps were published (34) together with some papers on the method of land use and agricultural mapping (5, 19, 25).

Some kinds of the detailed land use maps were also inserted into various publications (3, 8, 9, 10, 30, 31). In general they are concerned with individual large-scale farms or communities, and they are of various scales, contents and techniques.

A number of maps was prepared for the Planning Atlas of Agriculture and Food Economy of the GDR — a collective work by several planning and scientific institutions.

A number of methodological experiments were also made in the field of assessment of natural conditions of agriculture (1, 2, 6, 11, 12, 13, 15, 16, 32).

References

1. H. G. BANNORTH, W. ROUBITSCHEK. Natürliche Standorteinheiten des Ackerlandes der Gemeinden der DDR. (Natural Location Units of Arable Land in the Communities of the GDR). *Zeitschrift für der Erdkundeunterricht* 18, 1966, 4, 7 p.

2. K. BILLWITZ. Naturbedingungen und landwirtschaftliche Grossproduktion (mit einem Beispiel aus dem Nordwestsächsischen Lössgebiet und seinem nördlichen Vorland). (Natural conditions and Large-Scale Agricultural Production). *Wissenschaftliche Zeitschrfit der Universität Leipzig, Math.-Nath. Reihe*, 15, 1966, p. 763—780.

3. S. BREUER. Die Standortverteilung und die Leistungen der pflanzlichen Produktion in Kreis Bischofswerda. (The Location and the Efficiency of the Plant Production in the Bischofswerda county). *Wissenschaftliche Zeitschrift der Pädagogische Instituts Dresden* 1—2, 1966, *Math.-Nat. Reihe.* p. 27—42.

4. K. DÖRTER, M. KRAMER, W. ROUBITSCHEK. Der Grünlandanteil der Gemeinden der DDR. (The Grasslands Portion in the Communities of the GDR). *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 17, 1968, 2, *Mitteilungen für Agrargeographie, landwirtschaftliche Regionalplanung und ausländische Landwirtschaft* 26, (in print).

5. H. G. EWERT. Zur Darstellung der Produktionsrichtung in der Landwirtschaft. (A Contribution Towards the Representation of the Line of Agricultural Production). *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 16, 1967, 5. *Mitteilungen für Agrargeographie, landwirtschaftliche Regionalplanung und ausländische Landwirthschaft* 24.

6. G. HAASE. Bemerkungen zur Methodik einer grossmastäbigen landwirtschaftlichen Standortkartierung auf der Grundlage landschaftsökologischer Erkundungen. (Remarks on Methods of the Compilation of Large-scale Agricultural Location Maps on the Foundation of Landscape — Ecological

Investigations). *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 16, 1967, 5. *Mitteilungen für Agrargeographie, landwirtschaftliche Regionalplanung und ausländische Landwirtschaft* 20, p. 669—688.

7. H. HARKE. Tendenzen und Beispiele agrargeographischer Strukturveränderungen als Folge des gesellschaftlichen und wissenschaftliche-technischen Fortschritts. (Tendencies and Examples of Agrogeographical Structural Changes as Result of the Social and Scientific-Technical Progress). *Wissenschaftliche Beiträge der Universität Halle* 27, 1966, 28 p.

8. H. HARKE. Agrargeographische Strukturveränderungen in der Altmark, dargestellt am Beispiel der Gemeinden Sanne (Kreis Osterburg) und Schinne (Kreis Stental). (Agrogeographical Structure Changes in the Altmark Region represented by the Example of the Communities of Sanne (Osterburg County) and Schinne (Stental County). *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 16, 1967, 5. *Mitteilungen für Agrargeographie, landwirtschaftliche Regionalplanung und ausländische Landwirtschaft* 23, p. 722—732.

9. R. JÄNCKEL. Die Potsdamer Landschaft um 1680. (The Landscape of Potsdam about 1680). (in) Werte der deutschen Heimat. Berlin 1968, (in print).

10. D. KASACK, D. OBSCHERNINGS. Ein Beitrag zur agrargeographischen Strukturanalyse im Rostocker Raum, dargestellt an den Beispielen des VEG Gross Stieten und der LPG Sildemow. (A Contribution to a Agrogeographical Structure Analysis in the Region of Rostock, represented by the Examples of the State Farm of Gross Stieten and the Agricultural Cooperative Sildemow). *Wissenschaftliche Zeitschrift der Universität Rostock, Math.-Nat. Reihe* 15, 1966.

11. R. KRÖNERT. Auswertung historisch-agrarökologischer Untersuchungen für die naturräumliche Gliederung. (Application of Historical-Agroecological Investigations for the Delimitation of Natural Regions). (in) Leipziger Geographische Beiträge E. Lahmann zum 60. Geburtstag. Leipzig 1965.

12. R. KRÖNERT. Periglaziale Sedimente. Ihre Bedeutung für die landschaftsökologische Forschung und landwirtschaftliche Standortkartierung (dargestellt an einem Beispiel aus dem Mittelsächsischen Lösslehmhügelland). (Periglacial Sediments, their Significance for Landscape-Ecological Research and Mapping of Agricultural Location. *Wissenschaftliche Zeitschrift der Universität Leipzig, Math.-Nat. Reihe* 15, 1966.

13. R. KRÖNERT, K. BILLWITZ. Naturbedingungen und landwirtschafliche Grossproduktion dargestellt an einem Beispiel aus dem Mittelsächsischen Lösslehmhügelland. (Natural Conditions and Agricultural Large-Scale Production Represented by an Example from the Central Saxonian Loes-Loam Hilly Region). (in) Geographie und technische Revolution, Gotha 1967.

14. R. MÄTZ. Agraratlas über das Gebiet der Deutschen Demokratischen Republik. (Agricultural Atlas of the German Democratic Republic). Bd. I. Deutsche Akademie der Landwirtschaftswissenschaften zu Berlin. Institut für Agrarökonomik. Gotha 1956.

15. E. NEEF. Ein Beitrag der physischen Geographie zu den Fragen der Landnutzung. (A Contribution of the Physical Geography to the Land Use Problems). *Wissenschaftliche Zeitschrift der Technische Universität Dresden* 14, 1965, 1.

16. G. REDLICH. Der Einfluss natürlicher Standortbedingungen auf die Produktionsergebnisse der LPG Typ III des Bezirks Halle. (The Influence of Natural Location Conditions on the Production Results of the Agricultural Production Cooperatives Type III in the District of Halle). *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 16, 1967, 5, *Mitteilungen für Agrargeographie, landwirtschaftliche Regionalplanung und ausländische Landwirtschaft*, 25, p. 743—766.

17. K. RICHTER. Veränderungen in der Landnutzung Finnisch — Lapplands. (Land Use Changes in the Finnish Lappland). (in) Leipziger Geographische Beiträge. E. Lehmann zum 60, Geburtstag, Leipzig 1965.

18. W. ROUBITSCHEK. Die regionale Differenzierung der agraren Bodennutzung 1935 im heutigen Gebiet der Deutschen Demokratischen Republik. (Regional Differentiation of Agricultural Land Use in 1935 on the Present Territory of the German Democratic Republic). *Petermanns Geographische Mitteilungen* 103, 1959, p. 190—197.

19. W. ROUBITSCHEK. Investigations into the Regional Pattern of Land Utilization in the German Democratic Republic. (in) Land Utilization. Methods and Problems af Research, Warsaw 1962, p. 201—212.

20. W. ROUBITSCHEK. Profile und Gebiete der pflanzlichen Bruttoproduktion im Gebiet der Deutschen Demokratischen Republik. (Profiles and Regions of Vegetable Gross Production in the German Democratic Republic). (in) *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 12, 1963, 4, p. 289—310.

21. W. ROUBITSCHEK. Die regionale Struktur der pflanzlichen Bruttoproduktion in der Deutschen Demokratischen Republik 1955 (1953—57) und ihre Veränderungen gegenüber 1935. (Sum: The Regional Pattern of Crop-Production in the German Democratic Republic 1955 (1953—57) and Changes therein since 1935). *Petermanns Geographische Mitteilungen* 108, 1964, 1/2, p. 69—78.

22. W. ROUBITSCHEK. Die regionale Struktur des Getreide-und Futterbaues in der Deutschen Demokratischen Republik 1955 (1953—57) und ihre Veränderungen gegenüber 1935. (Sum: The Regional Structure of the Corn and Fodder--Plant Growing in the German Democratic Republic 1955 (1953—1957) and their Changes in Comparison to 1935). *Petermanns Geographische Mitteilungen* 108, 1964, 4, p. 282—291.

23. W. ROUBITSCHEK. Die räumliche Differenzierung der Bodennutzung im Gebiet der Deutschen Demokratischen Republik. Formen und Umfang der pflanzlichen Brüttoproduktion 1955 (1935—1957) und ihre Veränderungen gegenüber 1935. (The Regional Differentiation of the Exploitation of the Soil in the German Democratic Republic. Forms and Vo-

lume of the Vegetable Gross Production 1955 (1953—1957) and its Changes against 1935). *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 13, 1964, 12, p. 967—994.

24. W. ROUBITSCHEK. Die regionale Struktur der Viehhaltung in der DDR. (Sum: The Regional Structure of Animal Husbandry in the GDR). *Petermanns Geographische Mitteilungen* 109, 1965, 4, p. 273—284.

25. W. ROUBITSCHEK. Aufgaben und Ergebnisse der Agrargeographie in der DDR (dargestellt am Beispiel der Untersuchung der regionalen Struktur der landwirtschaftlichen Beschäftigten). (Purposes and Results of the Agrarian Geography in the GDR Represented by the Example of an Investigation Concerning the Regional Structure of Working Farm Population). *Wissenschaftliche Beiträge der Universität Halle* 18: Die Wissenschaft und Sozialistische Gesellschaft. Halle 1966.

26. W. ROUBITSCHEK. Entwicklung und Regionale Differenzierung der Eigentumsformen in der Landwirtschaft der DDR. (Sum: Development and Regional Differentiation of the Forms of Ownership in the Agriculture of the GDR). *Petermanns Geographische Mitteilungen* 111, 1967, 2, p. 279—288.

27. W. ROUBITSCHEK. Zur Entwicklung der Eigentumsformen und Betriebsgrössen in der Landwirtschaft der Deutschen Demokratischen Republik. (The Development of Ownership Forms and Size of Farms in the Agriculture of the German Democratic Republic). *Zeitschrift für der Erdkundeunterricht* 19, 1967.

28. W. ROUBITSCHEK. The Regional Pattern of Livestock Farming in the German Democratic Republic. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary 4, 1967, p. 45—53.

29. W. ROUBITSCHEK, H. G. EWERT. Formen der Bodennutzung Acker-Grünlandverhältniss, Formen des Futterbaues, Rindvieh-Schweine-und Schafhaltung 1935 in Mitteldeutschland. (Forms of Land Utilization, Arable-Grass-

land Relations, Forms of Fodder Crops Growing, Cattle, Pig and Sheep Breeding in 1935 in Middle Germany). Leipzig 1961.

30. K. SCHERF. Agrargeographische Gliederung der nordöstlichen Landkreise des Bezirkes Potsdam (Gransee, Nauen und Oranienburg). (Agrogeographical Division of the North-East Rural Counties in the District of Potsdam (Gransee, Nauen and Oranienburg). *Wissenschaftliche Zeitschrift der Pädagogische Hochschule Potsdam* 8, 1964.

31. K. SCHERF. Geographische Aspekte revolutionärer Veränderungen der sozialökonomischen Struktur in der Landwirtschaft dargestellt am Regionalbeispiel der Landkreise Gransee, Nauen und Oranienburg (Bezirk Potsdam). (Geographical Aspects of Revolutionary Changes in the Social-Economic Structure of Agriculture — Represented by the Regional Example of the Rural Counties of Gransee, Nauen and Oranienburg (district of Potsdam). *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 16, 1967, 5. *Mitteilungen für Agrargeographie, landwirschaftliche Regionalplanung und ausländische Landwirtschaft* 22, p. 703—720.

32. R. SCHMIDT. Die Kartierung der Flur Linz (Kreis Grossenhain) als Beispiel landschaftsökologischer Untersuchungen für agrarische Praxis. (Mapping of Linz Field, County Grossenhain, as an Example of Landscape Ecological Investigations for Agricultural Practice). *Wissenschaftliche Zeitschrift d. T. V.* Dresden 14, 1965, 4.

33. E. WEGNER. Feldsysteme um 1700 im Gebiet des ehemaligen Vorpommern. (Field Systems about 1700 in the Region of the Former Swedish Fore-Pomerania). *Wissenschaftliche Zeitschrift Math.-Nat. Reihe* 17, 1968, 2. *Mitteilungen für Agrargeographie, landwirtschiftliche Regionalplanung und ausländische Landwirtschaft* 27.

34. A set of 12 colour maps concerning the Regional Structure of the Agriculture in the GDR, edited by W. Roubitschek. (Scale 1 : 750 000, representation of the whole area of the GDR) inserted to the studies listed above:

Map. 1: Hauptformen der pflanzlichen Bruttoproduktion im Gebiet der DDR 1955 (1953—57). (The Main Forms of the Gross Plant Production in the GDR 1955 (1953—57) — publication with text see Roubitschek (21, 23).

Map. 2: Umfang der pflanzlichen Bruttoproduktion in Getreideeinheiten 100 ha LN im Gebiet der DDR 1955 (1953—57). (The Volume of the Gross Plant Production in the GDR 1955 (1953—57), represented by Grain Units per 1 ha of Agricultural Land — publication with text see Roubitschek (21, 23).

Map. 3: Formen des Getreidebaues in Gebiet der DDR 1955 (1953—57). (Forms of Grain Growing in the GDR 1955 (1953—57) — publication with text see Roubitschek (21, 22).

Map. 4: Formen des Futterbaues im Gebiet der DDR 1955 (1953—57). (Forms of Fodder Growing in the GDR 1955 (1953—57). — publication with the text see Roubitschek (21, 22).

Map. 5: Natürliche Standorteinheiten des Ackerlandes der Gemeinden der DDR. (Natural Location Units of Arable Land in the Communities of the GDR) — publication with text see Bannorth, Roubitschek (1).

Map. 6: Acker-Grünland-Verhältnis 1955 und Bonität des Grünlandes der Gemeiden der DDR. (The Proportion of Arable Land to Grassland 1955 and the Degree of Grassland Quality in the Communities of the GDR). — publication with text see Dörter, Kramer, Roubitschek (4).

Map. 7: Viehbesatz der Gemeinden der DDR 1960. (The Livestock Density in the Communities of the GDR 1960). — publication with text see Roubitschek (24).

Map. 8: Rindvieh-und Kuhbesatz der Gemeinden der DDR 1960. (The Cattle and Cow Density in the Communities of the GDR 1960). — publication with text see Roubitschek (24).

Map. 9: Schweine-und Schafbesatz der Gemeinden der DDR 1960. (The Pig and Sheep Density in the Communities of the GDR 1960). — publication with text see Roubitschek (24).

Map. 10: Landwirtschaftliche Beschäftigte (100 ha LN am 30.9.1962 in VEG und LPG der Gemeinden der DDR. (The Working Farm Population per 100 ha of Agricultural Land in the State Farms and the Agricultural Production Cooperatives by Communities of the GRD (30th of September 1962). — publication with text see Roubitschek (25).

Map. 11: Voraussichtlich bis 1970 in der Landwirtschaft verbleibende Beschäftigte (100 ha LN in VEG und LPG der Gemeinden der DDR (nach der Altersstruktur 1962 ohne Zugang und Abwanderung). (The Probable Working Farm Population per 100 ha of Agricultural Land in 1970 Concerning the State Farms and the Agricultural Production Cooperatives in the Communities of the GDR, Calculations on the Basis of the Age Structure in 1962 without Birthtrend and Migration). — publication with text see Roubitschek (25).

Map. 12: Vorherrschende Eigentumsformen und Betriebsgrössen der sozialistischen Landwirtschaft in den Gemeinden der DDR am 30.9. 1962. (The Prevalent Ownership Forms and Size of Farms at the Socialistic Agriculture in the Communities of the GDR, 20th of September 1962). — publication with text see Roubitschek (27, 26).

H U N G A R Y

The Hungarians having a long tradition and experience in similar studies, very early joined the world-wide studies on land utilization following Polish and Yugoslav geographers.

Already in 1951 a series of maps were prepared by the Institute of Agricultural Organization under I. CSAKANY, which assessed the suitability of natural environment for various cultivated crops. The final maps present land optimal, good, convenient or unconvenient for various crops in a topographic way based on the synthetic assessement of natural conditions.

An other kind of land use map was worked out in 1957—1966 in the Research Institute of Farm Economics under G. GÉCZY (3, 4, 5). This map covers the whole country in the scale 1 : 25 000. It does not show the present land use but the proposed desirable use of land based on the evaluation of soils. The map is widely used both by individual collective farms and regional planning.

Detailed maps of vineyard and orchard areas showing the age of plantations, as well as the areal distribution of particular sorts of fruit trees and vines were made by the Institute of Ampelographic and Horticultural Research.

All these studies serve as valuable material for land use mapping and limit the field work required. The presence of the agronome in each rural settlement facilitates also this task.

Some experimental surveys in land use mapping started already before 1960 with the aim to establish a final

classification and a key of symbols. The scale 1 : 50 000 was accepted as the most proper for Hungarian conditions with 1 : 200 000 and 1 : 1 million scales for more general versions (6, 7, 8).

The classification of land use corresponded in general with the recomendations of the IGU Land Use Commission. As to the arable lands, highly dominating in Hungary, the crops were not marked individually but similarly as in the Polish method grouped together with the crop dominating in each group marked on the map. Five groups were distinguished: bread cereals, fodder cereals, industrial crops, hay crops, vegetables and potatoes. In that way within the lisibility of the map not only crops covering large surface are presented but also the share of all the essential groups and the crop dominating within each group. The sample of the map was published in black and white already in 1960 (7). Similar maps were included in the case studies published in Geographia Polonica, vol. 5 (15, 19, 23).

The classification of non-agricultural land uses such as settlement (dispersed, nucleated, suburban with gardens, urban multistorey, etc.) was also developed.

In the years 1960—1964 the land use map in 1 : 100 000 was compiled for the whole territory of the country. It was based mostly on the statistical and other data with communities and state farms as basic units. The maps indicate the average data for the communities and state farms.

Besides the aforementioned maps some more detailed maps in 1 : 25 000 scale had already been prepared before 1964 for experimental purposes. The problem of elaborating a code system lies in the fact that the average size of rotation fields in Hungarian cooperatives varies from 100 to 200 hectares and therefore crops can be represented by their individual range.

The purpose of this large-scale mapping was to disjoin the previously established forms of land utilization into finer details and to disclose unit areas of a lower degre.. A further

aim was to detect the way in which natural environment was utilized and to make suggestions concerning its improvement.

In 1964, land use mapping was coordinated with geomorphological and soil erosion mappings attempted by the Section of Physical Geography of the Institute of Geography, Hungarian Academy of Sciences. It was felt that such a coordination would give rise to the practical approach in physical mapping and more closely connect the research in physical and economic geography. After completing a series of detailed geomorphological, soil erosion and land use maps, prognostic land use maps are to be made.

In the years of 1964—1968 the main task of land use mapping in Hungary was to improve the key of symbols. Consequently various heterogenous areas were covered by land use mapping. Following the discussion at the 2nd International Land Use Meeting in Budapest in 1964, a particular stress was put on wine growing areas, on the classification of vineyards based on their age, variety, composition, state and techniques of growing (10).

A number of 1 : 25 000 land use maps were made for the area of the Danube-Tisza Interfluve, the Eger and Lake Balaton wine growing district and for North-Eastern Hungary. To compile the maps the annual reports of particular collective farms, which contain a large amount of information and air photographs were used supplemented with some field work particularly necessary for wine growing regions. For arable land the Polish key of symbols with few modifications was finally accepted. The development of methods is regarded as the task of the Geographical Institute of the Hungarian Academy of Sciences. The survey itself covering the whole national territory will be carried out by executive organizations. It is most probable that in 1968 or 1969 the Ministry of Agriculture will begin the large scale (1 : 25 000) land use mapping covering the whole territory based on the method introduced by the Academy Institute.

The common Hungarian-Polish studies did not cover large areas in Hungary. In 1963 a mixed Hungarian-Polish group under G. ENYEDI and R. SZCZĘSNY made some field land use studies in the interfluve of the Danube and Tissa and in the Badacsony wine-growing area. The results were published (25, 26) together with the colour map of Badacsonytomaj (16). In 1968 another group under G. ENYEDI and W. BIEGAJŁO investigated 5 collecttive farms and 1 State Farm in Eastern Hungary.

One of the main purposes of land use mapping in Hungary is the assessment of the use of natural conditions. It is felt that the land use and the assessment maps of natural conditions are complementary to each other. Such a full series of both kinds of maps was prepared by L. ADAM for the Szekszárd hill country.

The land use problems were also discussed and some maps puhlished in a number of regional staudies on geography of Hungarian agriculture (1, 2, 9, 14, 17, 18, 20, 21, 22, 24).

It should also be mentioned that the general map of agricultural land use in Hungary in 1 : 1 million was prepared and published in the Hungarian National Atlas (11).

1. A. ASZTALOS, B. SÁRFALVI. A Duna-Tisza Közé-mezögazdasági földrajza. (Agricultural Geography of the Danube-Tissa Midregion). Budapest 1960, 394 p.

2. T. BERNAT, G. ENYEDI. A Magyar mezögazdasag termulési körzetei. (Production Regions of the Agriculture in Hungary). Budapest 1961, 169 p.

3. G. GÉCZY. Ujabb mezögazdasagi talajhasznositási osztályozási rendszer. (New Classification System of Agricultural Land Utilization). *Agrokemia és Talajtan.* Budapest 1960, 3, p. 405—418.

4. G. GÉCZY. Magyarországi talajok osztályozási rendszere és térkepezése hasznositatoságuk alapjan. (The Classification System and Mapping of Hungarian Soils on the Basis of their Utilization Possibilities). *MTA Agrargazdasagi Kutato Inzete* 29, Budapest 1962.

5. G. GÉCZY. Die Kartierung und Registrierung der den Pflanzenbau beeinflussenden Naturgegebenheiten in Ungarn. (Mapping and Registration of Natural Units of Crop Growing in Hungary). *Wissenschaftliche Zeitschrift der Universität Halle-Wittenberg, Mat.-Nat. Reihe* 16, 1967, 2. *Mitteilungen für Agrargeographie, landwirschaftliche Regionalplanung und ausländische Landwirtschaft* 12—19, p. 183—200.

6. G. ENYEDI. A területfelhasználasi (Land Use) térképezes. (Res. La cartographie de l'utilisatian (Land Use) du sol. Agrártudományi Egyetom Evkönyve. Budapest 1960.

7. G. ENYEDI. La cartographie de l'utilisation du sol de la Hongrie. Institutum Geographicum. Academia Scientiarum Hungarica 75. Budapest 1960, p. 65—70.

8. G. ENYEDI. Sostavleniye Kart ispolzovaniya zemel v Vengrii. (Sum: Land Use Mapping in Hungary). (in) Land Utilization. Methods and Problems of Research. Warsaw 1962, p. 195—199.

9. G. ENYEDI. A délkelet-Alföld mezögazdasági föld-

rajza. (Sum: Agrogeography of South-Eastern Great Plain. Budapest 1964, 316 p.

10. G. ENYEDI. A Hegy -és dombvidéki területek földhasznositási problémai Magyaroszágon. (Sum: Land Utilization Problems in the Mountainous and Hilly Districts of Hungary). *Földrajzi Közlemenyek* 1966, 1, p. 49—58.

11. G. ENYEDI. Arbeitsrichtungen und Ergebnisse der Ungarischen Agrargeographie. (Research Scopes and Results of the Hungarian Geography of Agriculture). *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 15, 1966, 3, *Mitteilungen für Agrargeographie, landwirtschaftliche Regionalplanung und ausländische Landwirtschaft* 11, p. 473—483.

12. G. ENYEDI. A Brief Characterization of the Agricultural Land Utilization in Hungary. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary. Budapest 1967, p. 74—88.

13. G. ENYEDI. Probleme der Bodennutzung in den Gebirgs-und Hügellandschaften Ungarns. (Land Use Problems in the Hungarian Mountainous and Hilly Regions). *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 17, 1968, 2. *Mitteilungen für Agrargeographie, landwirtschaftliche Regionalplanung und ausländische Landwirtschaft* 31 (in print).

14. G. ENYEDI, G. SZABO. A délkelet-Alföld mezögazdasagi földrajzának alapvonásai. (Res: Les traits caractéristiques de la géographie économique de la plaine du sud-est). *Földrajzi Ertesitö* 4, 1956, p. 445—464, 5, 1957, p. 207—216.

15. I. ENYEDI. The „Kossuth" Collective Farm of Békéscaba in Southern Part of the Great Hungarian Plain. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 407—420.

16. D. KOWALCZYK, W, JANKOWSKI, W. STOLA, R. SZCZĘSNY. The Commune of Badacsony. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary 4, Budapest 1967, (colour land use map, out of the text).

17. A. PAPP. A Püspökládanyi járas mezögazdasagi föld-

rajza. (Agrogeography of the Püspökládányi district). *Földrajzi Ertesitö* 1961, p. 211—237.

18. A. PAPP. Az Észak-Tiszántül Sántóföldi növenytermelesenek földrajzi vizsgálata (Arable Land Geography in Nordeastern part of Alföld). *Acta Geographica Debrecina* 8, 1962, 1, p. 85—127.

19. B. SÁRFALVI. The Village of Csepreg in Western Hungary. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 437—452.

20. B. SÁRFALVI. Land Utilization in a West-Hungarian Community. (in) Geographical Types of Hungarian Agriculture. Studies in Geography 3, Budapest 1966, p. 70—82.

21. L. SIMON. Belterejes mezögazdasag a Nyirségben és a Tisza-Szamos vidéken. (Intensive Agriculture in the Nyirseg and in the Tisza-Szamos region). *Földrajzi Ertesitö* 1962, p. 313—340.

2. L. SIMON. A belterjes mezögazdasag területi kérdései Magyarországon. (Regional Problems of the Intensive Agriculture in Hungary). Budapest 1964, 127 p.

23. L. SIMON. Nyiradony — the Village in North-East of the Great Hungarian Plain. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 421—436.

24. L. SIMON. Land Utilization in a Community of the Nyirseg. (in) Geographical Types of Hungarian Agriculture. Studies in Geography 3, Budapest 1966, p. 57—69.

25. W. STOLA, W. JANKOWSKI. Użytkowanie ziemi i gospodarka rolna w Badacsonskim okręgu winiarskim na przykładzie Badacsonytomaj. (Sum: Land Utilization and Farming in the Badacsony Vineyard District. The Case of Badacsonytomaj). *Dok. Geograf.*, Warszawa 1967, 1, p. 51—70.

26. R. SZCZĘSNY, W. STOLA. Rolnicze użytkowanie ziemi w międzyrzeczu Dunaju i Cisy na przykładzie wsi Harta. (Sum: Agricultural Land Utilization in the Interfluve of the Danube and Tisza. The Case Study of the Village of Harta). *Dokumentacja Geograficzna*, Warszawa 1967, 1, p. 27—50.

P O L A N D

The studies in land utilization were started in Poland on a limited scope already before World War II (22, 23, 57, 58, 62, 67, 68, 72, 73). After the war on the initiative of the Central Office for Physical Planning a detailed land utilization survey of the whole country was designed. A method of research modelled on the British survey was worked out (25) and a number of trial surveys were conducted. But soon it became obvious that for financial reasons and because of the shortage of the trained staff, Polish geography could not cope with such an immense work at that difficult postwar period. It was, therefore, decided to limit the whole project to the preparation of a general land utilization map based on the pre-war topographic maps drawn to the scale of 1 : 100 000. Under the sponsorship of the Polish Geographical Society and later of the Institute of Geography, Polish Academy of Sciences, all Polish geographical centres cooperated for several years with Professor F. UHORCZAK who directed the whole project. The work was completed in 1956. Its result was a set of 17 published maps to the scale of 1 : 1 million, obtained by photographic reduction of original 1 : 100 000 maps, showing principal forms of land utilization (arable land, grassland, forests, waters, settlements) separately and their various combinations (86).

In the years that followed many attempts were made to compile more detailed and up-to-date maps of land utilization within the scope of regional planning of various parts of the country. These maps too, however, did not go further than

presenting the distribution of principal forms of land utilization.

In a limited scope the detailed survey of land utilization was continued in the Cracow area by K. BROMEK (9), with the results published recently (10).

On the initiative of Professor K. DZIEWOŃSKI several attempts were made in the years 1953—1965 to come back to the detailed land use map based on field work.

The preliminary method based on these experiences (16) was presented to the International Geographical Seminar in Aligarh, India (13) and then to the XVIIIth International Geographical Congress in Rio de Janeiro (14, 15). The method aroused certain interest that was reflected by the election of the Polish representative (J. KOSTROWICKI) to the IGU Commission on World Land Use Survey.

In 1956 most of the Polish land use studies was taken over by the agricultural geography section (later on a Department) of the Institute of Geography, Polish Academy of Sciences, with the exception of studies on urban land use that remained under K. DZIEWOŃSKI (69, 70).

The following period covering the years 1956—1968 should be regarded as a stage of testing and improving methods adopted on the national scale. On the basis of the numerous sample surveys a method was finally completed; its successive versions were described in several instructions (16, 29, 41), summarized also in English (32, 37) and discussed in a number of publications (4, 7, 27, 28, 31, 33, 35, 36, 39, 42, 43, 44, 45, 46, 47, 48, 50, 51, 52, 53, 54, 64, 71, 77). Colour keys of symbols were added to thee of these publications (37, 38, 55). The territorial extension of the survey was greatly expanded.

The Polish method while fully based on the recomendations of the IGU Commission on Land Use World Survey not only developed several categories recommended by the Commission but also formed a specific system with several original features. To explain this it is necessary to dwell for a while on the

methods of land use survey applied up to the present day elsewhere.

The method which may be called classical, most widely known from the first British Survey, aimed, first of all, at a detailed presentation of areas occupied by the principal land uses on the basis of topographic maps and a field survey. Many other countries followed the British example and the recommendations of the IGU Commission on a World Land Use Survey represent the same point of view. Technological advance achieved during the last few decades made it possible to replace in this type of studies a toilsome direct field survey by air photographs. A number of land use maps published recently in many countries made use of this possibility.

In most developing and some other countries with the extensive way of agricultural development, this method is probably the only one that allows to map larger areas. As the progress in land utilization consists there, above all, in occupying new lands not utilized so far or utilized extensively, by more intensive forms of land utilization, this method is probably also sufficient there to meet most practical requirements. The land utilization survey combined with the assessment of natural conditions is probably adequate to ascertain where the present form of land utilization could or should be replaced by another more advantageous form.

In many other countries, however, including Poland, the progress in land utilization cannot consist in taking over new lands, simply because such lands do not exist or their extent is insignificant, and they could be reclaimed only by very expensive, often uneconomical, investments. Also the transformation of less intensive forms of land utilization (grasslands, forests) into more intensive ones e.g. arables is also often impossible without important inputs, or is not recommended for other reasons (climatic, water, health conditions, etc.). In this situation any progress in land utilization should consist above all in the rationalization of land utilization within the

framework of present range of the principal land uses, with slight modifications only.

In such conditions, the determination of the range of principal forms of land utilization should be supplemented by investigation as to how, in which way, and to what degree these forms are actually utilized. In countries with planned economy such survey when compared with natural and other potential conditions could serve as a basis for a number of practical conclusions as to the ways and methods of a more rational utilization of land, of a more intensive and productive utilization of various land uses.

The classification established by the IGU Commission, while based on the first approach, has a very important advantage of being so general and flexible that it could be adapted to various local conditions. It is also possible to pass from the first to the second approach without encroaching upon the accepted principles, with obtaining a full comparabity of the results.

The Polish land utilization survey took advantage of this possibility and developed within the framework of the recommended categories, numerous subdivisions, or subcategories aimed at a more detailed presentation or various features of land use.

While fully adopting the general classification of the Commission and its key of colours almost without modification, various additional characteristics are presented on the Polish maps by shades of colours or by symbols.

Crop rotation system and system or orientation in land utilization (crop combination) determined by using a specific techniques are marked on arable lands together with the degree of land fragmentation.

— within perennial crops — dominant species of trees, shrubs, or vines as well as the age of trees and their intercultivation, if any, are indicated.

— within permanent grassland — an orientation of grassland use as represented by various types of vegetation

determined on the phytosociological basis and the way they are used either by grazing or mowing, with a number of hay cuttings per year.

Livestock breeding being considered an essential form of agricultural land use which affects the use of other forms was also introduced on the map in terms of a number of animal heads counted in conventional units; and of the orientations in livestock breeding determined on the basis of the share of particular animals in total livestock.

— within woodland, the orientation as evidenced by dominating species of trees, the system of management and in case of forests managed by clear felling — by the dominant age of trees. Compact, open and degraded forests as well as various shrub associations are also distinguished.

— within the category of waters both their bological type connected with fishing potentials and the way waters are utilized, are marked.

— within settlements various forms of settlement areas as well as height of construction are distinguished.

— within idle (unproductive) land, its origin, form and character are indicated.

On all land uses the form of land tenure and various technical improvements (drainage, irrigation, terracing, etc) are also marked, as well as for agricultural land the degree of land subdivision. Various mixed categories are also distinguished with their proportion marked on the map.

A holding of over 50 hectares or a village in case of small-scale village farming was accepted as a basic unit.

In result, as Professor L. D. STAMP put it once, the Polish land use map consists of two layers. The first one, seen at a distance, presents a familiar picture of distribution of principal forms of land utilization, while the second layer, only seen at a small distance, differentiates individual forms of land utilization according to the way and purpose (orientation) of their use.

Together with a number of information of more or less stable character, presented on the land use map, the Polish land utilization survey provides and additional, rich and comprehensive material as to the forms, ways and results of land use. This material serves for the elaboration of reports on various problems of land utilization in the area under survey. A number of published studies represent the whole evolution of methods applied in such an elaboration (1, 2, 3, 5, 6, 8, 17, 18, 19, 26, 56, 59, 61, 65, 66, 69, 70, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85) which finally attained a certain degree of development and unification (39 49, 50, 55).

After 1960 methods of agricultural typology (30, 40, 42, 51, 57) were introduced to the elaboration of the problems of agricultural land use. At the same time the methods of elaboration of the land uses other than agricultural still lag behind, and only few attempts have been made up to date to introduce there some more accurate methods.

Experience gained from land use surveys abroad as well from the elaboration of collected material influenced methods and techniques of the Polish Survey. To increase the comparability several new sub-categories were added to the classification and to the key of symbols concerned with characteristics not found in Poland or being there of minor importance (open or enclosed fields, forms of tenancy, terracing, irrigation, intercultivation, etc.) but common or important in other surveyed countries.

The orientations in utilization of arable land is now defined by means of more accurate techniques based either on percentages or on the „successive quotients" technique. The classification of permanent grasslands was extended to cover types occurring in South-Eastern Europe. A special technique of land use survey was introduced for large-scale, socialized farming which dominates in many countries of that part of Europe.

As the Polish detailed survey is rather laborious, only some 17 thousand kilometres were mapped in Poland up to

date, mostly (over 13.500 sq. km.) by the Department of Agricultural Geography of the Institute of Geography, Polish Academy of Sciences, by the Geographical Department of the Jagellonian University in Cracow, where two forst docent and doctoral dissertations based on land use survey were prepared, as well as by the Departments of Geography at the Teachers Training College in Gdańsk, at the Universities of Warsaw, Toruń, etc.

Because of the high cost of colour printing only a few of land use maps were published as appendices to various studies (3, 8, 11, 20, 21, 38, 66, 75, 82, 85) and most of the Polish land use maps as well as collected material remain in manuscripts in the institutes which have compiled them. The only exception is one sheet of the detailed land use map published for methodological purposes (12).

This situation makes it difficult to use the land use maps both for scientific and practical purposes. To secure their utilization for scientific purposes the detailed land use survey in Poland has been concentrated for some years on certain territories, considered more interesting for various reasons, and investigated within the scope of broader typological studies on agriculture.

The use of land use studies for practical purposes is also difficult. The manuscripts could hardly be utilized for such needs and it is unlikely, that within the current framework of research institutions, mapping could pass beyond the present scope. Only the special service, similar to the existing geological or pedological ones, could cope with the mass mapping of the whole country and bring about the mass printing of colour maps. At the same time, discussions with planners have revealed their interest in some kind of a more simplified map in a smaller scale, suitable to cover larger areas.

Such a method has been recently worked out (53) at the Department of Agricultural Geography, Polish Academy of Sciences. The map is drawn in the working scale 1 : 100 000 to be printed in the 1 : 200 000. This scale imposes already certain

limitations and simplifications. In principle however, this general map is based on the same method that was used for the detailed land use map.

In order to reduce further labour and financial inputs most of the data presented on the map are based on statistical and other official sources. The map is compiled indoor, and most of the categories that require field work have been eliminated. Only what is considered essential and could not be classified otherwise, is checked on field.

Like the detailed land use map, its generalized version presents, first of all, by their ranges, the picture of distribution of all principal forms of land utilization within which a reduced number of subdivisions is maintained.

A separate holding of over 200 hectares or the smallest administrative unit (gromada = commune or parish) was accepted as a basic unit.

The form of land tenure and degree of land subdivision is distinguished on agricultural land, with farm fragmentation eliminated.

The orientation in arable land utilization (crop combination) defined by the succesive quotients technique is marked within the range of arable land. Crop rotation system defined on the basis of field work only, was eliminated.

— perennial crops are differentiated according to the dominating species of trees, shrubs or vines.

— for permanent grassland simplified classification is accepted which distinguishes only principal categories. Still within all the categories, the classification of grassland requires most of the field work.

— livestock breeding is marked by symbols showing both a number of animal heads in conventional units and the dominance (orientation) of individual species.

— woodland is subdivided according to the dominant species of trees. The age groups as well as classification of shrub associations were greatly simplified.

— as to the waters — fresh, brackish and salt waters and the way they are used are distinguished.

— a number of categories of settlement land have been reduced by the scale of the map but the principal ones are preserved.

The method has been discussed several times and tested in a number of maps, covering about 55 000 square kilometres. The instruction for compiling a general land use map is in print, a special version aimed at covering the whole of East-Central Europe is under preparation for the discussion on the IIIrdLand Use meeting in Yugoslavia in 1968.

A general economic map of Poland in S to S million published in „Polska. Atlas Geograficzny" (1967), on which among other principal land uses as well as agricultural production orientations are distinguished (by N. and P. DĄBROWSKI), deserves to be mentioned here.

1. W. BIEGAJŁO. Gospodarka rolna na Żuławach Gdańskich. Wieś Radunica. (Sum: Farming in Gdańsk Żuławy — Village Radunica). *Przegląd Geograficzny* 31, 1959, 3—4, p. 345—369.

2. W. BIEGAJŁO. Gospodarka rolna w powiecie Gdańskim. (Farming in the County of Gdańsk). *Dokumentacja Geograficzna*, 1960, 1, p. 1—59.

3. W. BIEGAJŁO. Borysówka, Grodzisko and Hruskie Villages in the Noth-Eastern Undeveloped Corner of Poland. (in) Land Utilization in East-Central Europe. Case Studies, *Geographia Polonica* 5, Warsaw 1965, p. 29—60.

4. W. BIEGAJŁO. Vyzkum využiti půdy v Polsku. (Land Utilization Investigations in Poland). *Sbornik Československe Společnosti Zemepisne* 70, 1965, 3, p. 251—262.

5. W. BIEGAJŁO. Z badań nad użytkowaniem ziemi w Prowansji. (Sum: From the Study on Land Utilization in Provence, France. The Case of the Commune of Banon). *Przegląd Geograficzny* 37, 1965, 1, p. 109—141.

6. W. BIEGAJŁO. Recherches sur l'utilisation du sol dans la region de Forcalquier, commune de Banon (Basses—Alpes). *Cahiers du Centre d'Études des Sociétés Méditerranéennes*, Aix en Provence 1966, 1, p. 131—171.

7. W. BIEGAJŁO. Polish Land Utilization Surveys in the years 1960—1964. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary 4, Budapest 1967, p. 28—34.

8. W. BIEGAJŁO, D. KOWALCZYK, H. PISKORZ. Land Utilization in Nieborów. (in) Problems of Applied Geography. Proceedings of the Anglo-Polish Seminar. September 15—18, 1959, Warsaw 1961, p. 56—68.

9. K. BROMEK. Opracowanie szczegółowej mapy użytkowania ziemi dla Krakowa. (Sum: The Preparation of a Detailed Land Utilization Map for the City of Cracow). *Przegląd Geograficzny* 27, 1955, 3—4, p. 589—604.

10. K. BROMEK. Użytkowanie ziemi w Krakowie i przy-

ległych częściach powiatu Krakowskiego około 1960 roku. (Sum: The Utilization of Land in Cracow and in the Adjoining Parts of the Cracow County around 1960). *Zeszyty Naukowe Uniwersytetu Jagiellońskiego. Prace Geograficzne* 14. Kraków 1966, 107 p.

11. A. BLOK-IWIŃSKA. The Commune of Kwaczała. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary 4. Budapest 1967, (a colour land use map out of the text).

12. Detailed Map of Land Utilization. Sheet N 34—54 c-a, Chroberz. Instytut Geografii PAN, Warszawa 1964.

13. K. DZIEWOŃSKI. Detailed Survey of Land Utilization in Poland. (in) International Geography Seminar. Aligarh Muslim University. Aligarh. India, January 1956, p. 562—566.

14. K. DZIEWOŃSKI. Detailed Survey of Land Utilization in Poland. *Przegląd Geograficzny* 28, 1956, Suppl. p. 26—31.

15. K. DZIEWOŃSKI, J. KOSTROWICKI. Detailed Land Use Survey in Poland. (in) Comptes Rendus du Congrès International de Géographie. Rio de Janeiro 1956, 4, 1966, p. 108—113.

16. K. DZIEWOŃSKI, J. KOSTROWICKI, H. PISKORZ, R. SZCZĘSNY. Tymczasowa Instrukcja sporządzania szczegółowych map użytkowania ziemi. (Preliminary Instruction for the Detailed Land Use Mapping). *Dokumentacja Geograficzna,* 1956, 1, 39 p.

17. J. GLUZIŃSKI, S. RZYMOWSKI. Użytkowanie ziemi i gospodarka rolna powiatu elbląskiego. (Sum: Land Utilization and Agriculture of the County of Elbląg). *Zeszyty Geograficzne Wyższej Szkoły Pedagogicznej w Gdańsku,* 8, 1966, p. 73—151.

18. C. GUZIK. Z zagadnień użytkowania ziemi w powiecie bocheńskim. (Sum: On the Land Utilization in the District of Bochnia). *Zeszyty Naukowe Uniwersytetu Jagiellońskiego.* Prace Geograficzne 15, Kraków 1967, p. 61—72.

19. S. HAUZER. Użytkowanie ziemi i gospodarka rolna w gromadzie Łomianki. (Land Utilization and Agriculture in

the Commune of Łomianki). *Dokumentacja Geograficzna,* 1965, 5, p. 39—63.

20. S. HAUZER. The Commune of Łomianki. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary. Budapest 1967. (a colour land use map, as appendix to the text).

21. Z. HOFFMANN, R. KULIKOWSKI, W. STOLA. The Commune of Pacanów and Oleśnica. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary. 4 Budapest 1967. (a land use colour map, appendix to the text).

22. Z. HOŁUB-PACEWICZOWA. Mapa gospodarczo-osadnicza pasterstwa w Tatrach. (Carte de la vie économique des bergers et de leurs établissements dans les Tatra). — a colour map inserted to the monograph by the same author.

23. Z. HOŁUB-PACEWICZOWA. Osadnictwo Pasterskie i wędrówki w Tatrach i na Podtatrzu. (Res: L'habitat et les migrations pastorales dans les Tatra et dans la région subtatrique). *Prace Komisji Geograficznej PAU* 1. Kraków 1931, 508 p.

24. S. ILESIČ. Geografija na Poljskem. (Geography in Poland). *Geografski Vestnik* 29—30, 1957/58, p. 184—185.

25. A. JAHN. Studia nad użytkowaniem ziemi w Polsce, stan dotychczasowy badań i projekt instrukcji (1947?). (Land Use Studies in Poland. The Present State and the Project of Instruction), mimeographed (1947?).

26. A. JELONEK. Z badań nad użytkowaniem ziemi w powiecie limanowskim. (From the Studies on Land Utilization in the Limanowa County). Zeszyty Naukowe Uniwersytetu Jagiellońskiego. *Prace Geograficzne* 4, Kraków 1961, p. 71—96.

27. J. KOSTROWICKI. Polskiye Issledovaniya Ispolzovaniya zemel. (Polish Land Utilization Studies). *Izvestia Akademii Nauk SSSR. Seria Geograficheskaya* 4, 1958, p. 131—134.

28. J. KOSTROWICKI. Badania nad użytkowaniem ziemi w Polsce. (Sum: Research Studies on Land Utilization in Poland). *Przegląd Geograficzny* 31, 1959, 3—4, p. 517—533.

29. J. KOSTROWICKI. (ed) Instrukcja szczegółowego zdjęcia użytkowania ziemi. (Instruction for the Detailed Land Use Survey). Dokumentacja Geograficzna 1st edition, 1950, 2, 128 p.; revised 2nd edtion. Dokumentacja Geograficzna 1959/60, 2, 124 p.; 3rd revised edition. *Dokumentacja Geograficzna* 1962, 3, 129 p.

30. J. KOSTROWICKI. Land Utilization Survey as a Basis for Geographical Typology of Agriculture. *Przegląd Geograficzny* 32, 1960, Suppl. p. 169—182.

31. J. KOSTROWICKI. Problematyka geograficzno-rolnicza szczegółowego zdjęcia użytkowania ziemi Polski. (Sum: Geographic-Agricultural Problems in the Detailed Survey of Land Utilization in Poland). *Przegląd Geograficzny* 32, 1960, 3, p. 227—279.

32. J. KOSTROWICKI. The Aims, Concept and Method of The Polish Land Utilization Survey. *Dokumentacja Geograficzna,* 1960, 3, 20 p.

33. J. KOSTROWICKI. Polish Land Utilization Survey. (in) Problems of Applied Geography. Proceedings of the 1st Anglo-Polish Seminar. Warsaw 1961, p. 45—56.

34. J. KOSTROWICKI. (ed) Land Utilization. Methods and Problems of Research. Proceedings of the International Seminar, Poland, 30.V.—8.VI.1960. Polish Academy of Sciences, Institute of Geography. *Geographical Studies* 31, Warsaw 1962, 250 p.

25. J. KOSTROWICKI. Le survey polonais de l'utilisation du sol. (in) Land Utilization. Methods and Problems of Research. *Geographical Studies* 31, Warsaw 1962, p. 31—58.

36. J. KOSTROWICKI. The Agricultural Problems involved in the Polish Land Utilization Survey. (in) Land Utilization. Methods and Problems of Research. *Geographical Studies* 31, Warsaw 1962, p. 59—128.

37. J. KOSTROWICKI. The Polish Detailed Survey of Land Utilization. Methods and Techniques of Research. *Dokumentacja Geograficzna,* 1964, 2, 72 p.

38. J. KOSTROWICKI. (ed) Land Utilization. in East-

Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, 500 p.

39. J. KOSTROWICKI. Land Utilization. Case Studies. Origins, Aims, Methods, Techniques. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 7—28.

40. J. KOSTROWICKI. An Attempt to Determine the Geographical Types of Agriculture in East-Central Europe on the Basis of the Case Studies on Land Utilization. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 453—498.

41. J. KOSTROWICKI. Polskie Zdjęcie użytkowania ziemi. (Polish Land Utilization Survey. Methods and Techniques). Warszawa 1965, 61 p. (mimeographed).

42. J. KOSTROWICKI. Săvremenite problemi i metodi na polskata selskostopanska gheografiya. (Contemporary Problems and Methods of the Polish Agricultural Geography). *Izvestia na Bălgarskoto Geografsko Drujhestvo* 5 (15), 1965, p. 115—125.

43. J. KOSTROWICKI. Code Name: Land. *Poland. Illustrated Magazine* 1, 1965, p. 12—13.

44. J. KOSTROWICKI. Criptónimo „Tierra" (Code Name: Land). *Polonia. Revista Ilustrada* 11 (135), 1965, p. 12—13.

45. J. KOSTROWICKI. Cryptonyme: Terre. *La Pologne. Revue Mensuelle* 11 (135), p. 12—13. 1965.

46. J. KOSTROWICKI. Kennwort: Erde. (Code Name: Land). *Monatsschrift Polen* 11 (135), 1965, p. 12—13.

47. J. KOSTROWICKI. Kryptonim Ziemia (Code Name: Land). *Polska* 11 (135), 1965, p. 12—13.

48. J. KOSTROWICKI. Täcknamn: Jorden. (Code Name: Land). *Tidskriften Polen* 11 (65), 1965, p. 12—13.

49. J. KOSTROWICKI. Metody opracowywania materiałów zdjęcia użytkowania ziemi. (Sum: On the Methods Applied to the Elaboration of the Materials Collected by the Land Utilization Survey). *Dokumentacja Geograficzna,* 1966, 2/3, p. 1—21.

50. J. KOSTROWICKI. O metodach opracowywania materiałów zdjęcia użytkowania ziemi. (On the Methods of Elaborating the Material from Land Use Survey). *Komitet Zagospodarowania Przestrzennego Kraju Polskiej Akademii Nauk. Biuletyn* 42, 1966, p. 219—235.

51. J. KOSTROWICKI. Problemy i metody polskiej geografii rolnictwa. (Sum: Contemporary Problems and Methods of the Polish Agricultural Geography). *Czasopismo Geograficzne* 37, 1966, 3, p. 289—304.

52. J. KOSTROWICKI. Sur l'application de la géographie de l'agriculture aux besoins pratiques de l'amènagement du territoire. (in) La Geographie appliquée dans le monde. UGI La commission de géographie appliquée. Actes de la Réunion à Prague du 13 au 18 Septembre 1965. Prague 1966, p. 66—79.

53. J. KOSTROWICKI. Zdjęcie użytkowania ziemi i jego przydatność praktyczna. (Land Utilization Survey and its Practical Importance). *Komitet Zagospodarowania Przestrzennego Kraju Polskiej Akademii Nauk. Biuletyn* 42, 1966, p. 211—218.

54. J. KOSTROWICKI. Die Agrargeographie in Polen. Entwicklung, Forschungsgebiete und-ergebnisse. (Agricultural Geography in Poland, Development, Scope and Achievements). *Wissenschaftliche Zeitschrift der Universität Halle. Math.-Nat. Reihe,* 16, 1967, 2. *Mitteilungen für Agrargeographie, landwirtschaftliche Regionalplanung und ausländische Landwirtschaft,* 14, p. 165—177.

55. J. KOSTROWICKI. Methods Applied in Elaborating the Material of Land Utilization. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary 4, Budapest 1967, p. 9—18.

56. D. KOWALCZYK. Użytkowanie ziemi w powiecie suwalskim. (Land Utilization in the Suwałki Country). *Dokumentacja Geograficzna,* 1962, 6, p. 41—77.

57. S. LESZCZYCKI. Badania geograficzne da osadnictwem w Beskidzie Wyspowym. (Res: Recherches géographiques sur l'habitat rural dans le Beskid Wyspowy). *Prace In-*

stytutu Geograficznego Uniwersytetu Jagiellońskiego. Kraków 1932, 83 p.

58. S. LESZCZYCKI. Region Podhala. Podstawy geograficzno-gospodarcze planu regionalnego. (Res: Les bases géographiques du plan regional du Podhale).Kraków 1938, 286 p.

59. M. MATUSIK. Niektóre problemy użytkowania ziemi a rzeźba terenu na Pojezierzu Kaszubskim. (Sum: Some Problems of Land Utilization and the Relief of the Cassubian Lakeland). *Zeszyty Geograficzne Wyższej Szkoły Pedagogicznej w Gdańsku* 7, 1966, p. 153—178.

60. W. MĄCZNIK-STOLA. Kierunki użytkowania gruntów ornych w województwie Białostockim. (Sum: The Orientations in Arable Land Utilization, in the Voivodship of Białystok). *Przegląd Geograficzny* 36, 1964, 1, p. 143—155.

61. B. MICHNIEWSKA-SZCZEPKOWSKA. Gospodarka rolna w strefie podmiejskiej Olsztyna, gromada Dajtki. (Farming in the Suburban Zone of Olsztyn The Cummune of Dajtki). *Dokumentacja Geograficzna,* 1962, 6, p. 79—110.

62. W. ORMICKI. Przyczynek do kartografii użytkowania powierzchni ziemi (A Contribution to the Cartography of the Utilization of Earth Surface). *Sprawozdanie z Czynności i Posiedzeń PAU* 37, 1932, 10, p. 34—35.

63. H. PISKORZ. Lasy i leśnictwo w powiecie mrągowskim. (Forests an Forestry in the Mrągowo County). *Dokumentacja Geograficzna,* 1959, 1, p. 25—59.

64. H. PISKORZ. Lesnaya problematika syemki ispolzovaniya zemel. (Sum: Problems of Forest Land Use in Poland). (in) Land Utilization. Methods and Problems of Research. *Geographical Studies* 31, Warsaw 1962, p. 129—178.

65. H. PISKORZ-SKOCKA. Użytkowanie ziemi w powiecie koszalińskim. (Land Utilization in the Koszalin Country). *Dokumentacja Geograficzna,* 1962, 6, p. 7—39.

66. H. PISKORZ-SKOCKA. The Commune of Miłogoszcz on the Pomeranian Baltic Sea Coast. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 157—194.

67. W. PRZEPIÓRSKI. Nieużytki w Polsce południowej. (Res: Les friches en Pologne meridionale). *Prace Komisji Geograficznej PAU* 3, Kraków 1933, 32 p.

68. W. PRZEPIÓRSKI. Z geografii osadnictwa w karpackim dorzeczu Czeremoszu. (La géographie de l'habitat rural dans le bassin du Czeremosz). *Czasopismo Geograficzne* 1935, p. 36—55.

69. J. RAKOWICZ. Użytkowanie ziemi w mieście Trzcińsko-Zdrój. (Land Utilization in the Town of Trzcińsko-Zdrój). *Dokumentacja Geograficzna*, 1958, 2, p.27—45.

70. J. RAKOWICZ. Miasto Mrągowo: środowisko geograficzne, rozwój i użytkowanie ziemi. (The Town of Mrągowo: Natural Environment, Development and Land Utilization). *Dokumentacja Geograficzna*, 1959, 1, p. 60—102.

71. G. RÉMY. Les trauvaux polonais sur l'utilisation du sol. *Etudes Rurales* 12, 1964, p. 134—136.

72. E. RÜHLE. Użycie ziemi i rozmieszczenie ludności na zachodnim Polesiu. (Res. Utilisation du sol et répartition de la population en Polèsie Occidentale). *Wiadomości Służby Geograficznej* 1930, p. 229.

73. E. RÜHLE. Studium powiatu kowelskiego. (A study of the Kowel County). *Rocznik Wołyński* 5—6, 1937, p. 171—403.

74. W. STOLA. Gospodarka rolna w strefie podmiejskiej Warszawy. Wieś Bielawa. (Sum: Rural Economy in a Suburban Area on the Example of Bielawa Village). *Przegląd Geograficzny* 34, 1962, 1, p. 173—155.

75. W. STOLA. The Commune of Czersk in the Warsaw Suburban Zone. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 87—124.

76. W. STOLA. Użytkowanie ziemi i stosunki gospodarcze w powiecie pińczowskim. (Land Utilization and Economic Problems in the Pińczów County). *Dokumentacja Geograficzna* 5, 1965, p. 3—38.

77. W. STOLA, W. TYSZKIEWICZ. Znaczenie badań użytkowania ziemi w planowaniu przestrzennym. (The Impor-

tance of Land Use Survey for Physical Planning). *Budownictwo Wiejskie* 11, 1964, p. 11—13.

78. R. SZCZĘSNY. Zagadnienie odłogów i nieużytków na terenie powiatu mrągowskiego. (Problem of Idle Lands in the Mrągowo County). *Czasopismo Geograficzne* 29, 1958, 3, p. 391—396.

79. R. SZCZĘSNY. Gospodarka rolna w Beskidzie Niskim. Gromada Cergowa. (Sum: Farming in Lower Beskid. Village of Cergowa). *Przegląd Geograficzny* 31, 1959, 3—4, p. 629—644.

80. R. SZCZĘSNY.Użytki rolne w powiecie mrągowskim w latach 1955 i 1956. (Agricultural Land Uses in the Mrągowo County). *Dokumentacja Geograficzna,* 1959, 1, p. 1—24.

81. R. SZCZĘSNY. Gospodarka rolna w powiecie myszkowskim. (Farming in the Myszków County). *Dokumentacja Geograficzna,* 1960, 1, p. 68—101.

82. R. SZCZĘSNY. The Carpathian Commuune of Cergowa. (in) Land Utilization, in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 61—86.

83. R. SZCZĘSNY, H. PISKORZ, J. RAKOWICZ. Studia nad użytkowaniem ziemi w powiecie mrągowskim. (Land Utilization Studies in Mrągowo County. *Dokumentacja Geograficzna,* 1959, 1, 103 p.

84. Utilisation du sol dans les districts: Bielsk Podlaski, Wysokie Mazowieckie, Mrągowo, Gdańsk, Kartuzy et Inowrocław. Communications préparés pour la Conference Internationale sur les problèmes de l'utilisation du sol. Varsovie 30.V.—8.VI.1960. *Documentation Geographique,* 1961, 6a, 115 p.

85. W. TYSZKIEWICZ. The Commune of Kruszwica in the Cuiavian Plain of Central Poland. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 125—156.

86. F. UHORCZAK. (ed) Polska Przeglądowa Mapa Użytkowania Ziemi. 1 : 1 000 000. (General Land Utilization Map 1 : 1 000 000). Warszawa 1957, 22 maps.

R U M A N I A

Land use mapping started in Rumania quite independently in 1949—1951. A set of three maps in the scale 1 : 200 000, each with 39 sheets including: 1. categories of land uses 2. crops 3. livestock breeding, was completed by the geographical Section of the Rumanian Academy of Sciences under Professor V. TUFESCU. Categories of land use were marked on the first two maps either by their range (forests, vineyards, alpine pastures) or by symbols (arables, grassland, orchards, idle land) for each village or commune. The dominating category in each village was marked by colour, the secondary one by means of superimposed strips, the remaining categories by different symbols. The maps have not been published (49).

After some minor attempts undertaken by the Ministry of Agriculture in the period 1952—1956, another Land Use Map of Rumania was completed in the scale 1 : 250 000 and published in 1960 in a limited number of copies. All principal land uses (arables, pastures, meadows, orchards, vineyards, forests) are shown there by their range, based on topographic surveys and comparisons on field, carried out by local state organs (14).

In 1962 the economic map of Rumania was published in 1 : 400 000 for the educational usage. It comprises, besides industrial centres, the main land uses marked in colours and principal crops by superimposed strips.

In 1963 the land utilization map of Rumania in the scale of 1 : 1 million together with the explanatory text was published

in black and white by I. VELCEA and I. IORDAN (56, 57). Cropland was subdivided into land used mostly for grain crops with wheat prevailing, wheat — and-maize, or with maize prevailing, and then land mostly used under industrial crops, by means of symbols for fiber crops, oleaginous crops, sugar beet, potatoes etc. The map indicates also irrigated crops such as vegetables or rice. Pastures and meadows, orchards, vineyards, forests and reeds were also indicated.

Studies on natural conditions of agriculture and their potentialities initiated by the Rumanian Academy of Sciences in the framework of agricultural zoning of the country (50) should also be mentioned. A detailed mapping in the scale 1 : 10 000 — 1 : 20 000 was made and particular zones distinguished. The study represents a scientific basis for planning agricultural development for the next 10—15 years. (see 49).

The collectivization of Rumanian agriculture requires a rational organization of territories, the division of land among particular forms of land uses, the exchange of some land between farm units and a rational subdivision of agricultural land within particular state and collective farms into rotation fields, workers allotments, etc. This process involves some changes in land utilization, namely by afforestation of some low productive mountain pastures, by clearing of some shrubs or by transformation of some newly irrigated or drained land into arable land as well as by terracing of slopes or eroded land to be used for wine or fruit growing. All these transformations require land use studies. Two groups of these works imply a closer insight into the problem concerned: terracing in the zones of rough relief and change of water conditions by irrigation or drainage and land reclamation (4, 31, 47).

In response to these practical needs the detailed land use studies were first of all concentrated on the lower Danube valley and the Danube Delta. The group of research workers from the Institute of Geology and Geography of the Rumanian Academy of Sciences spent some time on field working in these

areas. A number of studies were published and a colour land use map 1 : 1 million of the Danube valley is in print.

In general, land use mapping was based on recommendations of the Commission on World Land Survey. Because of the special signifance of the problems of soil erosion and of slope terracing, the degree of sloping was introduced into the detailed land use maps.

After 1964 land use studies were greatly expanded. The investigations were undertaken in nearly all larger physical units of the country, i.e. in the Danube delta, the Getic platform, the Muntenian Subcarpathians and those of the Curvature, the Western Plain, the Transilvanian tableland, in the series of intramountaine depressions, representing all together over a third of the country's total surface. On the basis of these investigations a number of studies were made into the structure and distribution of land uses, and changes in land utilization. The detailed mapping was done to the scales of 1:50 000 and 1 :100 000, however, not for the whole of investigated areas, but for the Danube valley and the Getic platform (under I. VELCEA), on the Prahova and Curvature Subcarpathians (by D. ŞTEFANESCU), the suburban area of Bucharest (by I. IORDAN), the Transilvanian Plain (by M. MIHAIL) on the basins of Maramureş, Sibiu, Făgaraş, etc. (by G. IACOB).

In most of the maps the recommendations of the IGU Land Use Commission were observed as far as the distinguishing of principal land uses (arables, pastures, meadows, vineyards, orchards, forests and other) was concerned. The use of cultivated land by prevailing crops was marked by dots, strips, shades, etc. In certain studies more detailed Polish methods were also applied.

In 1966 the common field investigations were carried out in Dobrudja, Moldavia and Bukovina by a mixed Polish-Rumanian group under J. KOSTROWICKI and I. VELCEA. The group used a special simplified method worked out for large-

-scale farming. Few studies in the Argeş were also made in 1966 by W. BIEGAJŁO.

Aimed at the improvement of the use of natural conditions, the Rumanian investigations included all forms of productive land use, the agricultural, forest nad piscicultural as well as residential urban and rural areas. A number of studies were made to assess natural conditions and to prepare recommendations as to their more rational use. The studies of that kind started in Iaşi. At the Institute of Geology nad Geography of the Academy the mapping of biotope types in the scale 1 : 50 000 was initiated in the southern part of the country in order to find out the capacity of land use and a possible extension of certain forms of land utilization. The studies expanded to the other centres (5, 9, 11, 12, 18, 19, 21, 22, 30, 35, 38, 40, 42).

On the basis of the land use studies, some regional investigations were carried out in Rumania, and suggestions (assessment) as to the systematization or planning of rural settlements and the rational organization of territory were formulated.

Land use maps are widely used in regional planning as well as for drawing economic and functional maps of rural and urban settlements, and in the analyses of the evolution of various ways of land use on certain territories. On the other hand, land use maps are frequently applied in the studies in regional geography.

Following the agreements concluded with local authorities, the mapping of South-Western part of Rumania was made by a group from Academy's Institute of Geology and Geography. The map in the scale 1 : 25 000, subsequently generalized in the scale of 1 : 50 000 and 1 : 100 000 for the use of socialized farm units, covered about 1500 square kilometres. Similar maps were made for the North of Oltenia (Gorj district) and the suburban area of Craiova.

Resembling studies wese made by geographers from the University of Iaşi under prof. I. ŞANDRU and C. MARTINIUC

for several districts of Moldavia (Pașcani, Huși and the towns of Iași, Huși, etc. (1, 6, 8, 41, 41a). The systematization studies of the suburban-zone of Cluj by A. BOGDAN, E. MOLNAR, M. MIHAIL etc included also the land use maps.

A number of methodological papers on land use were published (39, 48, 49, 52, 53, 54), as well as numerous articles of regional character (1, 2, 3, 15, 16, 17, 20, 23, 24, 25, 28, 33, 34, 36, 37, 43, 44, 45, 46, 51, 55, 58). Special attention was drawn to land use in the suburban areas (10, 26, 27, 29).

A number of synthetic, small-scale land use maps were published recently. The economic map of Rumania, made in GGI and published in 1965, besides industrial centres shows all main forms of land use: arable, grassland, vineyards, orchards, forests, reeds.

A mention should be made on the land use and agricultural maps published in the Atlas of Rumania in 1965 (13, 32).

At present, the work is carried on by a number of geographers who are engaged in drawing an agricultural map for the National Atlas of Rumania.

A number of studies on the natural conditions of particular crops together with maps were done at the Institute of Agricultural Research (ICAR) and other agricultural institutes (ISPA and DRIFOT).

The methods of land use and other studies of agriculture were discussed at the symposium on applied geography held in Cluj in September 1966 where several papers on land use studies and their application in the territorial systematization of settlement and the organization of rural space were presented (by A. RĂDULESCU, I. VELCEA, E. MOLNAR, G. IACOB, I. IORDAN, I. ȘTEFANESCU, M. MIHAIL).

In October 1967 the symposium on agricultural geography was organized in Craiova with 30 papers on methods of agricultural geography, agricultural typology and land use investigations.

References

1. M. APĂVĂLOAIE. Aspecte economico-geografice asupra agriculturii din Cîmpia Moldovei. (Economic-geographical Aspects of Agriculture of the Moldavian Plain). *Analele Ştiintifice ale Univ. „Al. I. Cuza" din Iaşi* 12, 1966.

2. C. ATANASIU. Cîteva probleme de geografie a agriculturii, privind posibilităţile actuale şi perspectivele de dezvoltare a legumiculturii in Raionul Mihaileşti. (Res. Quelques problëmes de géographie agricole concernants les possibilités actuelles et les perspectives de développement de la légumiculture dans le district le Mihaileşti). *Probleme de Geografie* 3, 1956, p. 257—270.

3. N. BARANOVSKY. Particularităţi geografice in repartiţia teritoriala a productiei industriale şi agricole în regiunea Ploesti. (Sum:Geographical Peculiarities in the Territorial Distribution of Industrial and Agricultural Production in the Ploeşti region). *Probleme de Geografie* 9, 1963, p. 201—215.

4. C. BLAJ. Pădurile din RPR. Evoluţia suprafaţei şi importanţa lor economica (Res: Les fôrets de la Republique Populaire Roumaine. L'evolution de leur superficie, leur importance économique). *Analele Ştiinţifice ale Universităţii „Al. I. Cuza" din Iaşi, Sect. II,* 5, 1959, 1, p. 215—226.

5. A. BOGDAN, I. RĂSMERIŢ, Z. SPÎRCHEZ. Studii valorificarea terenurilor nisipoase din nord-vestul ţarii. (Assessment studies of Sandy Lands of the North-Western Part of the Country). *Studia Universitatis Babeş-Bolyai, Seria Geografie,* 2, 1967.

6. N. BUCUR, N. BARBU. Complexul agropedologic dîn Podgoria de la sud de Iaşi. (Res: Le complèxe agro-pèdologique des vignobles du sud de Jassy). *Buletin Ştiinţific de ştiinţe biologice, agronomice, geologice şi geografice* 6, 1954, 4, p. 1095—1109.

7. N. BUCUR, N. BARBU. Complexul de condiţii fizico-geografice din „Coasta Dealul Mare Hărlău". (Complex of the

Natural Conditions of the „Coasta Dealul Mare Hărlău"). *Probleme de Geografie* 1, 1954, p. 137—153.

8. D. CHIRIAC. Consideraţii economico-geografice asupra păstoritului din Ţara Dornelor. (Considerations Economic-Geographical on the Pastures of Ţara Dornelor). *Analele Ştiinţifice ale Universităţii „Al. I. Cuza" din Iaşi* 12, 1966.

9. S. DECULESCU. Folosirea economică a terenurilor nisipoase dîn sud-estul Olteniei. (The Economical Utilization of the Sandy Soils from South-Eastern Oltenia). *Probleme Agricole* 10, 1966, p. 82—89.

10. P. DEICĂ, I. IORDAN, D. OANCEA. Zonea preorăşeneasca a Craiovei. (Sum: The Preurban Area of Craiova). *Natura* 1, 1965, p. 32—42.

11. H. GRUMĂZESCU. Regiunea geografică şi utilizarea terenurilor. (Geographical Regions and Land Utilization). *Studii şi Cercetari de Geologie, Geofizică, Geografie. Seria Geografie* 13, 1966, 1, p. 3—11.

12. H. GRUMĂZESCU. The Natural Landscape and the Land Use. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary 4, Budapest 1967, p. 54—58.

13. Harta Generală a Agriculturii. (General Map of Agriculture). Atlas Geografic. Republica Socialistă România. Bucureşti 1965, p. 90—91.

14. Harta utilizarii terenurilor în RPR. (Map of Land Utilization of RPR). Scara 1 : 250 000. Ministerul Agriculturii. Bucharest 1960.

15. G. IACOB. Dezvoltarea agriculturii in „Ţara" Maramureşului. (Sum: Development of Agriculture in „Ţara" Maramureşului). *Probleme de Geografie* 9, 1963, p. 245—256.

16. G. IACOB. Contribuţii la studiul économico-geografic al Depresiunii Zărandului. (Contributions to the Economic--Geographical Study of the Zarănd Basin). *Studii şi Cercetari de Geologie, Geofizică, Geografie. Seria Geografie* 12, 1965, 1, p. 123—131.

17. G. IACOB. Contribuţii la studiul geografiei agriculturii din Depresiunea Someşului. (Contributions to Agricultural

Geography of the Someş Plain). *Communicări de Geografie* 3, 1965, p. 219—228.

18. G. IACOB. Aspecte geografice privind lucrările hidroameliorative şi utilizarea actuală a terenurilor în Cîmpia Mureşului. (Geographical Aspects of the Hydroameliorative Works and the Present Land Utilization in the Plain of Mureş). *Studii şi Cercetari de Geologie, Geofizica, Geografie. Seria Geografie* 1, 1966.

19. G. IACOB. Aspecte geografice privind valorificarea resurselor nature ale depresiunii Vadului. (Sum: Turning to Account the Natural Resources in the Vad Depression). *Natura* 1966, 4, p. 30—34.

20. G. IACOB. Contribuţii la studiul geografiei agriculturii din Depresiunea Giurgeului. (Contributions to Agricultural Geography of the Basin of Giurgeu). *Studii şi Cercetari de Geologie, Geofizică, Geografie. Seria Geografie* 2, 1966, p. 213—224.

21. G. IACOB. Aspecte geografice privind utilizarea raţionale a terenurilor nisipoase din sudul Olteniei. (Geographical Aspects of the Rational Utilization of Sandy Lands in Southern Oltenia). *Studia Universitatis Babeş-Bolyai, Seria Geografie* 2, 1967.

22. E. IOIŢA. Aspecte ala eficienţei economice a irigaţilor în agricultura. (Aspects of Economic Efficiency of Irrigation in Agriculture). *Revista de Statistica* 8, 1967.

23. V. IORDACHESCU. Cîteva aspecte din agricultura raionului Petroşani. (Res: Quleques aspects sur l'agriculture du rayon Petroşani). *Analele Universităţii C. I. Parhon. Bucureşti. Seria Ştiinţelor Naturii* 9, 1956, p. 241—266.

24. I. IORDAN. Economia agrară a raionului Vidra. (Res: L'economie agraire du district de Vidra). *Probleme de Geografie* 5, 1957, p. 339—353.

25. I. IORDAN. The Pre-urban Zone of Bucharest. *Revue Roumaine de geologie, geophysique et geographie. Série de Geographie* 8, 1964, p. 245—248.

26. I. IORDAN. Zona de convergenţa a oraşului Tîrgu-Jiu. (The Zone of Influence of the Town of Tîrgu-Jiu). *Studii şi Cercetari de Geologie, Geofizică, Geografie. Seria Geografie* 1, 1967, p. 51—58.

27. I. IORDAN. Organizarea teritoriului agricol al zonei preorăşeneşti Bucureşti. (Organization of Agricultural Land in the Suburban Zone of Bucharest). *Studii şi Cercetari de Geologie, Geofizică, Geografie. Seria Geografie* 2, 1967, p. 219—222.

28. I. IORDAN, A. BARCO. Economia agricola a Bărăganului de Sud şi Băltii Ialomiţei. (Sum: Agricultural Economy of the Southern Băragan and of the Ialomiţa Lake). *Probleme de Geografie* 9, 1963, p. 257—271.

29. I. IORDAN, D. OANCEA. Zonele de aprovizionare oraşului Galaţi cu fructe şi struguri. (The Zone of Supply of the City of Galaţ in Fruits and Vegetables). *Studii şi Cercetari de Geologie, Geofizică, Geografie. Seria Geografie* 1, 1965, p. 115—122.

30. A. MĂIANU. Cu privire la valorificarea raţionala a terenurilor cu condiţii de salinizare. (About the Rational Evaluation of the Soils in Salinization Conditions). *Probleme Agricole,* 1967, 1, p. 75—81.

31. N. MAUŢ. Noi terenuri pentru agricultura. (New Lands for Agriculture). *Natura,* 1964, 4.

32. Modul de folosinţa a terenului. (Mode of Land Utilization). Atlas Geografic Republica Socialistă România. Bucureşti 1965, p. 78—79.

33. E. MOLNAR. Aspecte din agricultura şi industria Cîmpiei Transilvaniei. (Res: Aspects de l'agriculture et de l'industrie de la Plaine de Transylvanie). *Studia Universitatis Babeş-Bolyai* 2, 1961, 1. *Geologia-Geographia,* p. 227—240.

34. D. I. OANCEA. Contribuţii la geografia păstoritului dîn Masivul Bucegi. (Contributions to the Pastoral Geography of the Bucegi Range). *Studii şi Cercetari de Geologie, Geofizică, Geografie. Seria Geografie,* 1, 1966, p. 91—97.

35. G. OBREJANU. Aspecte privind punerea în valoare a nisipurilor şi solurilor nisipoase din R. P. România. (Aspects

Concerning the Development of Sands and Sandy Soils in the Socialist Republic of Rumania). *Probleme Agricole,* 1966, 1, p. 16—19.

36. I. POPOVICI. Consideraţii asupra unei hârfi privitoare la geografia agriculturii din Delta Dunarii. (Considerations on the Agricultural Geography of the Danube Delta). *Nature* 3, 1965.

37. I. POPOVICI. Utilizarea terenurilor din Delta Dunării. (Sum: Utilization of the Danube Delta). *Natura,* 1966, 1, p. 28—37.

38. N. N. POPP. Importanţa geografiei aplicate în amenajarea teritoriala complexa în lunca Delta Dunării. (The Importance of Applied Geography for the Complex Territorial Development of the Valley and Delta of Danube). *Studia Universitatis Babeş-Bolyai. Seria Geografie* 2, 1967.

39. A. RĂDULESCU. Contribuţii geografice la lucrările de ameliorati agricole şi de sistematizare a teritoriului R. P. Româna. (Geographical Contributions to the Agricultural Improvement Works and to the Physical Planning in Rumania). *Natura* 4, 1964.

40. G. SANDU. Despre valorificarea nisipurilor şi solurilor nisipoase din ţara noastra. (Sum: The Turning to Account of the Sands and Sandy Soils of our Country). *Natura,* 1966, 6, p. 15—22.

41. I. ŞANDRU, V. GIOSU, N. BARBU, P. POGHIRC, E. AVRAM. Probleme de geografie economică din raionul Paşcani. (Res. Problèmes de géographie économique du ‚rayon" Paşcani). *Analele Ştiinţifice ale Universtăţii „Al. I. Cuza" din Iaşi, sect. II.* 3, 1957, 1—2, p. 1—33.

41a. I. ŞANDRU, C. MARTINIUC, V. BLAJ BĂCĂUANU, M. PANTAZICĂ, M. SAFCA, N. BARBU, P. POGHIRC, V. GIOSU. Contribuţii geografice la studiul oraşalui Huşi. (Res. Contribution géographique á l'étude de la ville de Huşi). *Probleme de Geografie* 8, 1957, p. 231—324.

42. A. SAVU. Relieful din regiunea cheilor Turzii şi utilitatea sa economică. (A Relief of the Cheila Turzii and its

Economic Utilization). *Studia Universitatis Babeş-Bolyai. Seria Geografie* 2, 1967.

43. I. ŞTEFANESCU. Unele aspecte geografice ale culturilór in Bărăganul Central. (Res: Certains aspects géographiques des cultures dans la Bărăgan Central). *Probleme de Geografie* 8, 1962, p. 451—464.

44. I. ŞTEFANESCU, N. BARANOVSKY. Formes de l'exploatation agricole dans les Subcarpates de la Prahova et les changements survenus ces derniers cent ans. *Revue Roumaine de géologie, geophysique et gégrophie. Série de Geographie* 8, 1964, p. 51—56.

45. I. ŞTEFANESCU, E. TIMARU. Contribuţii la studiul geographic al agriculturii din Balta Brăilei. (Contributions to the Geographical Study of Agriculture of the Balta of Braila). *Communicări de Geografie* 3, 1965, p. 229—237.

46. G. TIMARU. Amplasarea raţională a culturilor pe zone in trustul gostat Argeş. (The Rational Zoning of Crops within the Framework of the Arges State Farm Trust). *Probleme Agricole* 1966, 11, p. 46—54.

47. V. TUFESCU. Contribuţia geografiei la studiul terenurilor în agricultura PRP. (Sum: The Contribution of Geography to the Study of the Utilization of Soils in Agriculture). *Natura* 1963, 6, p. 22—32.

48. V. TUFESCU. Angewandte Geographie und rationelle Landnutzung in der Sozialistischen Republik Rumänien. (Applied Geography and Rational Land Utilization in the Socialist Republic of Rumania). *Wissenschaftliche Zeitschrift der Universität Halle, Math.-Nat. Reihe* 17, 1968. *Mitteilungen für Agrargeographie, landwirtschaftliche Regionalplanung und ausländische Landwirtschaft* 33. (in print).

49. V. TUFESCU, I. VELCEA. Study and Mapping of Land Use in Rumania. *Revue Roumaine de géologie, géophysique et géographie. Serie de Géographie* 8, 1964, p. 233—237.

50. G. VALUŢA. Zonarea producţiei agricole in R. P. Romina. (Zoning of Agricultural Production in the Rumanian (People's Republic). *Natura,* 1963, 2, p. 9—17.

51. I. VELCEA. Ţara Oaşului. Studiu de geografia economică regională. (Sum. Ţara Oaşului. Study of Economic Geography). *Probleme de Geografie* 9, 1963, p. 217—243.

52. I. VELCEA. Dezvoltarea şi orientarea cercetarii în geografia utilizări terenurilor din România. (Development and Directions of Research in the Geography of Land Utilization in Rumania). *Studii şi Cercetari de Geologie, Geofizică, Geografie. Seria Geografie* 2, 1966, p. 205—212.

53. I. VELCEA. Schimbări pe harta utilizării terenurilor in R. S. România. (Sum: Changes Occurred on the Map of Land Utilisation of the Socialist Republic of Romania). *Natura,* 1966, 2, p. 3—13.

54. I. VELCEA. Geografia agriculturii poate şi considerata ea ştiinţa aplicata. (Could Agricultural Geography be considered as Applied Science). *Studia Universitatis Babeş-Bolyai, Seria Geografie* 2, 1967.

55. I. VELCEA, G. IACOB. Types of Land Use in the Danube Delta. *Revue roumaine de geologie, géophysique et géographie. Serie Geographie* 8, 1964, p. 239—244.

56. I. VELCEA, I. IORDAN. Harta utilizarii terenurilor in R. P. Romîna. (Sum: Map of the Utilization of the Land in the Rumanian Peoples Republic). *Probleme de Geografie* 10, 1963, p. 21—26.

57. I. VELCEA, I. IORDAN. Karta zemlepolzovaniya Rumynskoi Narodnoy Respubliki. (A Map of Land Utilization of the Rumanian People's Republic). *Revue de Geologie et Geographie* 7, 1963, 1, p. 179—185.

57. I. VELCEA, I. IORDAN, I. ŞTEFĂNESCU, G. IACOB. Conţribuţii la studiul geografic al agriculturii din Subcarpaţii dintre Suşiţa şi Rîmna. (Contributions to the Geographical Study of Agriculture of Sub-Carpathians between Suşiţa and Rîmna). *Studi şi Cercetarii de Geologie, Geofizică, Geografie. Seria Geografie* 11, 1964, p. 135—148.

Y U G O S L A V I A

The land use studies were introduced in Yugoslavia by Professor S. ILEŠIČ, who already before World War II had manifested his interest in that kind of problems (21), soon after IGU Commission on Land Use had been established. In his report in 1952 (22) S. ILEŠIČ, following the preliminary recommendations of the Commussion, explained the task and method of the land use survey and initiated first studies. In result a special Commission at the Yugoslav IGU National Committee was established with the aim to cover the whole of the country with detailed land use maps and to participate in the world land use survey. Because of financial and technical difficulties the Commussion cancelled this programme and recomended to geographical centres the continuation of the work in the form of sample studies for selected areas. Following this line a number of diploma works, doctoral theses and regional studies were made in Slovenia, Croatia and Serbia with land use mapping as one of the methods applied (some of them were published 7, 18, 34, 50, 51, 52, 58).

Few methodological articles appeared and some maps in 1:10 000 based on the recommendations of the IGU Commission were published as appendices to the studies (2, 33). At the same time land use map was accepted as a tool in town and country planning, by various institutions in Ljubljana and Zagreb. Mapping of one of the largest areas in Yugoslavia dates from that time and is connected with the regional plan of Krapine district in Croatia (65).

The Commission resumed this work under the broader name of the Commission on Agricultural Structures and Landscapes and that state of things was reported in 1960 to the Warsaw conference (9, 24).

After 1960 the land use studies were resumed on a new basis and greatly expanded mainly in Ljubljana, Zagreb and other centres. The mapping of the principal land uses only was found insufficient, both for scientific and practical purposes. The French-German morphogenetic methods, developed in Yugoslavia by S. ILEŠIČ, were combined with social--geographic methods introduced by the Munich school of W. HARTKE, which put strong emphasis on the investigation of the impact of industrialization and urbanization on land use and agriculture, as well as with the Polish methods and techniques of land utilization survey. In Slovenia the systematic land use survey was started in 1962 under S. ILEŠIČ and V. KLEMENČIČ. The studies were conducted hoth on the scale of villages and of larger areas.

The work was concentrated on five areas selected from the point of view whether they included all major types of land utilization in Slovenia. These are:

1. The highlands of Julian Alps around Bohinj where peasant economy within the scope of small individual land ownership is on the decrease and the highland pastures are being increasingly abandoned.

2. The Alpine area around Bled, a tourist country where farming is being superseded and reoriented both by tourism and by the strong influence of neighbouring industrial centres.

3. The sub-alpine area spreading towards Ljubljana Basin. The aim is to find out the influence of changing and developing small service centres on land utilization and farming systems.

4. Careful attention was paid to the study of land utilization and farming system in the industrialized and urbanized area of Bistrica Plain between Ljubljana and Kamnik, where in result of the abandonment of land or of

part-time farming the agriculture is to be reorganized in large--scale mechanized farms.

5. The research on land utilization and farming systems was carried out in the old mining and industrial area of Mežiška Valley where scattered farms had been for over a century under the influence of mining and industry and adapted their way of land utilization and their system of farming to the needs of industralization.

6. In the surroundings of Celje research was directed to the study of influence of this strong urban centre on land utilization and farming of the immediate area.

In eastern Slovenia on (7) Dravsko Polje, (8) Haloze, and (9) Slovenske Gorice, representing a predominatly agrarian territories, the land use studies were concentrated on the diversified vineyard and other modern specialized farming, characteristic of hilly lands, and also on grain and industrial crops (hop) as well as on livestock breeding (cattle, poultry) on more flat lands of Dravsko Polje and Ptujsko Polje.

The individual villages were studied also in the Pannonian Prekmurje and on the Karst plateau of Trnovski Gozd and Bela Krajina on the southern part of the country which lag behind the average level of agricultural development. For all these cadastrian units the sociogeographic maps in the scales 1 : 5000 and 1 : 10 000 were made while tle Polish method was used for larger areas such as those of Bled and Bohinj in the Alpine territory in 1 : 25 000, and Škofja Loka in 1 : 10 000 as well as some other cadastrian units such as Podgorje, Sebeborci, Runeč, Nunska Graba, Paradiž, Goričak, Trebijovi in 1 : 25 000.

All together some 90 cadastrian units were mapped in the working scale of 1 : 2880 in 1962—1964, of these 36 units using the land use methods. Some of the detailed studies were published (25, 27, 30, 28, 31, 35, 37, 54).

A number of doctoral dissertations were based at least partly on land use mapping. Those on Mežiska Valley by J. MEDVED, Bled country by M. JERŠIČ and Bohinj by

M. VOJVODA in Alpes; on Haloze wine-growing district by V. BRAČIČ, and Ljutomer-Ormoš hills by B. BELEC in Eastern Slovenia; on Škofja Loka suburban area by J. LOJK on Dravsko Polje by M. PAK, should be mentioned here as well as the dissertation made in Yugoslavia by an American geographer P. B. ALEXANDER who applied in full the Polish methods.

Except for summaries or fragments (3, 26, 29, 47, 49, 59, 60, 64, 79) few of them were published (6, 80). The land use studies of the Ljubljana centre were reported by V. KLEMENČIČ (36).

In 1964—1968 the larger area of the Bistrica plain situated between Ljubljana and Kamnik and the cadastrian units of Sečovlje, Rakitna and Ojstrica were mapped. Once again the mapping was made for the cadastrian units of Podgorje and Sebeborci in Slovenia and Trebijovi in Hercegovina to observe the impact of the urbanization on the land use in the neighbouring area.

A number of land use maps 1 : 25 000 were already printed. For the map of the Bistrica Plain special emphasis is laid on the demarcation of private from the socially-owned land (39). A number of published land use maps were drawn up according to the Polish method (11, 28, 31, 37). A synthetic study on agricultural systems of land use in Slovenia was published by I. VRIŠER (82).

Some special land use problems and methods of mapping urban (49, 76, 81) or tourist (29, 85) areas were discussed including the application of land use studies to regional and urban planning (42, 65). In general, land use studies in Yugoslavia, and particularly in Slovenia, found a broad application in urban and regional planning as an essential tool of the organization of space.

In the Zagreb centre the detailed land use studies were carried out on a limited scope. Before 1964 some units in the Sava valley, east of Zagreb, and in Dalmatia near Split were mapped. Between 1964—68 the cadastrian units of Košutarica,

Jesenice and Kaštel Novi were surveyed. On the other hand some regional studies with the discussion of land use problems were published (8, 17, 71).

In Serbia few attempts of land use studies *sensu stricto* were undertaken. The most popular were various regional studies in human, economic or agricultural geography (see M. POPOVIČ 66) which usually duscussed some problems of land use and incidentally presented them on some kind of land use maps in various scales and details (43, 53, 62, 68, 69, 70, 78, 83). An individual case is a study of the large-scale state farm by V. DJURIČ (14, 15, 16). An agricultural map of Serbia by M. POPOVIČ and M. MILOJEVIČ, a kind of land use small-scale map (67) could be considered a certain achievement. After 1964 some detailed land use mapping was made for the villages of Nove Selo, Levoša, Zalevlje and Kačarevo.

Even less was undertaken in the other federal republics of Yugoslavia. Some regional studies were published (57, 77). Cadaster units of Kupreš in Bosnia-Hercegovina were mapped by means of the IGU Commission methods. M. MIŠKOVIČ discussed the problem of small scale land use mapping (63). T. KANAET presented some unpublished studies made in Bosnia-Hercegovina (32) out of which one was summarized by its author. In Macedonia the village of Ljubojno was surveyed but no results were published.

Mixed Polish-Yugoslav studies were carried out five times in different parts of Yugoslavia.

In 1962 — Barsko Polje in Montenegro, the village Gomiljani near Trebinje in the Karstland of Hercegovina, Šmarca and Križ near Kamnik in Slovenia as well as Železnik and Ritopek in Serbia situated on both sides of Belgrade were studied by the Polish group under J. KOSTROWICKI with a participation of Yugoslav geographers from Belgrade (M. LUTOVAC, V. DJURIČ, M. SUŠIČ and others), and Ljubljana (V. KLEMENČIČ with his group).

In 1963 common studies under V. KLEMENČIČ and W. BIEGAJŁO were concentrated in eastern Slovenia (Žvab,

Runeč, Goričak, Belski Vrh), in Dalmatia near Split (Jesenice and in Sredna Vas on the highlands of Julian Alps around Bohinj.

In 1964 studies included Svetina near Celje and Izola on Istria peninsula. The geographers from Macedonia (M. PANEV), Bosnia (N. ZUBIČ) and Kosovo-Metohija (M. KRASNIČI) participated in this work.

In 1965 mixed group of Polish geographers under J. KOSTROWICKI, the Yugoslavs from Ljubljana (under V. KLEMENČIČ), Zagreb (under I. CRKVENČIČ) and Sarajevo (S. BAKARŠIČ) and Hungarian geographers under G. ENYEDI and B. SÁRFALVI carried out research near Split in the commune of Kaštel Stari on the sea-coast and Radušič in the neighbouring mountains.

In 1967 the Polish-Yugoslav group under W. BIEGAJŁO and V. KLEMENČIČ made its studies in Yugoslav Macedonia in the villages of Eloveč and Asamati as well as state farm Resen, and cooperative farm Čaška.

The results of a number of the above mantioned studies were published together with colour (44, 45, 54) or black and white maps (1, 4, 5, 20, 74, 75, 76).

A study on natural conditions of land utilization in Barsko Polje a counterpart of the Polish study on land use of this region, should also be mentioned here (72).

The Yugoslav land use and other problems of agricultural geography were summarized several times by S. ILEŠIČ, I. CRKVENČIČ, V. KLEMENČIČ and the others (9, 10, 11, 12, 24, 38, 48, 66).

In December 1964 an all Yugoslav Symposium on agricultural geography was organized in Maribor, Slovenia. During a two-day debate 7 papers and 23 communications were presented and various problems and methods of land use and agricultural geography studies discussed. The proceedings published in 1967 were dedicated to Professor S. ILEŠIČ to commemorate his sixtieth anniversary.

References

1. I. BAUČIČ, V. BIEGAJŁO, I. CRKVENČIČ. Socijalno-geografska obilježja sela Jesenice. (Sum: The Sociogeographical Characteristic of the Village of Jesenice). *Geografski Glasnik* 28, 1966, p. 93—114.

2. B. BELEC. Antropogeografija vasi na Spodnjem Murskem polju. (Res: La géographie humaine de la partie inferieure du Mursko Polje). *Geografski Vestnik* 27—28, 1955—56, p. 132—175.

3. B. BELEC. Neke demogeografske i socjalne pojave u procesu poljoprivedne proizvodnje u Ljutomersko-Ormoškim Goricama. (Sum: Some Demographic and Social Phenomena in the Process of Socialization of the Agrarian Production in Ljutomersko-Ormoške Gorice). (in) Zbornik radova prvog jugoslavenskog Simpozija o agrarnoj geografiji. Ljubljana 1967, p. 114—118.

4. W. BIEGAJŁO. Z badań nad użytkowaniem ziemi we wschodniej Słowenii, wieś Belski Vrh. (Sum: Land Utilization in Eastern Slovenia, the Village of Belski Vrh). *Dokumentacja Geograficzna,* Warszawa 1966, 2/3, p. 49—80.

5. W. BIEGAJŁO. Z badań nad użytkowaniem ziemi w Dalmacji, Jesenice, gmina (opčina) Omiš. (Sum: Land Utilization in Central Dalmatia. The Case of Cadaster Unit Jesenice, South of Split). *Dokumentacja Geograficzna,* Warszawa 1966, 2/3, p. 129—154.

6. V. BRACIČ. Vinorodne Haloze, Socialno-Geografski Problemi s Posebnim Ozirom na Viničarstvo. (Wine-Growing Haloze. Social-Geographical Problems with a special Regard on the Vineyard Economy). Maribor 1967, 252 p.

7. I. CRKVENČIČ. Prigorje planinskog niza Ivančiče. (Res: Le Prigorje de la chaine montagneuse d'Ivancica. Etude d'évolution d'un paysage agraire). *Radovi geografskog instituta Sveučilišta u Zagrebu* 1, Zagreb 1968, 113 p.

8. I. CRKVENČIČ. Kulturlandschaftliche Veränderungen in Hrvatsko Zagorje, Jugoslavien. (Sum: The Changing Agra-

rian Landscape of Hrvatsko Zagorje, Yugoslavia). *Erdkunde* 16, 1962, 3, p. 161—173.

9. I. CRKVENČIĆ. Land Use Mapping under Yugoslav Conditions. (in) Land Utilization, Methods and Problems of Research. *Geographical Studies* 31, Warsaw 1962, p. 187—194.

10. I. CRKVENČIĆ. Naučno-istraživacki rad agrarne geografije u svijetu suvremene socijalne geografije. (Sum: Scientific Research Work in the Field of Agrarian Geography in the Light of Modern Social Geography). (in) Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 52—64.

11. I. CRKVENČIĆ, V. KLEMENČIĆ. Arbeitsrichtungen und- ergebnisse der Agrargeographie in Jugoslavien. (Trends and Achievements of Agricultural Geography in Yugoslavia). *Wissenschaftliche Zeitschrift der Universität Halle, Mat.-Nat. Reihe* 16, 1967, 2, *Mitteilungen für Agrargeographie, landwirtschaftliche Regionalplanung und ausländische Landwirtschaft* 17, p. 201—211. (The Land Use Colour Maps of the Cadastrian units Podgorje, Sebeborci and Nunska Graba in Slovenja and Trebijovi in Hercegovina are included as examples).

12. I. CRKVENČIĆ, V. KLEMENČIĆ. Rozvoj i rezultati agrarne geografije v Jugoslaviji. (Sum: The Development and the Results of Agrarian Geography in Yugoslavia). (in) Zbornik radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 27—43.

13. V. DAKIČ. Sliv Jovanovačke Reke-geografska odlike. (Res: Bassin de la Jovanovačka Reka). *Zbornik Radova. Geografski Institut „Jovan Cvijić"* 15, 1959, p. 89—130.

14. V. DJURIČ. Pančevački Rit. Antropogeografska istraživanja. (Pančevački Rit. An Antropogeographical Study). *Srpska Akademija Nauka. Posebna Izdanja. Etnografiski Institut* 5, 1953.

15. V. DJURIČ. Poljoprivredni Kombinat „Beograd". (Sum: Agricultural Combine „Beograd"). *Zbornik Radova, Geografskog zavoda* 8, 1961, p. 145—158.

16. V. DJURIČ. Razvoj i funkcije agrarno-industrijskog kombinata „Beograd". (Sum: The Development and Functions of the Agrarian-Industrial Combination „Beograd"). (in) Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 65—72.

17. M. FRIGANOVIČ. Polja Gornje Krke. (Basins of Upper Krk). *Radovi Geografskog Instituta Sveučilišta u Zagrebu* 3, 1961.

18. I. GAMS. Agrarno geografska analiza Ropoče po upadu goričkega vinogradništva. (Agro-geographical analysis of Ropoč after the Decline of Gorice Wine-Growing). *Geografski Zbornik*, Murska Sobota 1959.

19. I. GAMS. O uplivu agrarnog iskorištavanja zemljišta na Karstna svojstva i proces. (Sum: The Influence of Agrarian Land Use on the Karstian Features and Processes). (in) Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 121—125.

20. S. HAUZER. Użytkowanie ziemi i gospodarka rolna we wsiach Žvab i Runeč (Słowenia Wschodnia, Jugosławia). (Sum: Land Utilization in Eastern Slovenia, the Case Study of Žvab and Runeč Villages). *Dokumentacja Geograficzna*, Warszawa 1966, 2/3, p. 105—128.

21. S. ILEŠIČ. Obrabiena zemlja v Sloveniji. (Cultivated Land in Slovenia). *Glasnik Geografskog Društva* 21, 1939, 39 p.

22. S. ILEŠIČ. Mednarodna proučitev kmetijskego izkoriščevanja tal. (International Investigation on Agricultural Land Utilization). *Geografski Vestnik* 24, 1952, p. 204—205.

23. S. ILEŠIČ. Mednarodna konferenca za metode proučevanija izrabe tal na Poljskem. (Res: Conference internationale sur les methodes des recherches sur l'utilisation du sol tenue en Pologne). *Geografski Vestnik* 32, 1960, p. 278—280.

24. S. ILEŠIČ. L'état actuel et les problèmes des recherches sur l'utilisation du sol en Yugoslavie. (in) Land Utilization. Methods and Problems of Research. Warsaw 1962, p. 181—186.

25. S. ILEŠIČ. Studije o kmetijski izrabi tal v treh vaseh Jugoslavije. (Res: L'étude sur l'utilisation du sol dans trois villages yougoslaves). *Geografski Vestnik* 34, 1962, j. 61—62.

26. B. INGOLIČ. Staranje agrarnega přebivalstva na primeru katastrske občine Beričevo. (Activities of Agricultural Population on the Example of the Cadaster Commune of Beričevo). *Socialistično Kmetijstvo in Gozdarstvo* 16, 1965, p. 4—94.

27. D. JELIČ, M. JERŠIČ, J. LOJK, M. VOJVODA. Kmetijska proizvodnja in izraba tal v katastrski občini Trebijovi v Hercegovini. (Agricultural Production and Land Utilization in the Cadaster Commune of Trebijovi in Hercegovina). *Geografski Vestnik* 34, 1962, p. 97—114.

28. D. JELIČ, M. JERŠIČ, J. LOJK, M. VOJVODA. The Cadastrian Commune of Trebijovi in the Karstland of Hercegovina. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 267—284.

29. M. JERŠIČ. Problem iskorištavanja zemljišta u turističkoj pokrajini Bleda. (Sum: Problems of Land Utilization in the Tourist Region of Bled). (in) Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 89—92.

30. M. JERŠIČ, J. LOJK, L. OLAS, M. VOJVODA. Kmetijska proizvodnja in izraba tal v vasi Sebeborci v Prekmurju. (Agricultural Production and Land Utilization in the Village of Sebeborci in Prekmurje). *Geografski Vestnik* 34, 1962, p. 81—97.

31. M. JERŠIČ, J. LOJK, L. OLAS, M. VOJVODA. The Village of Sebeborci on the Slovenian Fringe of the Great Pannonian Plain. (in) Land Utilization in East-Central Europe. Case Studies. Geographia *Polonica* 5, Warsaw 1965, p. 215—234.

32. T. KANAET. Rezultati naučno-istraživačkog rada na području agrarne geografije SR BiH. (Sum: The Results of Scientific Research in the Domain of Agrarian Geography in the People's Republic of Bosnia and Herzegovina). Zbornik

Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 125—127.

33. B. KERT. Vinogradiška pokrajina vzhodnih Mariborskih Goric. (Res: Les coteaux de Maribor, une region viticole). *Geografski Vestnik* 27—28, 1955—1956, p. 87—135.

34. V. KLEMENČIČ. Agrarna geografija Tuhijske doline. (Res. Geographie agraire de la valleé de Tuhinj). *Geografski Zbornik* 1, Ljubljana 1952, p. 75—117.

35. V. KLEMENČIČ. Kmetijska proizvodnja in izraba tal vasi Podgorje pri Kamniku. (Agricultural Production and Land Utilization in the Village of Podgorje at Kamnik). *Geografski Vestnik* 34, 1962, p. 62—81.

36. V. KLEMENČIČ. The Village of Podgorje in the Slovenian Sub-Alpine Region. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 195—214.

37. V. KLEMENČIČ. Rezultati agrarno-geografskih proučavanja Instituta za Georafiju Univerze u Ljubljani u godinama 1962—1964. (Sum: The Results of the Scientific Research Work in the Field of Agrarian Geography in Slovenia pursued by the Institute of Geography of the University of Ljubljana). (in) Zbornik Radova prvog Jugoslavenskog simpozija o ograrnoj geografiji. Ljubljana 1967, p. 73—83.

38. V. KLEMENČIČ, I. CRKVENČIČ. The Mapping of Land Utilization in Yugoslavia. (in) Land Utilization in Eastern Europe. Studies in Geography in Hungary, 4, Budapest 1967, p. 67—73.

39. V. KLEMENČIČ, M. JERSIČ. Elements of Transformation of the Bistrica Plain. *Kamniški Zbornik* 11, 1967, p. 3—46.

40. V. KOKOLE. Agrarna pokrajina in agrarna izraba tal v Veliki Britaniji. (Agricultural Area and Agricultural Land Utilization in Great Britain). *Geografski Obzornik* 4, 1957, p. 1—4.

41. V. KOKOLE. Prirodne osnove in agrarna izraba novomeške pokrajina. (Natural Foundations of Agricultural

Utilization of the Novo Mesto Region). Dolenjska, zemlja in ljudje. Novo Mesto 1959, p. 125—144.

42. V. KOKOLE. Neki aspekti na studij agrarnih područja u smislu aplikacije u regionalnom planiranju. (Sum: Some aspects of the Study of Rural Areas with Regards to Regional Planning). (in) Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 148—151.

43. M. KOSTIČ. Veliki Šiljegovac — prilog antropogeografskom proučavanju varošica u N. R. Srbiji. (Res: Contribution à l'étude anthropogéographique des bourgs dans la R. P. de Serbie). *Zbornik Radova Prirodno-Matematičkog Fakulteta* Belgrade 6, 1959, p. 205—226.

44. J. KOSTROWICKI, D. KOWALCZYK. Barsko Polje on the Adriatic Sea Coast of Montenegro (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 285—344.

45. J. KOSTROWICKI, D. KOWALCZYK, W. JANKOWSKI, R. SZCZĘSNY. The Commune of Železnik. (in) Land Utilization in Eastern Europe. Studies in Hungary 4, Budapest 1967. (a land use colour map, appendix to the text).

46. S. KULUŠIČ. Neke karakteristike agrarne strukture i prostorna diferenciranost posjeda stanovnika naselja Mustera i Betine. (Sum: Some Characteristics of the Agrarian Structure and the Spatial Differentiation of Land Holdings in the Settlements of Muster and of Betina). (in) Zbornik Radova prvog Jugoslavenskog simpozijia o agrarnoj geografiji. Ljubljana 1967, p. 128—131.

47. J. KUNAVER. Poljanska dolina ob Kolpi. Primer gospodarsko nerazvite pokrajine. (Sum: The Valley of Poljane, on the Kolpa River, Southern Slovenia, an Economically Underdeveloped Countryside). *Geografski Vestnik* 38, 1966, p. 95—121.

48. A. LAH. Neki aspekti programskog i metodološkog pravca agrarne geografije u Jugoslaviji. (Sum. Some Aspects of Programmatic and Methodic Orientation of Agrarian Geography in Yugoslavia). (in) Zbornik Radova prvog Jugosla-

venskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 151—155.

49. J. LOJK. O agrarnim elementima u urbanizovanom prigradskom području. (Sum: Agrarian Elements in the Urbanized Suburban Area). Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 95—98.

50. M. LUTOVAC. Privredno-geografska karakteristika sliva Jasenice. (Res: Les caracteristiques économico-géographiques du Bassin de la Jasenica). *Srpska Akademija Nauka. Posebna Izdanja. Geografski Institut* 3, Belgrade 1951, 70 p.

51. M. LUTOVAC. Sliv Mlave. (Res: Les caractères géographiques et économiques du bassin de la Mlava (*Zbornik Radova. Srpska Akademija Nauka. Geografski Institut* 9, 1954, p. 74—78.

52. M. LUTOVAC. Negotinska Krajina i Ključ, privredno-geografska proučavanija. (Res: La Krajina de Negotin et le Ključ). *Zbornik Radova Geografskog Instituta „Jovan Cvijič"* 15, 1959, p. 1—84.

53. M. LUTOVAC. Prigradska poljoprivreda okoline Beograda, uticaj grada na promene i poljoprivredi. (Res: Agriculture Suburbaine de Beograd). *Zbornik Radova Geografskog Instituta „Jovan Cvijič"* 18, 1962, p. 155—172.

54. M. LUTOVAC. The Village of Ritopek on the Danube in the Suburban Zone of Belgrade. (in) Land Utilization in East-Central Europe. Case Studies. *Geographia Polonica* 5, Warsaw 1965, p. 235—266.

55. M. LUTOVAC. Uticaj industrije na poljoprivredu i seoska naselja. (Sum: The Influence of Industry on Agricultural and Rural Habitat). (in) Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 155—157.

56. C. MALOVRH. Značaj i važnost privredno-prostorne strukture individualnich poljoprivrednih gazdinstava. (Sum: Character and Significance of the Economic-Spatial Structure of Individual Agricultural Complexes). (in) Zbornik Radova

prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 100—110.

57. D. MARTINOVIČ. Privredne odlike cetinjske Komune (Res: Le caractère économique de la commune de Cetinje). Zbornik VI Kongresa Geografov FLRJ v LR Sloveniji od 27.IX. do 5.X.1961. Ljubljana 1962, p. 313—332.

58. J. MEDARIČ. Historijski uvjeti razvoja sistema iskorišćavanja zemljišta u Požeškoj Kotlini u kraja segregacije (1886) do prvog svjetskog rata (1914). (Historical Conditons of the Development of Land Utilization System in the Požega Basin from the Close of Segregation to the World War I). *Sveučiliste u Zagrebu. Ekonomski fakultet. Zbornik Radova* 6, 1969.

59. J. MEDVED. Problematika gorskih kmetih ob primeru Topole. (Sum: Problems of Mountain Farming Exemplified in Topla, Northern Slovenia). *Geografski Vestnik* 33, 1961, p. 137—152.

60. J. MEDVED. Problematika klasifikacje agrarnh gazdinstava. (Sum: Problems of the Classification of Agrarian Households). (in) Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 98—100

61. D. MILANOVIČ. Lapovo — antropogeografska ispitivanija. (Lapovo, Antropogeographical Investigations). *Glasnik Srpskog Geografskog Društva* 1962.

62. M. MILOJEVIČ. Mačva, Šabačka Posavina i Pocerina — privredno geografska proučavanja. (Res: Mačva, Šabačka Posavina et Pocerina. Etude de géographie économique). *Posebna Izdanja Geografskog Instituta „Jovan Cvijič"*, 17, Belgrade 1962, 98 p.

63. M. M. MIŠKOVIČ. Prilog izradi karata i kartograma iskorišćavanja zemljišta u sitnijem Mjerilu. (Sum: A Contribution Towards Preparing the Cartograms and Land Use Maps in Smaller Scale). (in) Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 157—159.

64. M. PAK. Uticaji industrijskih centara na agrarnu okolicu na primeru Gornjeg Dravskog Polja. (Sum: Consequences of the Effects of Industrial Centers on Agrarian

Country, as seen on Zgornje Dravsko Polje). (in) Zbornik Radova prvog jugoslavenskog simpozija o agrarnoj geografiji. Ljubljana 1967, p. 118—121.

65. B. PETROVIČ, S. ŽULJIČ. Kotar Krapina, regionalni prostorni plan. (Krapina County. A Regional Physical Plan). *Urbanistički Institut NR Hrvatska.* Zagreb 1958.

66. M. POPOVIČ. Začeci, razvoj i stanje agrarne geografije u Srbiji. (Sum: The Beginnings, the Development, and the State of Agrarian Geography in Serbia). (in) Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geogfafiji. Ljubljana 1967. p. 134—137.

67. M. POPOVIČ, M. MILOJEVIČ. Agrarno-geografska Karta NR Srbije — razmeštaj biljne proizvodnje. (Agro-geographical Map of Serbia. Distribution of Crop Production). *Posebno Izdanje Geografskog Instituta „Jovan Cvijič"*, Belgrade 1962.

68. M. RADIVOJEVIČ. Svilojevo — kolonističko selo madjarske nacjonalne manjine u Bačkoj. (Svilojevo Colonized Village of the Hungarian National Minority in Bačka). *Glasnik Srpskog Geografskog Društva* 1960.

69. M. RADOVANOVIČ. Varošica Istok u Metohijskom Podgorju — antropogeografska proučavanja. (Res: Le bourg d'Istok. Recherches de gèographie humaine). *Zbornik Radova Prirodno-Matematičkog Fakulteta* Belgrade 6, 1961, p. 171—206.

70. K. RISTIČ. Miloševo — selo u sredisnjem Kosovo — antropogeografska proučavanja. (Miloševo — the Village in Central Kosovo). *Zbornik Radova Prirodno-Matematickog fakulteta* Belgrade 7, 1961.

71. V. ROGIČ. Velebitska Primorska padina. (Seaward Inclination of Velebit). Radovi Geografskog Instituta Sveučilišta Zagreb 2, 1958.

72. M. SUŠIC. Prirodni uslovi za iskoriščanje zemlišta u Barskom Polju. (Sum: Natural Conditions for Soil Utilization in the Field of Bar). *Zbornik Radova geografskog Instituta „Jovan Cvijič"* 20, 1965, p. 181—241.

73. J. TITL. Socialnogeografski problemi na Koprskem Podeželju. (Sum: Social-Geographical Problems on Koprsko). Koper 1965, 156 p.

74. W. TYSZKIEWICZ. Z badań nad użytkowaniem ziemi we wschodniej Słowenii — wieś Goričak. (Sum: Land Utilization in Eastern Slovenia — the Village of Goričak). *Dokumentacja Geograficzna,* Warszawa 1966, 2/3, p. 81—104.

75. W. TYSZKIEWICZ, R. SZCZĘSNY. Użytkowanie ziemi i rolnictwo na przykładzie gminy Izola (Istria). (Sum: Land Utilization in Istria. The Case of Cadaster Unit Izola, South of Koper). *Dokumentacja Geograficzna,* Warszawa 1967, 2/3, p. 93—125.

76. W. TYSZKIEWICZ, R. SZCZĘSNY. Z badań nad użytkowaniem ziemi w gminie Svetina (Słowenia). (Sum: Land Utilization in Central Slovenia. The Case of Cadaster Unit Svetina, South of Celje). *Dokumentacja Geograficzna,* Warszawa 1967, 1, p. 71—92.

77. M. VASOVIČ. Lovčen i njegova Podgorina. Regionalna ispitivanja. (Lovčen and its Foothills). Naučno Društvo N. R. Crne Gore 1955.

78. G. VIDANOVIČ. Vidlič-Zabrce ekonomsko-geografska studija. (Vidlič-Zabrce, a Study in Economic Geography). *Posebno Izdanje Geografskog Instituta „Jovan Cvijič".* Belgrade 1960, 132 p.

79. M. VOJVODA. Problemi transformacije Bačila u Bohinju. (Sum: The Problem of Transformation of Highlands in Bohinj). (in) Zbornik Radova prvog Jugoslavenskog simpozija o agrarnoj geografiji, Ljubljana 1967, p. 92—95.

80. I. VRIŠER. Nastanek in razvoj Nove Gorice. (Res: La Nouvelle Gorica (Nova Gorica) géographie d'une nouvelle ville-frontière). *Geografski Vestnik* 31, 1959, p. 43—79.

81. I. VRIŠER. Kartiranje izrabe tal v urbanih območjih. (Sum: Land Use Mapping of Urban Territories). *Geografski Vestnik* 38, 1966, p. 69—93.

82. I. VRIŠER. Sistemi agrarnega izkoriščanja tal v SR Sloveniji. (Sum: The System of Agrarian Utilization of Land

in Socialist Republic in Slovenia). *Ekonomska Revija* 2, 1967, p. 190—211.

83. V. VUJADINOVIČ. Preobražaj geografskog lika Poreča. (Transformation of Geographical Visage of Poreče). *Glasnik Srpskog Geografskog Društva* 1961.

84. Zbornik radova prvog Jugoslavenskog simpozija o agrarnoj geografiji u Mariboru od 3 do 5 decembra 1964. (Proceedings of the First Yugoslav Symposium on Agrarian Geography in Maribor 3rd to 5th December, 1964). Zbornik posvečen 60 godišnjici rodenja Svetozara Ilešiča). Proceedings presented to Svetozar Ilešič on the Occasion of his sixtieth birthday). Ljubljana 1967, 183 p.

85. S. ŽULJIČ. Plitvicka jezera — geografska interpretacija turističkich mogušnosti jednog nacjonalnog parka. (Sum: Plitvice Lakes. Geographical Interpretation of the Possibilities for the Development of the Tourism in the National Park). Zbornik VI Kongresa Geografov FLRJ. Ljubljana 1962, p. 136—148.

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1 M. STOPA — **Rejony burzowe w Polsce**, s. 100 + ryc. nlb., zł 18,—
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5 PRACA ZBIOROWA — **Studia nad użytkowaniem ziemi — V**, s. 65 + ryc. 2, tab. nlb., zł 18,—
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6 B. TCHÓRZEWSKA — **Zagadnienia bilansu wodnego rzek Nizin Środkowopolskich na przykładzie dorzecza Wilgi**, s. 86 + ryc. i tab. nlb., zł 18,—

(poz. 1, 5, 6 do użytku służbowego)

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1 PRACA ZBIOROWA — **Użytkowanie ziemi w krajach Europy środkowo-wschodniej**, s. 125 + nlb., tab., ryc., zł 27,—
2 E. DROZDOWSKI — **Objaśnienia do mapy geomorfologicznej** — arkusz CHEŁMNO
A. TOMCZAK — **Objaśnienia do mapy geomorfologicznej** — arkusz TORUŃ, s. 110 + ryc. nlb., zł 18,—
3/4 A. JELONEK — **Ludność miast i osiedli typu miejskiego na ziemiach Polski od 1810 do 1960 r.** Uzupełnienia s. 33 + tab. nlb., zł 21,—
5 PRACA ZBIOROWA — **Rozwój komunikacji kolejowej i autobusowej w Polsce w okresie 1946.** Uzupełnienia s. 142 + ryc. nlb., zł 27,—
6 R. CZARNECKI — **Stosunki wodne środkowej części dorzecza Opatówki.** Uzupełnienia s. 79 + ryc. nlb., zł 27,—

poz. 2 i 6 do użytku służbowego)

1968

1 PRACA ZBIOROWA — **National and Regional Atlases — Supplement for 1963—1967**