

THE ANNALS OF THE UKRAINIAN ACADEMY

OF ARTS AND SCIENCES IN THE UNITED STATES

VOLUME XI, 1964-1968

NUMBER 1-2 (31-32)

MEMORIAL: VLADIMIR VERNADSKY, THE FIRST PRESIDENT
OF UKRAINIAN ACADEMY OF SCIENCES

STUDIES: ALEXANDER ARCHIMOVICH, YAROSLAV BILINSKY,
JOSEPH DANKO, LUBA DYKY, EDWARD KEENAN, JR., IWAN
KOROPECKYJ, SERHIJ KRASCHENINNIKOW, JAROSLAV RUDNYC'
KYJ, HELEN SAVITSKY, ROMAN STRUC.

BOOK REVIEWS: ALEXANDER DOMBROWSKY, JOHN RESHE-
TAR, JR.

OBITUARIES

CHRONICLE



The Annals of the Ukrainian Academy of Arts and Sciences in the U. S. are published by the Ukrainian Academy of Arts and Sciences in the U. S., Inc.

EDITORIAL COMMITTEE: Alexander Archimovich, *President of the Ukrainian Academy of Arts and Sciences in the United States*
Dmitry Čiževsky, *Heidelberg University* Olexander Granovsky, *University of Minnesota*
John S. Reshetar, Jr., *University of Washington* George Y. Shevelov, *Columbia University*

EDITOR: Omeljan Pritsak, *Harvard University*.

All correspondence, orders, and remittances should be addressed to *The Annals of the Ukrainian Academy of Arts and Sciences in the U. S.*, 206 West 100 Street, New York, New York 10025

Price of this volume: \$8.00

Copyright 1968, by the *Ukrainian Academy of Arts and Sciences in the U. S., Inc.*

THE ANNALS OF THE UKRAINIAN ACADEMY OF ARTS
AND SCIENCES IN THE U.S., INC.

VOLUME XI, 1964-1968

NUMBER 1-2 (31-32)

This Volume is Dedicated

to the Memory of VLADIMIR VERNADSKY (1863-1945) the First
President of the Ukrainian Academy of Sciences (1918-1919)

CONTENTS

The First Year of the Ukrainian Academy of Sciences (1918-19) VLADIMIR VERNADSKY	3
Botanical-Geographical Changes in the Distribution of the Field Crops of the Ukraine During the Last Fifty Years . . . ALEXANDER ARCHIMOVICH	32
A Cytochemical Study of <i>Balantidium coli</i> 1. Macronucleus . . . SERHIJ KRASCHENINNIKOW	69
Major Results of Research Work by V. F. Savitsky in Genetics and Breeding of Sugarbeets in the United States HELEN SAVITSKY	91
Psalterium Winnipegense Cyrillicum A Note on a Hitherto Unknow Manuscript in Canada JAROSLAV B. RUDNYC'KYJ	105
Some Aspects of the "Sonata Pathetique" by Mykola Kulish . . . LUBA M. DYKY	109
Critical Reception of Franz Kafka in the Soviet Union ROMAN S. STRUC	129
Coming to Grips with the Kazanskaya Istoriya Some Observa- tions on Old Answers and New Questions EDWARD L. KEENAN, JR.	143
Plebiscite of Carpatho-Ruthenians in the United States Recom- mending Union of Carpatho-Ruthenia with the Czecho- slovak Republic JOSEPH DANKO	184

Structural Changes in Ukrainian Industry Before World War II	208
IWAN S. KOROPECKYJ	
Tunisia, France, the United States, and West Germany: A Tentative Appraisal of Tunisian Economic Policy in 1964-1966	229
YAROSLAV BILINSKY	

BOOK REVIEWS

P. A. Zuraev, <i>Severnye Irantsy Vostochnoi Evropy i Severnogo Kavkaza (Savromaty, Skify, Sarmato-Alany, Anty, Yassy i Osetiny)</i> , vol. 1, New York 1966, 341 pp.	253
ALEXANDER DOMBROWSKY	
Arthur E. Adams. <i>Bolsheviks in the Ukraine; The Second Campaign, 1918-1919</i> . New Haven and London: Yale University Press, 1963. 440 pages	255
JOHN S. RESHETAR, JR.	

OBITUARIES

Ivan Basilevich (Ivan Rozhin)	258
Levko Chikalenko (Neonila Kordysh-Holovko)	260
Semen Demydchuk (John V. Sweet)	261
Illja Hryhorenko (Ivan Rozhin)	262
Ivan Krypiakevych (Omeljan Pritsak)	264
Viacheslav F. Savitsky (Alexander Archimovich)	269
Dmytro Solovey (Ivan Bakalo)	270
Volodymyr Timoshenko (Iwan Zamsha)	272
Pavlo Zaytsev (W.M.)	273
Zakhariy V. Borispolets (Iwan Zamsha)	276
Yelisey P. Kryvobok (Iwan Zamsha)	276
CHRONICLE	277
A NOTE ON TRANSLITERATION	304



Academician Vladimir I. Vernadsky
(1863-1945)

The First Year of the Ukrainian Academy of Sciences (1918-1919)

VLADIMIR VERNADSKY*

THE VERNADSKY FAMILY

My father and mother were Kievans and Ukrainian national traditions were lively in both branches of the family. My childhood years (1868-1876) were spent in Ukraine, in Poltava and Kharkov, sometimes in Kiev.

In 1889 after a trip abroad (I went abroad after completing my studies at St. Petersburg University), I was elected to the chair of mineralogy at Moscow University, initially as a privat-dozent with one compulsory course.

This was completely unexpected for me. In London in 1888 I had made the acquaintance of Professor A. Pavlov of Moscow University and of his wife,^a M. V. Pavlov who was also a very learned paleontologist. Together with them I made a geological excursion to Wales during the International Geological Congress.

This acquaintance affected my entire life. In Paris in 1889 I received an unexpected letter from A. P. Pavlov which urged me to present my candidacy for the chair of mineralogy at Moscow University. The professor of mineralogy, M. A. Tolstopyatov, (1836-1890) had to leave the chair because of illness.

At that time I was planning to affiliate myself to either Kiev or Kharkov University because, according to the doctors, the climate of St. Petersburg was harmful to my wife. Due to this, my wife's family, the Staritskys, moved from St. Petersburg to Poltava in order to be close to my son, at that time their only grandchild.

My father had completed Kiev University and had been professor of Political Economy and Statistics first at the Kiev University and then at Moscow University. In 1856, he moved to St. Petersburg. I still met people in Moscow who had known him.

* A chapter from the Memoirs made available to the Editors through the courtesy of Professor George Vernadsky (New Haven, Conn.). Translated from the Russian by Orest Subtelny (Harvard University).

The doctors found the climate of Moscow completely satisfactory for my wife, Natalia Yegorovna (1860–1943).

During the summers (1889 to 1918), with the exception of yearly trips abroad and into the field for research in mineralogy and geology, we lived in Poltava and the Poltava Gubernia. My wife's parents lived in this area and I had a small estate on the Psel near Shishaki (I bought the land and built the house in 1913).

During all of this time I was closely associated with the Poltava Museum of Natural History from the time of its foundation and carried on my scientific work there.

My father and mother knew Ukrainian well. Mother, who was very musical and had an excellent voice (mezzo-soprano), sang Ukrainian songs beautifully. Sometimes we had choirs at home. This had a great affect on me, though I did not express it externally. I was a very introverted child.

An uncle on my mother's side, N. I. Hulak, (1822–1899), was a member and one of the leaders of the Cyrillo-Methodian Brotherhood, a secret Ukrainian society at whose head stood T. Shevchenko, N. Kostomarov and others. Shevchenko suffered the most. Hulak spent time in prison and was afterward forced to live outside Ukraine.

My mother was close to the future wife of N. I. Kostomarov (1817–1885). They were childhood friends. Both of them studied at the same boarding school, the Levashev Pension in Kiev. She often told me of her tragic and romantic fate.¹

My mother's and my wife's family belonged to the officer-gentry class. Being interested in my own and my children's past, I investigated documents and came to the conclusion that all these families owed their prosperity to the right of running a tavern and to the purchase of serfs—a privilege of the nobility.

Catherine II and Paul I established serfdom in Ukraine after Ukraine had freed herself from it through long years of Cossack and popular revolts. This action especially weakened the separatist tendencies which had existed in some of the families of the ruling class up to the 19th century—until the political revival of Ukraine.

My father's family had a different background. My great-grand-

¹ Consult her memoirs and N. I. Kostomarov's book *The Cyrillo-Methodian Brotherhood*, [The author's reference is to the book *Autobiography of N. I. Kostomarov* (Moscow, 1922). In the same book the memoirs of Alina Kostomarova are included in the form of an introduction. On pp: 195–204 of this book there is a discussion of the Cyrillo-Methodian Brotherhood.—Ed.]

father, I. N. Vernatsky attested his gentry background during the reign of Catherine II in the Chernigov regency. He did receive the patent of gentry for himself and his family, after he had produced as evidence a pledge by twelve gentry-men that he maintained a gentry-man's style of life (because his documents were lost in a fire).

He, of course, knew only his father's first name and patronymic and showed that his father and grandfather were "army comrades," that is, free, registered, rank and file Cossacks.

He was the pastor of a large village, Tserkovshchiny, in the county of Berezin, Chernigov Vicegerency. At that time in "Little Russia" the parishioners chose their priests from among themselves. According to family tradition he came to Tserkovshchiny from the Zaporozhe. He was a very vivid personality.²

He studied in the Pereyaslav Collegium and in the Kiev Academy which were at that time institutions of higher learning.³

According to family tradition, my father's ancestors came to the Zaporozhe from Italy or Lithuania.⁴

My grandfather, after breaking away from his father, Vasilii Ivanovich Vernadsky (1769–1838) received in 1826 the rank of Collegium Counsellor (as of December 31, 1824). At that time the rank carried with it the right of hereditary nobility; so he had himself registered into another list of nobility (nobility of service) and taking advantage of the opportunity he changed the spelling of the family name: Vernadsky instead of Vernatsky.

In the 1840's the Vernatsky family was excluded from the register of the Chernigov gentry as evidently incorrectly registered.

In my childhood, two men had a great influence on my intellectual development. The first was my father (Ivan Vasilievich Vernadsky, 1821–1884) who was forced in 1868 to leave a professorship in the Alexander Lyceum and in the Technological Institute in St. Petersburg because of illness and after recuperating received a position as director of the Government Bank Office in Kharkov; secondly—Evgraf Maksi-

² Aside from family traditions this is evident in the historical documents which were published in *Kievskaya Starina*, 1882–1904. See the index in this journal (Poltava 1911).

³ Unfortunately, the history of higher schools in Ukraine has not yet been written. Professor D. I. Chyzhevsky's work in the 1920–1930's gives it a different appraisal than what now rules in our historical literature. The philosophy that was taught was not, as is often asserted, medieval scholasticism but a reflection of the scholarship and philosophy of the 17–18th centuries.

movich Korolenko (1810–1880), an original, self educated man and my cousin on my grandmother's (E. Y. Korolenko) side.⁵

To this day I remember a discussion with my father which took place in 1871, during the Franco-Prussian War. Father was talking with D. I. Kachenovsky (1827–1873), a well-known professor of law at Kharkov University who had just returned from abroad. I was listening to the discussion, looking at the war pictures in *Niva*.⁶ Suddenly my father called me. Continuing his discussion, he said, "My father, Volodya's grandfather, believed that I would live to see a constitution in Russia, but now I believe that only my son will live to see it." I was eight years old then.

I lived through a huge social revolution, the fall of the Romanov–Holstein–Gottorp dynasty and the creation of the Soviet Socialist Republic. There was a Decembrist cult in the Vernadsky family⁷ and a very negative attitude towards autocracy and serfdom.⁸

My grandfather, V. I. Vernadsky left for Moscow on foot and with his mother's blessing. He was running away from his father who wanted him to enter the Mohyla Academy in Kiev. He, however, wanted to be a physician.

His father, my great-grandfather, then had him ceremonially cursed in church for disobeying his father. This left a mark on the

⁴ It is curious that among the Slavs of Italy (Istria) one meets such family names as Varnasca, Vernazzi etc. (the Italian geologist Vernazzi de la Vernaska). According to father, our family name was Verna. Professor M. A. Maksymovych (1804–1873) an expert in Ukrainian history and a botanist, told my father that our ancestors came from Lithuania.

⁵ V. G. Korolenko in his *History of My Contemporary* characterizes him beautifully. My grandmother, whose maiden name was E. Y. Korolenko, and the grandfather of V. G. Korolenko (G. Y. Korolenko) were sister and brother.

⁶ *Niva* was a cheap, illustrated weekly with wide circulation, which was put out in St. Petersburg by A. F. Marx right up to the Revolution.

⁷ The history of the Decembrists in Ukraine has not been historically evaluated up to now. M. P. Drahomanov (1841–1895) in whose family there was a cult of Decembrists as there was in ours, has long pointed this out. In Ukraine the Southern Society extended far outside the circle of military men and had a network among officer and Cossack families.

⁸ Pondering now on changes in life conditions and on the victory of closely interrelated workers' and peasants' masses, I clearly understand that the success of the Revolution of 1917 also resulted from the fact that peasants of Great Russia and Ukraine never peacefully accepted serfdom. The Ukrainian peasantry had freed itself but was enserfed again late in the 18th century. This was never forgotten. The history of our Cossackdom is a reflection of this process. The abolition of serfdom was late by two centuries and from economic and civic points of view was carried out in a manner difficult and economically unprofitable for peasants.

rest of my grandfather's life:⁹ all the children of his large family died as cadets or students, only the youngest, my father survived. He received the name of Ivan in honor of the saint who was the patron of his father who had had him cursed. I was named Vladimir (Vladimir-Vasiliy) in honor of my grandfather.

My grandfather, Vasiliy Ivanovich, was an original and obviously very gifted physician and Mason. To the end of his days he belonged to the Piletsky^b group of mystics.

In reading his service record as a military physician one is struck by the many long campaigns in which he participated. (He campaigned with Suvorov and Kutuzov.) He was at Devil's Bridge and in 1799, he and the hospital which he commanded were captured by Marshal Masséna. Since he had treated both Russian and French wounded, Napoleon I presented him with an order (Legion d'Honneur).

How different that was from the boundless savagery which is preached by and carried out by Hitler's Germany and its allies.

In 1800 he returned to Russia at the head of a 1000-man hospital.¹⁰

UKRAINIAN INTERESTS IN THE FAMILY

2. After Nicholas (1851-1874), my half-brother by my father's first marriage and a recent graduate of Kharkov University, died, I became even closer to my despairing father.¹¹ In 1876, he retired and left Kharkov for St. Petersburg where he wanted to publish a liberal newspaper. Repeated refusals had convinced him that this would not be allowed and he thought of moving to Prague where our family had been staying in 1873 and where he had been before. However, my mother determinedly opposed this. In 1873 she was abroad for the first time and did not like it in the least. She was fascinated by St. Petersburg, by its beauty and its white nights.

Before moving from Kharkov to St. Petersburg, father and I went

⁹ The same was true in the case of Dostoevsky's grandfather. His family was of Belorussian or Russian nobility.

¹⁰ His portrait has not been preserved. My father, and now I, have a portrait of Washington who, according to my father, resembled him very much.

¹¹ His mother, my father's first wife, was a cousin of my mother's. Her maiden name was Shigaev. She came from a cultured family and took prominent part in the feminist movement in the sixties. She was the first woman scholar in the field of economics. There are several biographies about her. My brother was a very talented artist and poet; he had a gentle character and was a very promising person.

abroad, and in Milan, I think, we read in P. L. Lavrov's (1823–1900) paper *Vpered* (Forward) about the circular which prohibited the printing of books in "Little Russian" in Russia. This made a great impression on my father and in resulting conversations also had a great effect on me. Father described Ukrainian history to me in a way completely unlike that which was taught in the Gymnasium. He frequently mentioned that St. Petersburg was built upon the bones of Ukrainians (because of Mazepa's "treason," Cossacks from his regiments were assigned to work in the construction of St. Petersburg.)

After returning to St. Petersburg I tried to acquaint myself with Ukrainian literature. In my father's library, I found odd copies of *Osnova* and other Ukrainian publications.¹² I dug up Ukrainian books in second-hand bookshops and received others from abroad. I questioned my father in detail about Shevchenko, Kulish, Maksymovych, Kvitka-Osnovyanenko—men whom he had known personally. Also I asked about the Cyrillo-Methodian Brotherhood and Kostomarov.

Incidentally, it was then that for the first time I became closely acquainted with the views of M. Drahomanov (1841–1895) through the literature which he and S. Podolynsky (1850–1871) printed abroad. I also read the thick volumes of *Hromada*¹³ (1878–1879; 1882).

It was only after my father's death that I came into close contact with Drahomanov in Paris. As I knew his publications we very quickly developed close personal relations. Until his unexpectedly early death I kept track of his literary activities abroad and received his books. Also I took part in the commemoration of M. Pavlyk (1853–1915) and was a member of the Shevchenko Scientific Society in Lviv which was, in a way, a kind of Ukrainian Academy (1873–1939).

SOCIAL INTERESTS

3. Having reached the age of eighty and having constantly and consciously related myself to my social environment, I realize that the Ukrainian aspect was not the basic one in my life. I was not a politician.

¹² A Ukrainian-Russian monthly journal published in St. Petersburg in 1861–1862, later discontinued.

¹³ A young artillery officer, N. D. Pokhitonov, who was a family friend provided them. He had a nervous breakdown in Schlüsselburg Prison and died soon after in a hospital. For his biography see V. Figner, *The Prisoners of Schlüsselburg* (in Russian) (Poln. sobr. Soch., vol. iv, pp. 117–134; vol. 11, pp. 108–118).

It is scientific work and research, independent scholarly meditation and the individual's creative search for truth which occupied and continues to occupy the foremost place in my life. My work proceeded in a peculiar social and moral milieu of the close-knit comradesly circle of the "brotherhood," which left an everlasting imprint on the entire course of my life. Nowadays only two brotherhood members are still living plus the survivors of its second generation.

The historical circumstances did not coincide with our attempt to reach our ideals, or more accurately, these ideals were beyond our reach. It is difficult to say what our efforts would have produced had we not lived during a period of a great world revolution, a revolution which for historical reasons took place in our country but obviously, left a deep impression on all of humanity, on the entire planet. It has by no means come to an end.

I see that what we are now experiencing reaches beyond the limits of our country. For the first time it is evident that the political processes in human history rise from a much deeper geological substratum lying at the base of human history. It corresponds to the new condition of the biosphere—sphere of life on our planet—to the noösphere in which humanity appears for the first time as a powerful geological force on our planet, in which its thought, its consciousness, its mind can take on a geological form.¹⁴

SCIENTIFIC INTERESTS

4. In the course of more than sixty years my scientific research has been continuously aimed in the one and same direction—the elucidation of the geological process of changing life on the planet earth, a process which I and my contemporaries vicariously experienced.

As I now ponder the principles of geochemistry and biogeochemis-

¹⁴ See A. Kornilov, *Russkaya Mysl*, 1916. No. 8, p. 49 ff. D. Shakhovskoy, Autobiography. The 50th anniversary collection of the newspaper *Russkiye Vedomosti*. M. 1913.—I. Grevs, *Past Years*.

A. A. Kornilov (–1925) civic leader and historian. He wrote the first scholarly history of 19th century Russia (Lectures in the Polytechnic Institute in St. Petersburg; translated into English). He left memoirs which should be published.

¹⁵ The noösphere concept was correctly introduced by the philosopher (Bergsonian) and mathematician E. LeRay from the concept of the biosphere which he accepted from me. This he cites (E. LeRay, *L'exigence idealiste et le fait d'évaluation*. p. 1927, p. 196) in his philosophical work (Lectures in College de France). His opinions in the field of natural sciences belong not only to him but also to his friend, the great geologist and paleontologist, Pierre Teilhard de Chardin who now [1943] works in China.

try as they have taken form in our country, I see that for me their historical roots proceed from three of my experiences.

The first was in 1908. I was then in Dublin, Ireland (at that time still a part of Great Britain) at the meeting of the British Association of Sciences—a foreign member of which I had been since 1889. John Joly (1857–1933), the professor of physics and mineralogy at Dublin University read a paper about the geological significance of Uranium. He also gave the first summary of the subject of radiogeology. I immediately realized the value of his work and developed friendly ties with John Joly, ties which I maintained until his death.

In 1911 at the annual meeting of the Academy of Sciences in St. Petersburg it was my turn to read the customary annual address. I chose the topic: “Contemporary Tasks in the Field of Radium,” in which I tried to elucidate the basic significance of radioactive energy in the history of our planet. As a result of this there emerged the basic significance of chemical elements in the geology of our planet and evidently of all planets and hence, of geochemistry.

Through aeons the basic chemical composition of our planet has been changing radically and spontaneously. The atoms of some elements disappear. Others naturally generate. Those elements which are slowly disappearing are Uranium, Thorium, Potassium, Rubidium and others. They transform into Lead, Calcium, Strontium and Helium, and new isotopes. This planetary process is clearly connected with the entropy of the planet.

This process has only been sketched and its significance will only be accurately understood when the methods of measuring radioactivity are improved and the conjectural process of radioactive decay of all chemical elements will be explained. The path to answering these questions was found, I think, just before the war by Professor Świętosławski in Warsaw. He was aided by the microcalorimeter which he had constructed. This work has been destroyed by the Hitlerite barbarians.¹⁶

Thus the geology of our planet naturally basically changes with the passage of time.

The second experience from which I proceeded was my own and the entire country's realization that in 1915 our Czarist government was unprepared to defend the land and had completely neglected the

¹⁶ Professor Świętosławski was earlier professor at Moscow University for a few years. He was in charge of the Luginin Thermochemical Laboratory. See my speech at the International Geological Congress in Moscow in 1937.

great significance of natural resources in the defence of the country.

In the report which I presented to the Academy and which it approved in May 1915, I stressed the need for a rapid recruitment of scientists for the study of our country's productive resources.¹⁷ I pointed out that this was in line with an old tradition of the Academy dating back to the 18th century when in 1776, on the occasion of the Academy's 50th anniversary, Academician I. A. Gildenstedt (1745–1781) vividly indicated the necessity of such a survey.

The Committee (Committee for the Study of Natural Productive Resources—KEPS), which grew rapidly and attracted to the Academy hundreds of people who were previously unconnected with it, produced a series of volumes dealing with the study of Russia's productive resources. This was also a great source for geochemical study.

For the first time the Academy absorbed a considerable number of doctors, engineers, technicians—people interested in applied science. Its publications are of great significance to this day and the Committee itself existed into the 1930's. Presently the Committee exists in the Academy of Sciences in the form of the Council for the Study of Productive Resources. This Council had received in part the function of the previous Committee. The absence of the Committee itself has obviously had a negative effect in this war.

My third experience was the chairmanship of the Learned Council in the Ministry of Agriculture. Academician B. B. Golitsyn (1862–1916), who was active in the KEPS, acting together with A. E. Fersman (1883–1945) as one of the secretaries, was my predecessor in this post. After his untimely death in May 1916, I agreed to take his place on the Council, because during my work in KEPS I was struck by the great significance of living organisms in reviewing the energy-potential of the planet.

Attached to the Council was a series of research institutions, some of which were excellently equipped and directed by prominent specialists in such fields as zootechnics, applied entomology, agricultural mechanics, agriculture, etc.

B. B. Golitsyn was not the creator of this remarkable organization; it was V. I. Kovalevsky (1843–1883), Vice-Chairman of the Council and an important government official, who at that time could not attain his full potential.

¹⁷ See V. Vernadsky, *The Study of Russia's Natural Productive Resources*. Academy of Sciences, 1915, p. 682 (in Russian).

At the time when I knew him he was ill and already nearing the end of his activity. It was he who presented the plan and compiled a list of prominent people which included A. Regel, A. A. Yachevsky, D. Artsybashev, D. Liskun and others.

Contact with these institutions and people opened a whole new world for me. I realized that the basis of geology lies in the chemical element—in the atom, and that living organisms play a prominent role, perhaps the leading one, in our natural environment—the biosphere. Proceeding from these three ideas we created our geochemistry and biogeochemistry.

IDEAS ABOUT BIOGEOCHEMISTRY AND GEOCHEMISTRY

5. In the spring of 1917 I became ill in Petrograd. To my astonishment, Professor Rubel diagnosed acute tuberculosis. Later X-rays showed that I had contracted the disease some time before though I did not have the faintest idea of this. When I felt better he insisted that I leave Petrograd and spend the spring outside the city. At the first opportunity I left for Shishaki in Ukraine.

I wanted to use the time to calmly outline the ideas which I had accumulated about biogeochemistry and geochemistry. There, on "Kobyla"^e, I worked at a fast tempo. I clarified for myself the basic concepts of biogeochemistry, sharply differentiated the biosphere from the other envelopes of the earth and realized the basic significance of the multiplication of living matter in the biosphere.

I began to write with great enthusiasm and used a broad approach. It now seems to me that the simple and new concept of living matter as a totality of live organisms which I introduced into geochemistry allowed me to avoid those complications which now permeate contemporary biology where "life" is counterposed to inert matter.

The concept of "life" is insolubly connected with philosophical and religious constructions from which biology can by no means divest itself.

Leaving the concept of "life" aside, I tried to maintain a strict empirical basis and introduced into geochemistry the idea of "live matter" as a totality of live organisms, indivisibly connected with the biosphere as an insoluble component and function of it. The conbio-sphere as an insoluble component and function of it. The concept of "living matter" corresponds completely to "life" as it appears

on our planet, excluding philosophical and religious excrescences of thought.

Since that time, wherever I found myself and under whatever circumstances I had to live through (sometimes quite difficult), I worked constantly, reading and thinking about problems of geochemistry and biogeochemistry. And I continue to work in this manner now.

This was reflected in my work for the future Ukrainian Academy of Sciences as it was my fate to take part in its founding and in which I first put my work on an experimental level.

PARTICIPATION IN THE ORGANIZATION OF SCHOLARLY WORK.

6. In Shishaki I received a telegram from Academician (Orientalist) S. F. Oldenburg (1863–1934), who was at that time Minister of Education in the cabinet of A. F. Kerensky. He called me to Petrograd. When I arrived he proposed that I become one of the assistant ministers of education and head the section of higher schools and governmental organization of scientific research.

From 1897 to 1911 as professor of Moscow University I had taken a very active part in discussing questions of the reorganization of academic life and of a stronger and better organization of higher schools, which we then had hoped to create. Our work was demolished by the Minister of Education, L. A. Kasso (1865–1814; Minister 1910–1914).

From 1906 on, I was continually elected to the State Council by the higher institutions of learning and by the Academy of Sciences. However, political activity had little influence on me and I viewed it as a fulfillment of a citizen's moral debt.

In 1904 I became one of the initiators in the organization of the free Academic Union which soon encompassed the vast majority of the professors in our country.

Thus, questions of the proper organization of scholarly and scientific research always deeply interested me.

It was clear that from the moral point of view I could not refuse Oldenburg's proposal, though I realised the complete instability of the situation. I hoped that at least something could be accomplished. In this I was not mistaken.

I accepted the proposal.

I was confronted with an extraordinary haphazardness in the distribution of the institutions of higher learning in our country and

with a great scarcity and casual location of the large research centers not connected with higher schools.

During the short time of my work Perm University was opened. This had been prepared several years before the Revolution by the initiative and partly with the financial aid of Meshkov, a man of ideals and a local civic leader.

The question of the creation of new Academies of Science was raised. I remember that my old friend, Academician N. Y. Marr (1864–1934), took part in the discussion of this question.

Other discussions dealt with the question of creating the Georgian Academy of Sciences as well as the Academies of Science in Ukraine and Siberia. By now these questions have been solved. The Georgian and Ukrainian Academies exist and the question of Siberia has been in all likelihood temporarily decided by establishing branches of the All-Union Academy there.

At this time I made the acquaintance of Professor N. P. Vasylenko (1867–1935), another assistant minister. Vasylenko, historian of Ukraine, was the representative of Ukraine in questions dealing with the higher institutions of learning. It was he who first proposed the idea for the creation of a Ukrainian Academy. And he died its academician.

We developed close relations, the memory of which for me, who survived him, remained for life.

A very interesting plan worthy of attention was developed by N. Y. Marr. It called for the creation of a separate historico-philological faculty in Tiflis (now Tbilisi). In his note Marr urged that Arabic and other eastern languages, as well as cultures, should form the basis for the institute just as historico-philological faculties in European and American universities were based on the study of the Greek and Latin languages and on the culture of Western Europe.

THE POLITICAL SITUATION IN UKRAINE

7. When the October Coup occurred, I felt morally incapable of taking an active part in the Civil War and moved to Poltava. By now the Minister of Education was S. S. Salazkin (1862–1932), an old friend from the Academic Union.

I arrived in Poltava in November of 1917 and there I met three governments: 1) the Ukrainian Central Rada in Kiev which was headed by Professor Hrushevsky; 2) the government of the Donets

Workers Republic; 3) the local Council of Workers and Peasants Deputies, in which the Mensheviks and the railroad workers played the important role.

In Kiev, on April 22, 1918, on the right-bank Ukraine, the Central Rada was disbanded and for a time the rule of "Hetman" Skoropadsky was established with the aid of the Germans. The "Hetmanate" was a fiction. It was an ephemeral rule in a limited form. Except in name it had nothing in common with the Hetman state which had existed in the Ukraine from the 16th century to the beginning of the 18th century. The same held true for Kiril Rozumovsky, the last Hetman (1750-1764), during the reign of Catherine II.

At that time I was in Poltava, not in Kiev. There we knew nothing about what was going on. However we did experience the sudden, unopposed occupation of Poltava by the German armies. During those times contacts with Kiev almost did not exist for the inhabitants of Poltava. In my environment these contacts were insignificant. Poltava was traditionally tied to Kharkov and the Donbas more so than to Kiev. Because of this we knew about the bonds between the newly arrived Germans and the White Army of General Krasnov on the Don.

Under these circumstances I received a letter in May from N. P. Vasylenko who was then in Kiev. He proposed that I come to Kiev as soon as possible to take part in the organization of the cultural life in Kiev. He also pointed out the possibility for the creation of a Ukrainian Academy of Sciences.

M. S. HRUSHEVSKY

8. I had been in Kiev several times before. As a boy I had lived in a house on Lypky in which my grandmother, V. M. Konstantynovych, had lived and died.¹⁸ Much later as a professor in Moscow I took part in a mineralogical excursion with the specialists of the Mineralogical Department of Moscow University into the Teterev River valley, the area of pelicanites, kaolin, and plagioclases (sunstone), and also into the Ovruch County in Volhynia.

Not long before my arrival to Kiev the "Black Hundreds" had burned Professor Hrushevsky's house.^d He lived, half-hiding, in the unburned sections of his home.

M. S. Hrushevsky (1866-1934; his family came from the Kuban)^e

¹⁸ My grandmother was already dead (1863), and an older sister of my mother, E. L. Neelova, lived in it and inherited the house.

was a graduate of Kiev University and a pupil of Professor V. Antonovych (1834–1908). Hrushevsky was a man of tremendous erudition and the greatest Ukrainian historian. Up to the Revolution he had been professor at the Austrian university in Lviv and had placed the chair of Ukrainian history on a very high level. He created a school of his students and promoted the Shevchenko Scientific Society which functioned as the center of scholarly activity in the territories inhabited by Ukrainians.

I made his acquaintance in 1916 in Petrograd during the war with Germany. The old Russian Academy of Sciences was then actively backing efforts to recall the ukaz of 1876 which forbade the printing of books in Ukrainian. A concrete example of this support was the fact that the Academy published one or two articles by Hrushevsky in Ukrainian on the basis of the ruling that the Academy had the right to publish in the languages it thought fit.

My friend, Academician A. A. Shakhmatov (1864–1920), whose firm moral personality (he did not care what others thought of him) impressed me and always remained dear to me, took an active part in this affair.

At that time both Hrushevsky and I did not think that a Ukrainian Academy of Sciences could be created. My discussion with Hrushevsky dealt with the Shevchenko Society in Lviv of which I was a member and also, as I recall, with the question of Hungarian Ruś (as it was then called) which interested me very much.

PREPARATIONS FOR THE ORGANIZATION OF THE UKRAINIAN ACADEMY OF SCIENCES

9. Upon arriving in Kiev, I quickly contacted N. P. Vasylenko. I was very enthusiastic about the possibility of creating a Ukrainian Academy of Sciences. However the conditions under which I would work were that I would not become a citizen of the Ukrainian Hetmanate but would rather take part in the cultural work in the Ukraine in the role of an academician of the Russian Academy of Sciences and an expert of affairs. Vasylenko agreed to this.

By then I had already been an academician for 12 years and only three years had passed since, on my initiative and with my most active participations there had been formed the largest committee of the Russian Academy of Sciences—the Committee for the Study of Natural

Productive Resources (KEPS), a committee which included hundreds of scientists and engineers.

I think that at that time I was the only person in Kiev who was experienced in the academic work in the form in which it functioned in the Petrograd Academy of Sciences.

Our Academy was radically different from the others. It was formed by the initiative of Peter I on the model of the old Paris Royal Academy of Sciences, which ceased to exist during the great French Revolution and which was renewed by Napoleon I in a mutilated form. Basically, the old Parisian academy and our Academy of Sciences were different from that of Napoleon in that they not only held sessions, published journals, books and had libraries but that they had attached to them scientific institutes, laboratories, museums, botanical gardens.

Only in London, in the Royal Society, have we such an independent and complex organization. That, however, was a society with an unlimited number of members which received government subsidies but, like all important scholarly societies, it was independent of the government.

The continental academies were more like government departments, more related to the contemporary Parisian Academy than to the structure of ours.

Vasylenko and I realized that in such a historical moment we had to act quickly, decisively and with complete trust in one another.

SCHOLARLY INSTITUTIONS IN UKRAINE—

A. KRYMSKY AND D. BAHALIY

10. Up to the Polish Revolution of 1830, Polish culture was dominant in Kiev. This was so because after the liquidation of the Polish state during the reign of Catherine II two great Polish leaders, Adam Czartoryski (1770–1861), who was also a Russian statesman, and Tadeusz Czacki (1765–1813) created during the reign of Alexander I two large centers of Polish culture, one in Lithuania, (the University of Vilno) and the other in Ukraine¹⁹ (the Kremenets Lyceum).

Fortunately for the Poles, the moment of the Polish kingdom's destruction coincided with a great patriotic movement and the ap-

¹⁹ Vilno itself is at the boundary of the compact Belorussian population (Academician E. F. Karsky).

pearance of great Polish scholars, writers, poets. It was the golden age of Polish culture.

When Nicholas I created a Russian University in Kiev (1833) he intended to curb Polonization. But he called a number of available Polish scholars to staff the university faculties and by this increased the influence of Polish culture—the opposite of what he wanted to do.

Under Alexander II after the Polish revolt of 1863, which affected the Kiev gubernia, there started a period of more oppressive russification. It was reflected in the struggle with the indigenous Ukrainian population and was sharply emphasized in the ukaz signed by Alexander II in Ems which forbade printing in Ukrainian.

For this reason, in my day, idealistic Ukrainian scholars could not firmly establish themselves in Kiev and the other provincial Ukrainian universities, such as Kharkov and Odessa (New Russia). On the contrary, in the historico-philological faculties, where national traditions could come to the fore, the choice of professors was very unfavorable for Ukraine. During a period of more than forty years the Ministry systematically filled the chairs with people whose attitudes toward the Ukrainian movement were clearly negative.

In these universities there always existed a majority which tended to support russification.

This was especially evident in Kiev University after Drahomanov left for abroad and after the South-Western branch of the Geographical Society was liquidated in 1876. Here, even among serious scholars, people could be found who supported a radical policy of russification no matter what means were used. They acted on the principle that the end justifies the means. There were no professors who were leading specialists in the areas of Ukrainian language, literature and history.

Without such people it was impossible to assemble a Ukrainian Academy of Sciences.

Qualified people had to be sought elsewhere. Vasylenko and I searched outside of Kiev for specialists in Ukrainian studies.

With Vasylenko's consent I turned to A. E. Krymsky (1871–1942), professor at the Lazarev Institute in Moscow, a former pupil of Academician F. E. Korsh (1843–1915) and a leading Orientalist. Krymsky was not only an Orientalist, he was also a specialist in the history of Ukrainian language and literature, a gifted Ukrainian poet and a man of colossal erudition. He was a close friend of mine and a member of the Academic Union from its very beginning in 1904. I met him in

the Academic Union where he represented the Lazarev Institute of Oriental Languages.

Love for Ukraine was the bond that drew us together.

In addition to this we both belonged to one of the circles—the Group of Autonomists and Federalists—which were characteristic of the times. The purpose of the circle was to unite people who wanted to become acquainted with such questions and to discuss relevant ideas from the contemporary point of view.

With the consent of Vasylenko, I corresponded with Krymsky. It was necessary to bring Krymsky from Moscow to Kiev by a freight train, as he agreed to go to Kiev “forever” only if his huge library, which he had collected all his life and which contained material in Arabic, Turkic, Persian as well as in Ukrainian, would be brought along. He was lonely, frail and ill and could not leave without a companion. He left at the first opportunity and arrived safely in Kiev with his huge, valuable library (which he later donated to the Ukrainian Academy of Sciences) and in the company of his young pupil.

In addition to this I proposed to N. P. Vasylenko to invite another Ukrainian specialist—a historian of the Slobodian Ukraine and its culture, an old professor at Kharkov University whom I knew from the State Council (since 1906) in which we both belonged to the opposition group. This was D. I. Bahaliy (1857–1932). He arrived soon.

TWO TYPES OF ACADEMIES OF SCIENCES

11. At this time M. S. Hrushevsky sent me a message through his brother, O. S. Hrushevsky (1877–?; also in Ukrainian studies, a specialist, but nowhere near the caliber of his brother). He said that he wanted to see me and to talk about the Ukrainian Academy but that since he was in hiding and did not go out he asked me to come to him. At the first opportunity, I went to him in conspiratorial fashion and we had a long discussion.

We represented two opposing points of view. M. S. based his position on the organizational model of West-European academies and on that of the excellently organized Shevchenko Society in Lviv (now a branch of the Ukrainian Academy) which in co-operation with his University seminar placed Ukrainian (historico-philological) studies on an excellent level.

However, what I considered no less important, the Shevchenko So-

ciety was completely unadaptable for work in other disciplines such as mathematics, natural sciences and applied studies.

M. S. presented the question straight forwardly. He told me, "You know that at this time we do not have enough Ukrainian specialists outside the field of Ukrainian studies. Therefore we have to turn to Russians. Much time is needed before we will have these specialists."

I represented another point of view. I agreed with him in part, but I thought it was necessary to create new chairs and laboratories which would at first be occupied by Russians but this would quickly change as new academicians would be elected. It was important to create strong centers for the study of the Ukrainian people and its history, its language, its natural environment.

It would, of course, be necessary to carry out these studies not on a nationality principle but on a broader human scale.

Local talent would emerge very soon.

At the time M. S. wanted to create in Kiev the Kiev Ukrainian Scientific Society on the model of the Lviv Shevchenko Society. This was done and I became a member of it from its very founding.

M. S. died in 1934 as an Academician of the Ukrainian Academy of Sciences and of the Academy of Sciences of the U.S.S.R. (He died in Moscow where he had lived.)⁸ He was buried in Kiev.

The Ukrainian Academy of Sciences was organized on the model of the St. Petersburg Academy of Sciences—with laboratories, institutes, etc., and as we can see now, my prognosis was correct. In these chairs Ukrainians now occupy an almost equal place. And those years were not completely normal.

COMMITTEE FOR THE FORMULATION OF THE STATUTE OF THE UKRAINIAN ACADEMY OF SCIENCES

12. I agreed to direct two committees: 1) the committee dealing with problems relevant to scholars and to higher schools in general. The secretary of this committee was a young Kievan professor, B. L. Lichkov, a Russian by origin but with a wonderful command of the Ukrainian language; 2) Statutory Committee of the Ukrainian Academy of Sciences. The secretary of this committee was, as far as I remember, V. L. Modzalevsky (1882–1920), who published in Kiev (1908–1914) his "Little Russian Genealogy."

I quickly made friends with Lichkov and the friendship has lasted to this day.

Soon another task appeared which had not been foreseen. The times were revolutionary and it became necessary to save the libraries in the landed estates in the vicinity of Kiev. A third committee was created and I became its chairman. H. Zhytetsky, S. Yefremov and I made a report which laid the basis for the statute of the Central Ukrainian National Library.

Thousands of volumes from a number of libraries in the environs of Kiev were collected.

THE FIRST GENERAL MEETING OF THE UKRAINIAN ACADEMY OF SCIENCES—ELECTION OF THE PRESIDENT

13. On October 19, 1918, the second Committee finished its task, completing the statute of the Ukrainian Academy of Sciences. This was printed on the 26th of October in the *Derzhavnyi Vistnyk* (Governmental Bulletin). Earlier, on the 22nd of October, the same paper published the list of members of the Academy of Sciences.^b

On the 27th of October the first general meeting of the Ukrainian Academy of Sciences took place. The chairman was supposed to be the oldest member, N. I. Petrov (1840–1921), professor of the Kievan (former Mohyla) Academy and its historian. I do not remember why he could not take the chair, but I believe he was ill. The chairman was the second oldest member, Professor O. Levytsky (1848–1922), a social historian of 17–18th century Cossack Ukraine.

At this meeting, in a closed ballot, I was unanimously chosen President (Holova) of the Ukrainian Academy of Sciences, D. I. Bahaliy was chosen Vice President, and A. E. Krymsky as permanent secretary.

On the next day I published in the Kievan papers my letter of resignation from the Party of People's Freedom. I had been a member of it and its central committee from the time of its formation.

On the same day I also sent a similar statement to the Kiev committee of the Party. Sofia Lunacharskaya was then secretary of the committee. She was the sister of A. V. Lunacharsky,ⁱ (1875–1933), People's Commissar of Education, well-known literary historian, critic and later Academician of the U.S.S.R. Academy of Sciences. I took that step for what I considered and continue to consider—reasons of principle. I felt that the President of the Academy should not be a member of any political party during his tenure.

From then on I was unaffiliated with any party and participated in

the political life of the land only to the extent in which any common citizen participates.

PARTICIPATION IN THE CREATIVE WORK OF THE UKRAINIAN ACADEMY OF SCIENCES

14. The creative work of the Academy went on in a friendly atmosphere and at an energetic pace. There were many plans. We felt that what we were doing was necessary and important in the life of Ukraine as well as in the life of Russia. That, however, was only the external aspect.

Immediately I began to create for myself the facilities for experimental work in geochemistry and biogeochemistry. I had worked in these fields continuously since my arrival in Kiev.

During this time I became close friends with Professor S. L. Frankfurt, a pupil of K. A. Timiryazev (1843–1920), and with A. E. Dushchekin, who directed the large, excellent laboratory of the Union of Sugar Manufacturers. They gave me the possibility to immediately commence research in biogeochemistry.

There gathered around me a small circle of people whom I interested in these problems. Some of them are working in that field today.

On November 9, I made a report on the significance of living matter in geochemistry at a meeting of the Physics and Mathematics section of the Ukrainian Academy of Sciences. The outline of experimental work in this field was accepted.

Fifty-nine thousand rubles were assigned and it was decided to support three co-workers: I. D. Starynkevich-Borneman, M. I. Usanovich and B. M. Berkenheim.²⁰

This was the beginning of the biogeochemical laboratory and the inception of experimental work in biogeochemistry. Although the work took place under conditions of war, we managed to achieve results.

One of the projects was the elucidation of a problem which had first been introduced by John Murray (1841–1914) at the end of the last century during the excellent British "Challenger" oceanographic

²⁰ B. M. Berkenheim is at the present editor of the chemical journal in Moscow; M. I. Usanovich a great physicochemist, is now professor of chemistry in Tashkent, I. D. Starynkevich-Borneman works in the Vernadsky Geochemical Laboratory and the Geological Institute of the USSR Academy of Sciences.

expedition. He focused attention on the fact that diatomaceous silicic algae were abundant in the ocean, while a silica content in the sea water was very low. He advanced a working hypothesis that the diatomaceous algae extract the necessary silica from mud suspended in sea water by decomposing the kaolin core in clay minerals.

I had worked with kaolin in Paris in 1889 with H. L. Le Châtelier (1850–1936) and had produced its structural formula. Le Châtelier had first shown that heat is given off by the decomposition of kaolin and I could verify him in this. In decomposing the kaolin core, the diatomaceous algae had to receive free energy—heat—which they could use for life.

Under my direction a young chemist, V. M. Naumovych carried out these experiments in the laboratory of the sugar manufacturers. He was an officer and was killed during one of the disturbances. The greater part of the experiments was lost because frost caused the test-tubes to burst.

One of the control experiments, however, was saved and concluded by A. Ohloblyn, a very talented entomologist with an inclination to chemistry. We raised diatomaceous algae on Podolian kaolin and were able to prove that in this Podolian kaolin, after sowing of diatomaceous algae, there appeared a free aluminum hydroxide not present before.

When I came to Paris in 1922, I made a report about this in the Paris Academy of Sciences. In his lecture at the following meeting, the French zoologist Coupin confirmed our observations and showed as we had done that here besides diatomaceous algae there could have functioned bacteria which neither he nor we could then rid ourselves of.

This work was renewed by me in the biogeochemical laboratory in Moscow in 1935 and it was only in 1942 that the problem was solved by the work of Professor Vinogradov and the botanist E. A. Boychenko.²¹ The question was finally positively answered. However, a small number of bacteria play a secondary role as a nutrient.

In Paris I could introduce another result of our work in the Ukrainian Academy of Sciences. I. D. Starynkewich-Borneman discovered for the first time (so far by qualitative analysis only) a constant presence of nickel in mice, which until then had been unknown

²¹ The first account—A. Vinogradov and E. Boychenko. DAN, 1942, XXXVII, No. 4, p. 158. The final work should appear in the next issue of *Microbiology*.

in organisms. This was the first participation of the Ukrainian Academy of Sciences on an international academic forum.²²

CHANGE IN THE POLITICAL SITUATION

15. Those were the days when Kiev and all of Ukraine had an unusual appearance. Kiev was crowded with German officers who strolled along the Khreshchatyk and sat in the coffee-houses. German press misrepresented what was happening both in Ukraine and in Western Europe. We had, however, no other news. The Austrians were in the south, in Podolia. On the surface, everything seemed to be in order in Kiev. I cannot recall at this moment the name of the German general who motored throughout the Crimea and enthusiastically wrote about the situation in the Kiev German newspaper.

However, we felt that all that was around us was only a show and that reality was something completely different. The Hetman finally succeeded in sending Professor Frankfurt to Germany for some economic negotiations. It was he who first brought back to Kiev more correct news which confirmed that what we saw around us was a decorum and that actually a peasant uprising had begun in Ukraine and in Germany—a revolution. Germany could not hold out for long. In the Ukraine at that time food stuffs were being continuously bought up and exported to Germany.

The peasantry began to defend itself. Frankfurt felt that the collapse of the German occupation was a matter of a few weeks. Many thought that Frankfurt was exaggerating the seriousness of the situation, but after a few days everything cleared up. Blatant propaganda spread among the German armies and people, who had been in hiding before, appeared among the populace. One beautiful day there appeared German and Russian soldiers (drunk and in disorderly uniforms) fraternizing and singing revolutionary songs. Discipline grew lax. Officers disappeared. Some said that many were committing suicide.

²² V. Vernadsky, in *Comptes Rendues de l'Académie des Sciences* (Paris, 1922). [In vol. 175, p. 297, it is noted that during the August 7 session, academician of the Petrograd academy, V. Vernadsky was presented as a "welcome guest." On pp. 382-385 there is a report on V. Vernadsky's "Sur le nickel et le cobalt dans la biosphère." Here Vernadsky's work in connection with the founding of the Ukrainian Academy of Sciences is mentioned. His colleague, I. D. Starynkevich (Borneman) is also mentioned here. On pp. 1226-1229 there is Henri Coupin's report on "Sur l'origine de la carapasse siliceuse des Diatomées." (Information provided by G. V. Vernadsky).—Ed.]

The German army collapsed. The situation deteriorated rapidly. Finally, one day when we woke up we realized that the Germans had disappeared and had taken the Hetman with them.

A new Ukrainian government appeared—the Directory of V. Vynnychenko. It was supported by the army of S. Petlyura; however, we never saw that army in Kiev.

That was at the end of November, a little more than a month since the founding of the Ukrainian Academy of Sciences. At a general meeting on the 28th of November I discussed the state of events which appeared to us not to be very stable or clear.

The Directory changed the composition of the Committee for Higher Schools and Scholarly Institutions. I remained a member but not the chairman. I do not remember who was the chairman. Soon everything changed again. The Directory lasted several weeks, altogether less than two months.

The question of a Ukrainian university in Kamenets-Podolsk was raised on the initiative of the Directory government. It was proposed that I go there and ceremonially open the Ukrainian university. The temptation was very strong for me since I had never been in Podolia and my father had begun his pedagogical activity in Kamenets-Podolsk. He had been a senior teacher in the Gymnasium until he was sent on a mission abroad. The natural beauty of Kamenets-Podolsk and its environs had captivated him. However, reason triumphed. Due to the instability of the situation, I decided not to go to a place which was completely strange to me.

The Directory brought about several changes in the statute of the Ukrainian Academy of Sciences. One of them was a point which we opposed; that the Academy could print in all languages except Russian. Printing in Russian was not directly forbidden but one needed a special reason for it.

Soon the government of the Directory left for Kamenets-Podolsk and we were invited to accompany it. Very many Ukrainians did so. We all stayed and decided to meet after the Government left. Rumors appeared that the Soviet armies were approaching Kiev.²³

Early in the morning of the 5th of February as I left the house to take a walk, Kiev was occupied by troops—apparently Russian—who did not answer when asked who they were. They were not, however,

²³ Now it is known that it was the Ukrainian Red Army. See Appendix VIII, to the Vol. XXIII of the *Collected works* of V. I. Lenin, 2nd. ed. M. 1935.

Petyura's Ukrainians or Bolsheviks. Soon they left and all seemed quiet.

On that morning, February 5, 1918 we called a general meeting of the Academy in the house where I was then staying, a building which housed the former First Gymnasium on Shevchenko (formerly Bibikov) Boulevard.

A. E. Krymsky, through his contacts with the Borotbists, knew more than any one about what was going on. It was clear for us that the fate of the Academy was being decided.

After the meeting we came to the unanimous decision to delegate Krymsky, in his function as the permanent secretary of the Academy, to represent the Academy before the Bolshevik armies which were approaching Kiev.

We knew that they were led by Rakovsky and Manuilsky. During the entire time Krymsky was in contact with the new power.

The entry of the Bolshevik armies into Kiev was ceremonious. No great changes took place in the position of the Academy. V. Zatonky (1888–1938), a young chemist and a Bolshevik party member was appointed chairman of the Committee for Higher Schools (I do not remember who was the previous chairman).

I remained a member of the committee.

ACADEMICIAN A. E. FERSMAN AND THE COMMITTEE FOR THE STUDY OF NATURAL PRODUCTIVE RESOURCES

16. Unexpectedly in May of 1919, A. E. Fersman, a newly elected academician (February 1919—I had taken part in his selection, being one of those who had sponsored him) arrived, commissioned by the Presidium of the Russian Academy of Sciences. He was assigned by the USSR Academy of Sciences to replenish the library of the Academy in Petrograd. He came to us because Kiev and Ukraine had then become a strong center of a free and uncensored press in both Russian and Ukrainian. Many important and interesting books were published. At the same time, the government organization for furnishing such institutions as the Academy with books, had vanished in those chaotic times.

The second goal of his trip was to establish contacts with the new Academy and to offer it friendly aid from the older organization. On

May 4, he gave a long report at a session of the Ukrainian Academy about the situation of research work in Russia. Contact of the Petrograd Academy's Committee for the Study of Natural Productive Resources (KEPS) was established with the Ukrainian Academy of Sciences.

Of course, in those stormy times which the years 1917-1921 were, it was difficult to expect solid results. But even the matter of principle was not to be ignored. The Ukrainian Academy of Sciences and our oldest Academy immediately established friendly bonds which continue to this day, though we may have forgotten how they began.

Very soon, however, these bonds will have a practical effect because the Ukrainian Academy was especially hardhit by German barbarism (as was the Belorussian) and it will be necessary to build them anew.

All the Academies will have to share in this task.

I think that a Union of Soviet Academies should be formed.

One of the results of Fersman's visit was the clarification of the position of the Committee for the Study of Natural Productive Resources (KEPS).

KEPS was then headed in Petrograd by Academicians N. S. Kurnakov (1860-1941) and A. E. Fersman.

In his report Fersman stated that the question of the Committee should be decided as follows: for the territory of Ukraine the Committee should be headed by an academician from the Ukrainian Academy, in this case, by me, as long as I stayed here.

WORK AT THE BIOLOGICAL STATION IN STAROSELIE

17. In 1919, elemental forces dominated over the fate of individuals, thus I found myself in a situation in which regardless of my wishes, I could not resume my work until 1921. And that was in Petrograd after a long period of interruption.

I will try to describe briefly how this came about.

In Kiev and vicinity clashes between various groups took place, often with shooting. I spent considerable time working in Staroselie at the biological station on the Dnieper near Desna. Then there were still the remains of an immense forest which stretched from Kiev to Chernigov. Just a few years after the Revolution, in the 1920's, the forest was no longer the same.

In Staroselie I came into close contact with subsequent academician of the Ukrainian Academy, N. G. Kholodny [1882–1953] and with Professor S. Kushakevych (1873–1920), who died of typhus when he left Ukraine.

NEGOTIATIONS IN ROSTOV CONCERNING THE UKRAINIAN ACADEMY OF SCIENCES

18. At the end of August or in the beginning of September I received a telegram addressed to "Academician of the Russian Academy, Vernadsky." It was from the Provisional Government which was then in Rostov-on-the-Don. I was asked to take all necessary measures for the preservation of the scientific collections and other valuables kept in the Ukrainian Academy of Sciences.

I decided to go to Rostov for an explanation and negotiations. To get there in those times was not easy. We went in a freight wagon. Several academicians accompanied me, among them were N. P. Vasylenko, V. A. Kistyakovsky [1865–1952], S. P. Timoshenko (1878–?).

In the negotiations I succeeded in attaining the following: 1) that the question of the Ukrainian Academy of Sciences would be finally decided only after the universities of Ukraine expressed their opinion on the matter, 2) it was agreed that in principle the Academy was desirable for the study of the Ukraine and South Russia, 3) a "Troika" of three academicians—myself, S. P. Timoshenko and O. Levytsky—was to be constituted instead of my presidency; 4) immediately after my departure from Rostov, a definite sum of money was to be transferred for the payment of salaries and for the maintenance of order.

The former professor of Warsaw University, Spektorsky, was appointed the curator of the Kiev educational district. I was not personally acquainted with Spektorsky but knew of him as a scholar and researcher in the history of the social sciences in the 17th century. My article about his studies was published in the *Russkaya Mysl* in those transitional times before the Revolution. We soon established good relations. He was instructed to assist me.

NEGOTIATIONS IN KIEV AND AGAIN IN ROSTOV

19. It was still not clear how things would develop and who would win: the Bolsheviks, the Socialist-Revolutionaries, or the Whites, not to

speak of the foreigners—German, American, English, French, and in Ukraine also Polish interventionists.

Even aside from these important factors the conditions of life in Kiev were influenced by inarticulate underground currents.

In Kiev at that time there was freedom of the press, as no power was then capable of restraining it. I was confronted with this phenomenon.

I will sketch a few moments from those strange by-gone days.

On February 12, the Soviet government gave the Academy a house which had formerly been the Levashev Boarding School for women of the gentry.

I knew of it because my mother, who had studied there, told me much about it. Her friendship with Kostomarov's wife, which I mentioned before, was connected with this place. I knew that the boarding school was organized through funds which had been collected by the Kiev gentry and the general public after the retirement of General-Governor Levashev under Nicholas I.

Suddenly the curator of the Kiev Educational District, E. V. Spektorsky came to me with a proposal to return the house to the Levashevs who claimed their rights to it. A General Levashev appeared who pressed this action by referring this matter to the curator, who believed him, rather than directly to the Academy.

I succeeded in finding in the archives of the house evidence which proved beyond doubt the falsity of these family traditions. This matter was picked up by the press and debated on the pages of the papers. In general the press attentively followed the activity of the Academy. The Sign "Ukrainian Academy of Sciences" was pulled down at night by the rightists-russifiers (of which there were many in Kiev). This was ceremoniously replaced. The press busied itself with this question for a few days, presenting the entire matter in a tragicomic aspect.

Much more important than these little incidents which characterized the environment in which one lived was the fact that the transfer of money, which was supposed to have been sent from Rostov the day after my departure, did not arrive.

I decided to go again to Rostov. The trip was made in completely different circumstances. I went through Kharkov and spent the night at Academician M. I. Palienko's (1869–1937) house. In Kharkov at that time there was a meeting of the City Council and great tension

in the air. General May-Maevsky, the commander of the White units, drank incessantly and aroused anxiety among the populace. It was clear that the White Army was disintegrating.

I arrived in Rostov and found out that the money had already been sent out. At that time, however, it was not possible to go from Rostov directly to Kiev. I decided to leave through Novorossiysk and Crimea. By the time I arrived in Yalta I found lice upon myself (I had left on an over-crowded steamer) and by chance disembarked there.

It was a complete surprise for me and my family that upon disembarking I met my daughter. This halt changed the course of my life. That very night more lice were found, and, as was to be expected, I contracted a very bad case of typhus. Luckily, I found myself in very good hands. A relative of mine, S. M. Bakunin (who lived in a small dacha, where a brother of the famous anarchist, the Hegelian philosopher A. A. Bakunin had died) and my wife and daughter looked after me.

I nearly died. The physician caring for me, a well-known civic leader, A. Mikhailov, died of typhus at this time. The former professor of Kiev University and active member of the Academic Union, the philosopher E. N. Trubetskoy, who saw me off in Novorossiysk, also died of typhus.

I could not return to Kiev. When in 1921 I could return to either Petrograd or Kiev, I chose Petrograd and sent a letter to Kiev.

In 1921 I received an invitation from Paris University to read a course in geochemistry. The opportunity to read the course came in 1922 and 1923, and I returned to Leningrad only in 1925. Work in the Curie Radium Institute kept me abroad. Due to unforeseen circumstances I could not complete this work or further develop it. It was connected with the origin of radium deposits in the Congo. I worked in association with E. Chamié of the Paris Radium Institute, a Russian-Syrian and a talented worker. If one is to believe the Belgians, a kilogram of uranium lead, which was transferred to M. Skłodowska-Curie, was obtained from curite, whose entire lead was derived from uranium.

We could not complete this work because the Belgians wanted to do it themselves. They did not however, complete it. The director of the company, the mineralogist, Professor Büttenbach was more interested in technology and the financial aspect.

The explanation of this phenomenon is the next scientific task in radiogeology. It is not now for me to solve it.

18-V-1943.

Borovoe Kurort-Oblast Akmolinsk.

EDITOR'S NOTES

[a] Aleksei Pavlov (1854-1929)—from 1886 Professor at Moscow University. His wife, Maria Pavlova (1854-1938), was a paleozoologist and from 1921 an Academician of the All-Ukrainian Academy of Sciences.]

[b] Mikhail Piletsky Urbanovich belonged to the mystic "Spiritual Union" which was founded in the 1820's by Ekaterina Tatarinova. In 1837 Piletsky was forced to enter a monastery.]

[c] "Kobyła" is the local term for the grassy banks along the winding course of the Psel River. Such a "kobyła" was on the piece of land, near Shishaki in the Poltava region, which V. Vernadsky acquired in 1913 (information provided by G. V. Vernadsky).]

[d] Hrushevsky's house was burnt and destroyed by artillery fire during Muravev's Red Guard offensive on Kiev in March of 1918.]

[e] Hrushevsky was born in 1866 in Kholm.]

[f] The Ukrainian Scientific Society was founded by Hrushevsky in 1907. The reference here is to the renewal of its activity after the War and the Revolution of 1917.]

[g] M. Hrushevsky lived in Moscow 1931-1934 in confinement. He died in Kislovodsk in 1934.]

[h] The reference is to the Kiev Theological Academy.]

[i] Sofia Lunacharskaya was the wife of A. V. Lunacharsky's brother, Nicholas.]

Botanical-Geographical Changes in the Distribution of the Field Crops of the Ukraine During the Last Fifty Years

ALEXANDER ARCHIMOVICH

A. The Natural Geographical Zones of the Ukraine

I. General Considerations

The territory of the Ukrainian SSR amounts to 601,000 square kilometers, and it constitutes only 2.7 per cent of the total territory of the USSR.¹

The ethnic Ukrainian territory, if one includes areas of a mixed but mainly Ukrainian population, extends far beyond the borders of the Ukrainian SSR and comprises an area of 945,000 square kilometers.²

V. Kubiiovych considers the Ukraine as a separate natural geographical unit when compared with the total territory of the USSR. The grounds for this contention are the peculiar features of the climate, soil, vegetation, and orography in the West, South, and partly in the East, as well as of the anthropological structure of the population.³

The territory of the Ukraine can be divided into broad strips of land that are differentiated by their climate, soil, and vegetation. On the basis of a study of these peculiarities, a number of Ukrainian scholars—P. Tutkovskiyi, E. Lavrenko, O. Yanata, A. Fomin, B. Lichkov, B. Rudnytskyi, G. Vysotskiy, I. Tesla, and G. Machiv—have proposed a series of schemes for the division of the Ukrainian territory into natural zones.⁴ According to these schemes, the Ukraine would

¹ *Nar. Khoz. SSSR, 1964, p. 12* = Narodnoe khozyaistvo SSSR v 1964 godu. Tsentral'noe Statisticheskoe Upravlenie pri Sovete Ministrov SSSR. Statisticheskii Ezhegodnik. (The National Economy of the USSR in 1964. The Central Statistical Administration of the Council of Ministers of the USSR. Statistical Annual) Moscow, 1965, p. 12.

² *Kubiiovych, V. Entsyklopediya Ukrayinoznavstva* (Encyclopedia of Ukrainian Studies) Vol. I, 1949, p. 23.

³ *Kubiiovych, V. ibid, p. 118.*

⁴ *Tutkov'skiy, P. Pryrodna rayonizatsiya Ukrayiny. Materialy dlya rayonizatsiyi*

be divided into three main zones: the Mixed Forest Belt, the Forest Grassland Belt, and the Grassland Belt.

These zones represent modified continuations of similar zones which as broad strips cross the Eurasian continent in approximated from the south-west to the north-east direction.⁵

Summing up the above differentiation of the Ukrainian regions, V. Kubiiovych divides the Ukraine into three main natural units: the northern, the middle, and the southern. He considers the Carpathian and the Crimean Mountains separately as mountain regions. This division corresponds in its main characteristics to the already-mentioned division into the Mixed Forest Belt, the Forest Grassland Belt, and the Grassland Belt. V. Kubiiovych describes these natural units as follows:⁶ "The northern belt, commonly known as Polisia, is a territory of postglacial landscapes, forests, and swamps. In general, it is poorly populated. The middle belt is a territory of erosive loess landscapes, black soil (chernozem), an adequate amount of precipitation, and of forest-steppe, an area with excellent conditions for agriculture. It is densely populated. Southern steppe Ukraine is distinguished from the middle belt above all by less precipitation, a different steppe flora, and different conditions for agriculture. It has

Ukrayiny. (The Natural Geographical Demarcation of the Ukraine. Materials for the Natural Demarcation of the Ukraine) Kiev, 1922, pp. 1-79, with maps and illustrations. *Lavrenko, E. Heo-botanichna rayonizatsiya Ukrayiny.* (The Geographical-Botanical Demarcation of the Ukraine) with map. Editorial by Prof. O. Yanata, Kharkiv, 1927. *Fomin, A. Kratkyi ocherk estestvennykh botaniko-geograficheskikh rayonov Ukrayiny.* (A Short Essay of the Natural Botanical-Geographical Demarcation of the Ukraine) with map. Kiev, 1925. *Lichkov, B. Estestvennye rayony Ukrayiny.* (The Natural Demarcation of the Ukraine. Ed. by the Kiev Provincial Statistical Bureau, Kiev, 1922. *Vysot'skyi, G. Makroklimatychni shkemy Ukrayiny.*) Kiev, 1922. *Teslya, I. Klimat Ukrayiny.* (The Climate of the Ukraine.) in the Encyclopedia of Ukrainian Studies, Vol. I, pp. 82-83 (See No. 2). *Makhov, G. Materialy po rayonirovaniyu Ukrayiny.* (Materials for the Natural Geographical Demarcation of the Ukraine.) Ed. by the Gosplan (State Planning Commission) of the Ukrainian SSR. 1923. *Ibid. Pryrodne ta ahrykul'turne rayonuvannya Ukrayinskykh Zemel'.* Naukovi Zapysky Ukrayinskoho Tekhnichno-Hospodarskoho Instytutu. Vol. I-IV, pp. 57-84. (The Natural and Agricultural Geographical Demarcation of the Ukrainian Territories. Scientific Reports of the Ukrainian Technological Institute. Regensburg, 1948.)

⁵ Berg, L. S. *Geograficheskie zony Sovetskogo Soyuza.* (The Geographical Zones of the Soviet Union) Moscow. Vol. I, 1947. Vol. II, 1952. *Ibid. Les regions naturelles de l'URSS.* Traduction française par C. Walter, Payot, Paris, 1941. *Ibid. Natural Regions of the USSR.* (Translated from Russian by Olga Adler Tatelbaum, New York, 1950. *Francois Bourlière. The Land and Wildlife of Eurasia.* Life Nature Library, 1964, p. 18-19.

⁶ *Kubiiovych, V. The Ukraine.* A Concise Encyclopedia. Toronto, 1963, p. 150.

been settled more recently and is less densely populated, with the exception of the industrial areas. The mountains are distinctive in their characteristics. Likewise, the submontane depressions and foothills constitute separate small units."

The division of the Ukraine into three belts also can be found in the work of M. Nuttonson, who has indicated the agro-climatic analogues between the Ukraine and North America.⁷ These belts can in turn be divided according to their natural differences into smaller geographical units.

After World War II atlases were published in the USSR which contained descriptions of the natural zone boundaries, soils, climate, and wild and cultivated vegetation and the conditions of agriculture and animal husbandry of the Ukraine. In one of these atlases, "Agricultural Atlas of the Ukrainian SSR," the territory of the Ukraine is divided into the following principal natural zones: the Forest Belt, the Forest Grassland Belt and Grassland Belt, the Northern and Intermediate Steppe, the Southern Steppe, the Crimean Mountains, the Southern Bank Crimea, the Submontane Carpathian Regions, the Mountain Regions of the Carpathians, and the Tramontane Carpathian Regions.⁸ In the other atlas, "An Agro-Climatic Atlas of the Ukrainian SSR," the whole territory of the Ukraine is divided into regions according to climate, and these regions are in turn divided into the administrative units—the provinces.⁹ Both of these atlases have the defect of a lack of bibliographical information.

B. Changes in the Administrative Divisions of the Territory of the Ukraine

Until World War I most of the Ukraine was included in the boundaries of the Russian Empire, and this region was divided into nine provinces (guberniya).¹⁰ A considerably smaller portion of the

⁷ Nuttonson, M. *Ecological Crop Geography of the Ukraine and the Ukrainian Climatic Analogues in North America*, American Institute of Crop Ecology, Washington, D. C., 1957, pp. 1-23 (map).

⁸ *Atlas = Atlas sil'skoho hospodarstva Ukrayin'koyi RSR* (Agricultural Atlas of the Ukrainian SSR,) Ed. by the Ukrainian State University of Kiev, 1958 (47 maps).

⁹ *Agroklimaticheskii atlas Ukrainskoi SSR*. (Agro-Climatic Atlas of the Ukrainian SSR. The Central Administration of the Hydrometeorological Bureau of the Council of Ministers of the USSR. Ukrainian Hydrometeorological Research Institute, Kiev, 1964. Publishing House "Urozhay" (36 maps).

¹⁰ Kubyovych, V. *Entsyklopedia*. Vol. I, p. 24 (See No. 2). Ibid. The Ukraine, Vol. I, p. 23 (See No. 6).

Ukrainian territories was included in the Austro-Hungarian Empire.

As a result of the defeat of Germany and its allies the Austro-Hungarian Empire was dissolved. A group of new countries emerged including Poland and Czechoslovakia, and the territory of Rumania was considerably increased. The Ukrainian territories that previously had belonged to the Austro-Hungarian Empire were divided among these countries.¹¹ The part which was included in the Ukrainian SSR underwent a series of administrative changes.

In 1939, as a result of the Ribbentrop-Molotov Treaty for the division of Poland, some regions were annexed to the USSR. In 1964 the Ukrainian SSR consisted of 25 regions which can be divided according to the economic provinces as follows: The southwestern regions, including the oblasts of Vinnytsya, Volyn, Zhytomyr, Transcarpathia, Ivan Frankivsk, Kiev, Lviv, Rovno, Ternopil, Khmelnytsky, Cherkasy, Chernivtsi, Chernihiv, and Kharkiv; the southern regions, including the oblasts of Crimea, Mykolayiv, Odessa, and Kherson; the Don-Dnipropetrovsk regions, including the oblasts of Dnipropetrovsk, Don, Zaporizhya, Kirovohrad, Luhans'k, Poltava, and Sumy.¹²

C. Analysis of the Statistical Sources

A study of the changes in the geographical distribution of the field crops in the Ukraine in the 20th Century is rather difficult, since during this period there have been many great changes in the administrative divisions of the Ukraine. It should be noted that there was no uniformity in these administrative changes. Pre-revolutionary Russian statistics were published in detail and provided accurate information regarding sown areas, the average and total for a given year harvests of the main field crops, and numerical data for the principal species of cattle. These data were published yearly in the Annuals of the Agricultural Departments.¹³ They covered the agricul-

¹¹ Kubiyovych, V. *Entsyklopedia*. Vol. I, pp. 23-29 (See No. 2).

¹² Nar. Hosp. Ukr. RSR, 1964 = *Narodne hospodarstvo Ukrainyins'koyi RSR v 1964*. Statystychnyi shchorichnyk. National Economy of the Ukrainian SSR in 1964. Statistical Annual. Kiev, 1965, pp. 1-694.

¹³ *Ezhegodnik 1913* = *Ezhegodniki Glavnogo Upravleniya Zemleustroistva i Zemledeliya po Departamentu Zemledeliya* (Annuals of the Department of Agriculture. St. Petersburg. 1907-1913) (Each of these Annuals consisted of 900-1000 pages containing information on the agricultural activities of the preceding year, as well as information regarding the structure and personnel of the Department of Agriculture. They also contain reports and special articles on plant husbandry and cattle raising, reports of the scientific stations, descriptions of the agricultural edu-

tural economy for the whole of Russia, as well as for each province separately.

In 1923 a statistical collection edited by N. P. Oganovsky was published. It provided information regarding the cultivated areas and the average and gross harvests of the main field crops for the years 1901–1921. Since during this period a series of administrative changes involving the territorial division of the Ukraine had occurred, the authors of this miscellany had to make painstaking studies in order to present the statistical data for the years 1901–1917 in terms of the newly established territorial units.¹⁴ The statistical collection edited by N. P. Oganovsky is in great contrast with the majority of the subsequent statistical publications in that its statistical data regarding the average and gross harvests of the agricultural crops are not falsified. In 1933 a collection, "Crop Husbandry in the USSR",¹⁵ was published, in the writing of which Academician N. I. Vavilov participated. In Part I of the first volume there is an article by V. V. Talanov, "The Distribution of Field Crops."¹⁶ The author discusses the then existing division of Ukrainian territory into oblasts (provinces) and, on the basis of the harvest data, he points out the most suitable regions for the main field crops. The harvest data are here presented without falsification.

In 1936 a statistical collection, "Agriculture in the USSR, Annual

cational institutions, reports of agricultural fairs and of agricultural societies and phytopathological and entomological reports. These Annuals resemble the "Year-books of Agriculture" in their form and content, but they differ from the latter in that they published yearly statistical information for each of the provinces of pre-revolutionary Russia, including information regarding the sown areas and average and total harvests of the principal crops.)

¹⁴ *Sel'skoe khozyaistvo Rossii v XX veke*. Statisticheskii Sbornik pod redactsieyu prof. N. P. Oganovskogo. Izdatel'stvo Novaya Derevnnya. (The Agriculture of Russia in the 20th Century. A statistical collection edited by Prof. N. P. Oganovsky and published by "Novaya Derevnnya" Moscow, 1923, pp. 1–340.) This work provides statistical data for the different provinces from 1901 to 1921 with respect to the principal agricultural crops. The division of the Ukraine into provinces was here preserved, but there were some administrative territorial changes.

¹⁵ *Rastenievodstvo SSSR*. Vsesoyuznyi Institut Rastenievodstva Narodnogo Komissariata Zemledeliya Soyuzs SSR. (Plant husbandry in the USSR.) Moscow, 1933. In two volumes. The Institute of Plant Husbandry of the National Commissariat of Agriculture of the Soviet Union.

¹⁶ *Talanov, V. K rayonirovaniyu polevych kul'tur*. In *Rastenievodstvo SSSR*. (The Natural Geographical Demarcation of Field Crops.) Plant Husbandry in the USSR, Moscow, 1933, Vol. I (maps). The Zones of the Ukraine, pp. 226–237. This work and its maps showed the best zones in the Ukraine for the cultivation of the chief crops.

Publication, 1935"¹⁷ appeared. The publication of yearly statistics was subsequently temporarily interrupted. The above-mentioned 1935 collection shows the cultivated areas and the average and gross harvests for the main field crops for the years 1928–1934 for the whole territory of the USSR, as well as for the separate oblasts. The data for the separate oblasts of the Ukraine are only given for 1933 and 1934. The only reliable data in this miscellany are those for the sown area. The data for the average and gross harvests of agricultural crops in this and the ensuing statistical collections of this type can only be used with a certain degree of caution, since they have been falsified. This is especially true for the cereals.

Starting in 1933 the economists of the USSR changed their method of calculating the harvests of grain. Until that year the actual harvest was considered to be that of the grain which was taken to the granary for storage, that is, the granary or storehouse harvest. In American literature it is called "barn yield." In 1933 orders were given to calculate the harvest by estimating the expected harvests of the fields. This was done by weighing the grain from a number of plots each of one square meter in size. The amount of grain obtained per square meter was then multiplied by 10,000 to calculate the theoretical harvest from one hectare. The amount calculated in this way was called the biological harvest. Since during the actual collection of grain certain losses were to be expected, it was permitted to discount 10% of the calculated biological harvest for these losses. However, it can quite certainly be assumed that the harvest thus calculated must always have been much greater than the harvest actually collected. In 1937 even this allowance for a supposed loss of only 10% was abolished.¹⁸

The establishment of the above-described method of calculation of the harvest along with the forced contribution of the major portion of it to the government led to catastrophic starvation of the peasants in the Ukraine and the northern Caucasus during the period of forced collectivization.

In 1932 and 1933 the actual harvests were relatively small but would

¹⁷ *Sel'. Khoz. SSSR 1935* = *Sel'skoe Khozyaistvo SSSR*. Ezhegodnik 1935. Gosudarstvennoe Izdatel'stvo Kolkhoznoi i Sovkhoznoi literatury. Sel'khozgiz. (The Agriculture of the Soviet Union), Annual, 1935, edited by the Government Publishers of Literature on the Kolkhozes and Sovkhozes, Sel'khozgiz, Moscow, 1936, pp. 1–1465.

¹⁸ *Slovar' spravochnik po sotsial'no-ekonomicheskoi statistike*. (Dictionary and Reference Book on Social Economic Statistics), Moscow, 1944, p. 88.

have been sufficient for the nutritional needs of the local population. However, these harvests formed only a part of the calculated biological harvests. Therefore, when the government ruthlessly and forcefully took "its" share, the rural population was left without any bread at all, and the result of this act was the death of several million people.¹⁹

The first person to point out in the Soviet literature the existing mistakes resulting from the false calculations of the harvest based on collections of grain from one square meter plots was the renowned Soviet economist N. Osinsky.²⁰ He checked the accuracy of the figures obtained by different methods and found that in most cases the biological harvest showed amounts 30 to 50 per cent higher than the actual grain weighed after threshing. It must here be noted that even after threshing, the grain loses weight in the process of drying, cleaning, and transportation. Thus the figure obtained after threshing is again not the exact figure.

Among the publications by emigres, the work of Naum Jasny²¹ can be pointed out. The latter author has made a comparison of the biological harvest of the USSR and the actual weight of grain that reaches the granaries of the *Kolkhozes*—the granary harvest. During the years 1933–1939 the difference amounted to approximately 20 per cent. The above-cited figures show that one must be very careful when dealing with Soviet statistical data which represent the calculated biological harvest as the actually collected harvest.

In 1936 a special collection was published which described the sown areas for the main agricultural crops in the oblasts of the Ukraine for 1935, with less detailed data for the years 1920–1934.²²

In 1939 the Central Board for National Agricultural Calculations of the State Planning Commission of the USSR published a statistical

¹⁹ *Archimovich, A. Urozhay zbizhya v SSSR i na Ukrayini v chasy velykoho holodu 1932–1933 rr.* Naukovi Zapysky, Ukrayins'kyi Technichno-Hospodars'kyi Institut, Munich. (Grain harvests in the USSR and the Ukraine during the time of the great famine of 1932–1933.) Scientific Reports of the Ukrainian Technological and Agricultural Institute, Munich, 1964, Vol. V (VIII), pp. 22–29.

²⁰ *Osinsky, N. Ob urozhay, obmolote i poteryach* (The harvest, the threshing and the losses) *Izestiya*, September 21, 1933.

²¹ *Jasny, N. The Socialized Agriculture of the USSR*, Stanford University Press, Stanford, California, 1949, pp. 544, 548. Appendix notes pp. 728–746.

²² *Posevnyye ploshchadi SSSR. Itogi ucheta posevnykh ploshchadey letom 1935 godu.* Tsentral'noe Upravlenie narodnokhozyaistvennogo ucheta SSSR. (The Sown Areas of the USSR. Total Sown Areas in the Summer of 1935.) Central Administration of the National Economic Calculations of the Gosplan of the USSR, Moscow, 1936, pp. 1–334.

collection entitled "The sown Areas of the USSR." It contains the sowing areas for 1938 and the preceding years of 1928, 1932, 1933, 1934, 1935, 1936, and 1937. As a basis for comparison, the statistical data for pre-revolutionary Russia in the year 1913 are shown.²³

Dr. L. Volin, in his summary "A Survey of Soviet Russian Agriculture,"²⁴ combined the then existing provinces of the Ukrainian SSR into two groups: a northern and a southern group. He divided the sowing areas of the Ukrainian SSR between these two groups. The valuable part of this work for our purpose is the part containing maps of the expansion of the territories of the USSR showing the sown areas of the principal crops. On these maps the regions belonging to the Ukraine can easily be discerned. In 1957 the statistical miscellany "The sown Area of the USSR"²⁵ was published in Moscow. This miscellany provides information regarding the areas planted to the main crops of the entire Soviet Union as well as for the separate Soviet Republics, hence it includes information regarding the cultivated areas of the Ukraine. In the years 1957 and 1965 two Ukrainian statistical collections were published.²⁶

In 1958 publication of annual statistics, entitled "National Economy for the Year . . .,"²⁷ was started in Moscow under the auspices

²³ *Posevnyye ploshchadi USSR v 1938 godu*. Tsentral'noe upravlenie narodno-khozyaistvennogo ucheta Gosplana SSSR. (The Sown Areas of the USSR in 1938, Moscow-Leningrad. Gosplanizdat, 1939, pp. 1-334. The Central Administration for the National Economic Calculations of the Gosplan of the USSR.)

²⁴ *Volin, L. A Survey of Soviet Russian Agriculture*. Agriculture Monograph 5. United States Department of Agriculture, 1951, pp. 1-194. (Pages 115, 116, 117, 120, 123, 124, 128 and 130 contain maps of the distribution of the field crops.)

²⁵ *Pos. plosh. 1957 = Posevnyye ploshchadi SSSR, 1957*. Statisticheskii Sbornik. Tsentral'noe Statisticheskoe Upravlenie pri Sovete Ministrov SSSR, Moskva. (The Sown Areas of the USSR. Statistical Collection) The Central Statistical Administration of the Soviet Ministers of the USSR, Moscow, 1957, Vol. I. The sown areas in the USSR and the Union's Republics for the years 1913-1956, pp. 1-515, Vol. II. The sown areas of the raw material crops in the Republics, regions and oblasts for the years 1950-1956, pp. 1-503.

²⁶ *Nar. Hosp. Ukr. RSR, 1957. Narodne hospodarstvo Ukrayins'koyi RSR, 1957*. Statystychnyi zbirnyk. Statystychnye Upravlinnya Ukrayins'koyi RSR. Derzhavne Statystychnye Vydavnytstvo. (National Economy of the Ukrainian SSSR. Statistical collection.) The Statistical Administration of the Ukrainian SSR. Government Statistical Edition, Kiev, 1957, pp. 1-534. Section on Plant Husbandry, pp. 113-231. *Nar. Hosp. Ukr. RSR 1964* See N. 12.

²⁷ *Nar. Khoz. SSSR = Narodnoe khozyaistvo SSSR v 1958 godu*. Statisticheskii Ezhegodnik. Tsentral'noe Statisticheskoe Izdatel'stvo. (The National Economy of the USSR in 1958.) Statistical Annual. The Central Statistical Administration of the Council of Ministers of the USSR. Government Statistical Edition, Moscow,

of the Central Statistical Board. These statistical annuals have appeared regularly but with considerable delays. They contain data regarding the arable areas and average harvests for some field crops. The planted areas given are those of the RSFSR and the economic regions of the individual republics. Data for the separate provinces are not included. The selection of the field crops for which the planted areas are shown is quite limited and inadequate. Therefore, these annual publications are of secondary importance for our studies.

Curiously enough, these collections do contain information regarding the average and gross harvests of field crops. Starting in 1956 in the statistical collections and in 1958 in the statistical annuals, they began to use the term "the granary harvest" as regards the cereals. The term "granary harvest" is understood throughout the world to mean the weight of the clean, dry grain which is in a condition to be stored. Actually, this definition was not entirely correct with respect to the Soviet granary harvest. Thus in Soviet practice it was required that the grain immediately after threshing be accounted for as the granary harvest. In its further processing these data were recalculated in such a way that they grew to astronomical figures for the entire USSR. However, even the fallacies of this method eventually were perceived by the Soviet economists and leaders of agricultural economics.

The director of one of the state farms (sovkhozes) in the Virgin Lands, P. Lasebny, in an article published in "Village Life,"²⁸ writes: "I often wonder why the amount of the harvest and the production of the grain is measured by the 'combine' weight. Can it give an exact indication of the actually collected grain when the 'combine' weight is not only the weight of the grain itself but also that of the wastes, dust, and moisture? In spite of this a farm includes in its annual report the weight of everything that comes from the combine." The question arises why the kolkhozes and sovkhozes must give false information regarding their harvests. The answer to this question can be found in an article by the Soviet economist P. Makarov entitled

1959, pp. 1-959. (Similar editions were published for the years 1959, 1960, 1961, 1962, 1963, 1964 and 1965.)

²⁸ Lasebnyi, T. *Bunkernyi, ambarnyi ili zachetnyi. Uporyadochit' sistemu ucheta proizvodstva i zagotovok zerna. Sel'skaya zhizn'*, Feb. 25, 1965, (The bunker, the granary or the record.) The system of calculation of the production and provision of grain. *Village Life*, 1965, Moscow.

"Pancakes from Wastes."²⁹ He writes: "The Central Statistical Board of the USSR demands from the kolkhozes and sovkhoses information regarding the gross collection of the harvest in terms of the so-called 'combine' weight. The question arises why all the chaff and the dirt should be shown in the reports of the farms. Is it possible to make pancakes from waste?"

However, this procedure is used for the purpose of exaggerating the statistical data. In the USSR the harvest statistics do not correspond to reality but are adjusted for purposes of political propaganda. These falsified data are intended for Western European and American economists and specialists in Soviet agriculture and husbandry. Many of the latter cite these figures as the correct ones, thereby increasing the amount of data which they can cite in their publications. In consequence of the many inaccuracies in the Soviet statistical data concerning the size of harvest these data are not included in the present work. The critical analysis of the Soviet statistical data should be confined to the special research.³⁰

II. *Special Considerations*

A. *The Peculiarities of the Different Natural Zones of the Ukraine in Terms of its Agriculture*

The division of the territory of the Ukraine into the three principal natural zones, the Mixed Forest Belt, the Forest Grassland Belt, and the Grassland Belt, indicates their origin and their prominent characteristic traits.

At the beginning of Ukrainian history the terms Forest Belt and Grassland Belt were still truly descriptive of these regions, since the Forest Belt was a continuous strip of forests and the Grassland Belt was almost entirely unploughed. Since then, as a result of man's husbandry, these conditions have been radically changed. The forests have to a great extent been felled and today occupy only 31% of the Ukrainian Forest Belt.

The Grassland Belt is ploughed, and in the northern and central

²⁹ Makarov, P. *Bliny iz otkhodov*. Ekonomicheskaya gazeta. (Pancakes from Wastes.) Economics Journal of Feb. 10, 1965.

³⁰ Archimovich, A. *Valovaya produktsiya zerna v Rossii i v SSSR*. Vestnik instituta po izucheniyu SSSR. (The total production of grain in Russia and the USSR.) Journal of the Institute for the Study of the USSR, 1960, No. 3 (35). Munich, pp. 74-81.

Grassland Belt 71% of the land is used for agricultural crops and only 13% is used as pasture or for the production of hay. The southern Grassland Belt has been changed by irrigation. In spite of the changes produced by human activity, the division of the Ukraine into the natural zones has great theoretical and practical importance. These zones were created by the influence of a series of natural factors acting upon them over many millenia; and these factors continue to influence and act upon these zones today. Important factors in the present characteristics of the natural zones of the Ukraine are the relationships in each of them between forest, ploughed land, pastures, and the agricultural portions. The relative importance of the agricultural portions in each of the natural zones, including the mountain regions, is shown in the following table.³¹

Table I

		Arable Area	Forest	Meadows, Pasture, Hay Col- lection	Gardens and Vineyards
	Mixed Forest Belt	35.1	31.2	18.5	0.4
	Forest Grassland Belt	66.9	10.7	9.8	1.4
Grassland Belt	{ Northern and				
	{ Intermediate	70.9	2.5	13.1	1.4
	{ Southern	62.8	1.5	16.9	1.4
Crimea	{ Mountain Zone	23.7	42.6	18.0	3.8
	{ Shore Zone	5.2	62.4	22.8	4.3
Carpathian Zones	{ Submontane	42.7	27.8	18.2	1.0
	{ Montane	12.8	46.4	21.4	1.1
	{ Tramontane	32.8	29.5	22.3	1.2

The characteristic feature here is the increase in the percentage of the ploughed land and the decrease of the forests in a north-south direction. Also noteworthy is the fairly high percentage of the forest area in the mountain regions. In the mountain regions a high percentage of the land is occupied by grass meadows. The largest percentage of land occupied by gardens and vineyards is in the Crimea.

³¹ "Atlas" maps 17, 18, 19, 37, 38 (See No. 8).

B. *The Size of the Sown Area of the Ukraine and its Division According to the Crops Planted*

In the period from 1913 to 1965 the total sown area of the Ukraine has undergone the changes shown in the following table.³²

Table II

(in thousands of hectares)

1913	1928	1932	1937	1940	1945	1955	1964	1965
27,952	25,368	27,154	25,888	31,117	23,613	32,892	34,104	33,785

The percentage relationships among the areas sown to the various crops underwent the changes shown in the following table.³³

Table III

Cropping pattern for various years in the period 1913–1965. Data are shown as percentages of the area sown to certain types of crops in the respective years.

	1913	1928	1932	1937	1940	1945	1955	1964	1965
Cereals	88.4	79.2	69.1	72.8	68.2	75.4	69.9	50.4	48.8
Technical Crops	3.2	8.7	12.1	9.4	8.7	7.5	8.5	12.6	12.6
Potatoes, Vegetables, Melons	5.0	8.3	8.0	7.7	8.9	10.4	8.8	8.1	8.1
Fodder Crops	3.2	2.7	10.8	10.1	14.2	6.7	16.8	28.9	30.5

As can be seen from the above table, the percentage of the cultivated area used for cereals decreased considerably between 1913 and 1965, whereas the percentages of the areas used for raw material crops,

³² *Pos. plosh.*, 1957, Vol. I, pp. 32–35 (See No. 25). *Nar. Khoz. SSSR*, 1964, p. 278 (See No. 1). *Ibid*, 1965, p. 294 (See No. 27). *Nar. hosp. Ukr. RSR*, 1957, p. 113 (See No. 26). The years in the table were chosen with the following considerations in mind: 1913 was the last normal year before World War I. The data are calculated by the Soviet economists. 1928 was the last year of the NEP (*Nova Ekonomichna Polityka*). 1932 and 1937 were years of forced collectivization. 1940 was the year before World War II. 1945 was the year in which World War II ended. 1955 marked the conclusion of the restoration of agriculture.

³³ *Pos. plosh.*, 1957, Vol. I, pp. 40–43 (See No. 25). *Nar. Hosp. Ukr. RSR*, 1964, p. 114 (See No. 12). *Nar. Khoz SSSR*, 1964, pp. 270–271 (See No. 1). *Ibid*, 1965, pp. 286–287 (see No. 27).

as well as for potatoes, vegetables, and melons and for fodder crops increased.

C. Cereal Crops

In world agriculture the most important cereals are rice, wheat, corn, sorghum, and oats.³⁴

In the Ukraine before World War I, spring wheat and spring oats shared first place among the cereals. But before World War II the position of first importance already had been given to winter wheat, and spring wheat was relegated to last place. After the end of World War II winter wheat maintained first place, and second place was occupied by maize. The relationships between the cereals in the period from 1913 to 1964 are shown in the following table.³⁵

Table IV

Acreage in the various crops in certain years in the period 1913-1964, Shown as percentages by the cultivated area occupied by a crop for the respective year.

Table IV

Correlation of the Percentages of the Sown Area

	1913	1928	1932	1937	1940	1945	1955	1964
Winter Wheat	11.0	7.8	22.6	26.4	20.2	17.7	25.7	18.2
Winter Rye	16.2	14.0	14.2	12.7	11.8	15.0	8.0	3.9
Spring Wheat	20.6	12.3	4.4	4.5	2.9	2.8	0.5	0.1
Maize	3.1	9.1	5.1	4.0	4.9	7.1	14.5	8.3
Spring Barley	20.8	15.0	9.8	11.3	12.8	16.6	7.1	7.8
Oats	10.5	9.2	5.9	6.4	7.2	6.6	3.5	1.7
Millet	1.9	6.3	3.2	1.7	3.1	4.9	2.6	1.9
Buckwheat	2.5	3.9	1.2	2.3	2.3	2.5	1.9	1.0

In 1913 the cereal crops showed the following order of importance: First place was shared by spring barley and spring wheat, followed in descending order by winter rye, winter wheat, oats, maize, buckwheat, and millet. In 1955 first place was occupied by winter wheat and

³⁴ Walsh, John. *Food: Postwar experience shows it was later than we thought*. Science, Vol. 152, No. 3724, May 13, 1966, pp. 896-899.

³⁵ Pos. *plosh.*, 1957, Vol. I, pp. 40-41 (See No. 25). *Nar. Hosp. Ukr. RSR, 1964*, pp. 177, 194 (See No. 12).

second place by corn for grain production, followed in descending order by winter rye, spring barley, oats, millet, and buckwheat. Last place was then occupied by spring wheat, which in 1913 shared first place with spring barley. In 1964 winter wheat and corn for grain production occupied first and second places, respectively, and spring wheat again occupied last place.

Wheat—Triticum L.

There are 16 species of *Triticum* among the world's cultivated wheats.³⁶ The distribution and classification of the wild species of *Triticum* are described by Jack Harlan and Daniel Zahary.³⁷

In the Ukraine first place among the cultivated wheats is occupied by common wheat = *Tr. vulgare* (Vill.) Host. Hard or durum wheat = *Tr. durum* Desf has hardly any importance. Spelt = *Tr. spelta* L and Emmer wheat = *Tr. dicoccum* Schubl. are very rarely cultivated there. Two forms of common (soft) wheat are cultivated in the Ukraine: winter wheat and spring wheat. Durum (hard) wheat occurs in the Ukraine only as a spring wheat.

Winter Wheat

Before World War I winter wheat occupied third place among the field crops of the Ukraine and comprised only 11% of the total cultivated area. The largest sown areas of winter wheat were in the right bank Forest Grassland Belt in the regions which today correspond to the Vinnytsya, Khmelnytskyi, and Cherkasy oblasts and the southern parts of the Kiev and Zhytomyr oblasts. Other centers for the cultivation of winter wheat were some steppe regions which today correspond to the Odessa, Mykolayiv, Kherson, and Zaporizhya oblasts, as well as the steppe portions of the Crimea.

Spring wheat was planted in the left bank Forest Grassland Belt and in the main parts of the Grassland Belt. During the post-Revolutionary period there was a gradual advance of winter wheat plantings in the left bank Forest Grassland and Grassland Belts. There were several reasons for this: 1) The larger harvest of winter wheat in

³⁶ Zhukovskii P. M. *Vidovoy sostav i novyi vid pshenitsy. Doklady Akademii Nauk SSSR, 1949.* (The composition of the genus *Triticum* and a new species of wheat.) Reports of the Academy of Sciences of the USSR, 1949, Vol. LXIX, No. 2, pp. 261-263.

³⁷ Harlan, Jack and Zahary, Daniel. *Distribution of wild wheat and barley*, Science, Vol. 153, No. 3740, September 2, 1966, pp. 1074-1080.

comparison with spring wheat was attractive to wheat growers. 2) The dry conditions in the steppe during the spring are not always favorable for sowing spring crops, whereas during the fall the soil usually has a sufficient supply of moisture. 3) Winter wheat ripens earlier than spring wheat and thus is not affected by the late summer heat, which can be very harmful during the period of ripening of the grain.

These reasons were decisive factors in the change from spring to winter wheat in the Grassland Belt of the Ukraine. There also was an economic reason, namely that after the Revolution the export of Ukrainian wheat was almost entirely stopped. The foreign market demands spring wheat, which is rich in protein. As the exportation of wheat was stopped, the cultivated areas for winter wheat increased. In 1932 winter wheat gained first place among the field crops of the Ukraine, a position which it has maintained up to the present time. The main sowing area for winter wheat has gradually shifted southward, and as early as 1938 approximately 70 per cent of the sown area was in the southern part of the Ukraine.³⁸

In 1956 winter wheat occupied the following percentages of the total sown areas in the zones listed:

Mixed Forest Belt	8.2
Forest Grassland Belt	23.0
Grassland Belt, Northern and Intermediate	35.8
Grassland Belt, Southern	38.0
Submontane Carpathians	15.3
Mountain Regions of the Carpathians	7.6
Tramontane Carpathians	23.6
Average for the Whole Ukraine	28.3

The relative importance of each of the zones in percentages of the total area of the Ukraine planted in winter wheat in 1956 is shown below:³⁹

Mixed Forest Belt	2.7
Forest Grassland Belt	36.6
Grassland Belt, Northern and Intermediate	46.7
Grassland Belt, Southern	12.9
Mountain Regions: Crimea and Carpathians	1.1

³⁸ *Volin, L.*, p. 111 (See No. 24).

³⁹ "Atlas." Map No. 22 (See No. 8).

In some regions of the Crimea and the Kherson oblast, winter wheat occupies up to 45 per cent of the total sowing area. The Carpathian mountain regions and the Forest Belt are characterized by the small amounts of winter wheat cultivated there.⁴⁰

In 1965 the sowing area occupied by winter wheat in the Ukraine was 7,346,000 hectares, which amounted to 21.7 per cent of the total sowing area of the Ukraine.⁴¹

Spring Wheat

In the Ukraine spring wheat is now largely represented by two species of *Triticum*: *Triticum vulgare* (Vill.) Host (common or soft wheat) and *Tr. durum* Desf. (hard or durum wheat). *Tr. spelta* L. (spelt) and *Tr. dicoccum* Schubl (emmer) are now planted in very few regions. However, the sown areas of the latter species has not been listed separately in the statistical collections for many years but has been included as spring wheat. Thus the wheat shown in the statistical data as spring wheat constitutes botanically a collection of many species of *Triticum*. Before World War I spring wheat and spring barley were the main field crops of the Ukraine. In 1913 spring wheat and spring barley occupied 20.6 and 20.8 per cent, respectively, of the total sowing area of the Ukraine. The spring wheat was chiefly cultivated in the left bank of the Forest Grassland Belt and in the Grassland Belt of the Ukraine. As a result of the advance of winter wheat in the Grassland Belt, the area planted in spring wheat began to decrease gradually until it finally came to occupy last place among the cereals of the Ukraine. In 1932 spring wheat occupied only 4.4 per cent of the sown area of the Ukraine.

After World War II the sowing of spring wheat in the Ukraine, as was demanded by Stalin, was somewhat increased in 1949–1950. But it could not compete with winter wheat. In 1955 it occupied only 0.5 per cent of the cultivated area of the Ukraine.⁴²

The striking changes in the ratio of winter wheat acreage to spring

⁴⁰ *Sil'. Hosp. Ukr. RSR = Sil'ske Hospodarstvo Ukr. RSR*. Derzhavne Vydavnytstvo Sil'sko-hospodarskoyi literatury Ukr. RSR. The Agriculture of the Ukrainian SSR. Government edition of the agricultural literature of the Ukrainian SSR, Kiev, 1958, p. 259.

⁴¹ *Nar. Khoz. SSSR, 1965*, pp. 294, 296 (See No. 27).

⁴² *Pos. Plosh., 1957*, Vol. I, pp. 40–41 (See No. 25). *Pravda*, Nov. 30, 1961. *Sil'. Hosp. Ukr. RSR*, p. 257 (See No. 40).

wheat acreage are shown by the percentage of the whole area planted to wheat that was occupied by the respective types.⁴³

	1913	1932	1955	1964	1965
Winter Wheat	34.9	83.6	98.0	99.3	93.8
Spring Wheat	65.1	16.4	2.0	0.7	6.2
Both	100.0	100.0	100.0	100.0	100.0

The sown areas in thousands of hectares for spring wheat and the percentages of the total cultivated area of the Ukraine which these areas represented were as follows:⁴⁴

	1964	1965
Sown area under spring wheat	46	493
Percentages of total cultivated area of the Ukraine	0.1	1.5

The largest areas planted in spring wheat are in the submontane Carpathian region, the Carpathian region, and the eastern provinces of the Ukraine.⁴⁵ In the eastern oblasts of the Ukraine the cultivation of the hard wheat *Triticum durum* is more extensive than in the western provinces. The now abandoned cultivation of emmer occurred chiefly in the southern and eastern parts of the Ukraine. In 1926–1927 emmer was mentioned in the statistical data and the research bulletins regarding the cultivated plants of the Ukraine. However, starting with the year 1935, emmer was no longer mentioned as a Ukrainian crop.⁴⁶

Rye, Secale cereale L.

Two forms of rye are planted in the Ukraine: winter rye and spring rye. Winter rye constitutes the major portion of the rye crop, and the sowings of spring rye are considerably smaller.

⁴³ *Pos. Plosh.*, 1957, Vol. I, pp. 40–41 (See No. 25) *Nar. Khoz. SSSR, 1965*, pp. 296–297 (See No. 27).

⁴⁴ *Nar. Khoz. SSSR, 1965*, pp. 294, 297 (See No. 27).

⁴⁵ *Pos. Plosh.*, 1957, Vol. I, pp. 350–353 (See No. 25).

⁴⁶ *Ezhagodnik, 1913* (See No. 13). *Archimovich, A.* Grain Crops in the Ukraine. Institute for the Study of the USSR. Ukrainian Review, No. 2, pp. 21–34, Munich, 1956. *Ibid.* The Problem of Grain Production and Grain Crops in the Ukraine after World War II. *Proceedings of Shevchenko Scientific Society.* Section on Mathematics, Natural Sciences and Medicine, Vol. V (XXXIII), New York, 1959–1961, pp. 22–29.

Until World War I winter rye occupied first place among the winter cereals in the Ukraine. As a result of the expansion of the area sown in winter wheat, the area planted with winter rye decreased considerably. This is clearly shown in the following comparison of the percentages of the total cultivated areas of the Ukraine occupied by these two grains in 1913 and 1964:⁴⁷

	1913	1964
Winter Wheat	11.0	18.2
Winter Rye	16.2	3.9

Unlike winter wheat, winter rye is more extensively sown in the northern part of the Ukraine in the Forest Belt, the Forest Grassland Belt, and in the Carpathian mountain regions, as is shown below in terms of the percentages of the sown areas in each of the zones in 1956.⁴⁸

	<i>Winter Rye</i>	<i>Winter Wheat</i>
Mixed Forest Belt	28.4	8.2
Forest Grassland Belt	10.5	23.0
Grassland Belt, Northern and Intermediate	1.5	35.8
Grassland Belt, Southern	0.6	38.0
Submontane Carpathian Region	15.9	15.3
Mountain Regions of the Carpathians	10.9	7.6
Tramontane Carpathian Region	7.6	23.6

The percentages of the total cultivated areas for winter rye and winter wheat in the Ukraine in the different zones in 1956, are shown below:⁴⁸

	<i>Winter Rye</i>	<i>Winter Wheat</i>
Forest Belt	32.5	2.7
Forest Grassland Belt	56.9	36.6
Grassland Belt	7.3	59.6
Mountain Regions	3.3	1.1

In the poor and sandy soil of the Forest Belt and in the Carpathian mountain regions, spring rye was planted in small lots which yielded

⁴⁷ *Pos. Plosh.*, 1957, Vol. I, pp. 40-41 (See No. 25). *Nar. Khoz. SSSR*, 1964, p. 177 (See No. 1).

⁴⁸ "Atlas," Maps No. 22 and No. 23 (See No. 8).

small harvests. In 1913 the sown area for this cereal was 50,000 hectares, and in 1955 it was only 2,500 hectares.⁴⁹ In 1965 in the Ukraine, 1,424,000 hectares were planted in winter and spring rye, and only 59,000 hectares of this area were in the southern part of the Ukraine.⁵⁰

Barley, Hordeum L.

The most common of the species of the genus *Hordeum* are *H. distichum* L.—two-rowed barley and *H. vulgare* L.—common barley.

Both spring and winter barleys are grown in the Ukraine. Spring is the most popular.

Until World War I spring barley together with spring wheat were the main cereals in the Ukraine. In 1913 spring barley occupied 20.8 per cent and spring wheat 20.6 per cent of the total sown area of the Ukraine; and spring wheat and spring barley were the chief cereals for export. With the decrease in the exports of cereals and the expansion in the area planted in winter wheat, the area devoted to spring barley decreased considerably. In 1928 it comprised only 15.0 per cent of the total cultivated area of the Ukraine, and in 1964 this percentage had decreased to 7.8 per cent.⁵¹

As in the case of winter wheat, the plantings of spring barley increased in a southward direction. In 1956 the following percentages of the total sown areas of the different zones were planted in spring barley:⁵²

Forest Belt	2.6
Forest Grassland Belt	10.1
Grassland Belt, Northern and Intermediate	18.3
Grassland Belt, Southern	14.9

In the southern steppe spring barley occupies a smaller percentage of the total cultivated area than in the northern and intermediate steppes. A higher percentage of the sown area is occupied by spring barley in the mountain regions:

⁴⁹ *Ezhagodnik, 1913* (See No. 13). *Pos. Plosh., 1957*, Vol. I, pp. 330, 334, 335 (See No. 25).

⁵⁰ *Nar. Khoz. SSSR, 1965*, p. 298 (See No. 27).

⁵¹ *Pos. Plosh., 1957*, Vol. I, p. 40 (See No. 25). *Nar. Hosp. Ukr. RSR, 1964*, p. 117 (See No. 12).

⁵² "Atlas," Map No. 26 (See No. 8).

In the Crimean mountain region	16.7
In the submontane Carpathian region	9.3
In the Carpathian mountain region	6.6
In the tramontane Carpathian region	16.3

The percentages of the total area planted in spring barley in the Ukraine in the different zones are as follows:

Forest Belt	1.8
Forest Grassland Belt	34.3
Grassland Belt	62.2
Mountain Regions	1.7

Even though the percentage of spring barley planted in the mountain regions is large, it represents only a small part of the total amount planted in the Ukraine. Barley is used in the Ukraine for two purposes: for malting and brewing (mainly *H. distichum*) and as a feed for livestock (mainly *H. vulgare*). The first species is cultivated chiefly in the Forest Grassland Belt and the latter predominantly in the Grassland Belt.

Winter barley

Winter barley is a delicate crop with respect to climatic conditions. It does not tolerate cold winters well, and for this reason it is little planted in the Ukraine. Thus in 1913 in the Ukraine 21,000 hectares were planted in winter barley; and in 1964 158,000 hectares (= 0.5 per cent of the total cultivated area) were planted in winter barley.⁵³

Oats, Avena sativa L.

Until the Revolution, oats were widely cultivated and had an important role in the feed for horses. In 1913 the crop occupied 10.5 per cent of the sowing area of the Ukraine. As mechanization progressed and horses were replaced by machines, the importance of oats diminished, and in 1964 the crop occupied only 1.7 per cent of the total cultivated area of the Ukraine.⁵⁴

Unlike spring barley, the planting of oats is greater in the northern

⁵³ *Ezhegodnik, 1913* (See No. 13). *Nar. Hosp. Ukr. RSR, 1964*, p. 177 (See No. 12).

⁵⁴ *Ezhegodnik, 1913* (See No. 13). *Nar. Hosp. Ukr. RSR, 1964*, p. 177 (See No. 12).

regions of the Ukraine than in the southern regions. In 1956 oats and spring barley occupied the following percentage of the total cultivated areas in the zones listed:

	<i>Oats</i>	<i>Spring Barley</i>
Forest Belt	6.4	2.6
Forest Grassland Belt	3.3	10.1
Grassland Belt, Northern and Intermediate	2.0	18.3
Grassland Belt, Southern	2.3	14.9

Oats, like spring barley, occupy high percentages of the cultivated area in the mountain regions, as is shown below:

Crimean mountain regions	7.3
Submontane Carpathian region	8.2
Carpathian mountain regions	11.4
Tramontane Carpathian region	5.4

The percentages of the total areas planted to oats and spring barley in the Ukraine in the different zones are as follows:

	<i>Oats</i>	<i>Spring Barley</i>
Forest Belt	18.7	1.8
Forest Grassland Belt	45.2	34.3
Grassland Belt	29.8	62.2
Mountain Regions	6.3	1.7

In the Carpathian mountain regions and submontane Carpathian region, oats, winter rye, and potatoes are the principal food crops.⁵⁵

Maize, Indian Corn, Corn, Zea mays L.

Until World War I the use of corn as a grain was not very extensive, and the principal sources of grain were spring barley, spring wheat, winter rye, winter wheat, and oats. In 1913 corn occupied 3.1 per cent of the total sowing area of the Ukraine. The largest amounts of corn were grown in Bessarabia, Bukovina, the tramontane Carpathian region, and the western provinces of the Odessa region. As a result of the campaign by Mr. Khrushchev, the plantings in corn suddenly increased, so that in 1955 corn for grain production occupied

⁵⁵ "Atlas," Maps No. 25 and No. 26 (See No. 8).

14.5 per cent of the cultivated area. As can be seen from the following data, the largest plantings in corn were in the Forest Grassland Belt and in the Grassland Belt.⁵⁶

Percentage of the cultivated Area under Corn in Relation to the Total Sown Area under Corn in the Ukraine in 1956.

Forest Belt	1.8
Forest Grassland Belt	34.3
Grassland Belt	62.2
Mountain Regions	1.7

Contrary to the national interest, the Ukraine and the northern Caucasus were forced to grow 70 per cent of the corn for grain production required by the entire USSR. In 1963 the area planted in corn for grain production in the Ukraine reached its maximum and comprised 4528 thousand hectares, so that it then was 5.3-fold greater than in 1913. After Mr. Khrushchev's retirement, the corn project lost its importance. In 1965 the area planted in corn was 1814 thousand hectares.⁵⁷

Millet, Panicum miliaceum L.

In 1913 524.6 thousand hectares in the Ukraine were planted in millet, and this constituted 1.9 per cent of the total cultivated area. Sixty per cent of the area planted in millet was in the Forest Grassland Belt. After the Revolution the area planted in millet increased in the Grassland Belt. During the Soviet period the area planted in millet was changed on the basis of meteorological and social factors. It was always larger after poor years for winter wheat, when the ruined lots of winter wheat were replaced in the late spring with late planted crops, as occurred in 1946, 1954, and 1955. The same change in the crops also occurred in 1934 as a result of the great famine of 1933 caused by the forced collectivization of the Ukrainian peasantry. The relative importance of millet increased in a southward direction. The percentages of the total cultivated areas planted in millet in 1956 were as follows:

⁵⁶ *Pos. Plosh., 1957*, Vol. I, pp. 32, 33, 40, 41 (See No. 25). "Atlas," Map No. 24 (See No. 8).

⁵⁷ *Nar. Khoz. USSR, 1965*, p. 299 (See No. 27).

Forest Belt	1.5
Forest Grassland Belt	1.7
Grassland Belt, Northern and Intermediate	2.1
Grassland Belt, Southern	2.0
Mountain Region of Crimea	1.7

The areas planted in millet also increased in an eastward direction. Thus the left bank regions have a larger area sown to millet than the right bank regions. In 1965 in the Ukraine 438 thousand hectares were planted in millet, which constituted 1.3 per cent of the total cultivated area of the Ukraine.⁵⁸

Buckwheat, Fagopyrum Sagittatum Gilib. = F. esculentum Moench.

In the Ukraine In 1913 679.9 thousand hectares were planted in buckwheat, and a considerable portion of this area was in the Chernihiv province (Forest Belt). This area comprised 2.5 per cent of the total sowing area of the Ukraine. After the Revolution the area planted in buckwheat, like that planted in millet, increased during years when there was damage to the winter cereals and after the years of famine. For example, following the famine of the winter of 1932 and the spring of 1933, the areas planted in buckwheat and millet increased as is shown by the following figures:⁵⁹

Sown Areas in Thousands of Hectares

	1932	1933	1934
Millet	860	1225	1874
Buckwheat	338	670	636

Until 1956 the area planted in buckwheat was maintained and showed little change from that for 1913, except for the years when there was severe damage to the winter cereal crops, at which times the crop showed sudden increases. Whereas the largest area sown to millet is in the southern part of the Ukraine, the largest sown area for buckwheat is in the northern part. The percentages of the total areas planted in buckwheat and in millet in the different zones of the Ukraine are as follows:

⁵⁸ *Ezhгодnik, 1913* (See No. 13). *Pos. Plosh., 1957*, Vol. I, pp. 32, 33, 40, 41 (See No. 25). *Sil'. Hosp. Ukr. RSR*, p. 268 (See No. 40). "Atlas," Map No. 28 (See No. 8). *Nar. Khoz. SSSR, 1965*, p. 300 (See No. 27).

⁵⁹ *Sel'. Khoz. SSSR, 1935*, pp. 307, 312 (See No. 17).

	<i>Buckwheat</i>	<i>Millet</i>
Forest Belt	29.7	7.5
Forest Grassland Belt	64.2	41.2
Grassland Belt	5.2	51.0
Other Regions	0.9	0.3
Total	100.0	100.0

After 1956 there was a systematic reduction in the areas planted in buckwheat. The reason for this was the unwillingness of the kolkhozes to take risks with a crop whose yield is to a great extent dependent on the weather. Here it must be borne in mind that the government demanded definitely established norms for the collections from the kolkhozes regardless of whether unfavorable conditions made a good harvest impossible. In 1956 the sown area in buckwheat in the Ukraine was 395 thousand hectares, which constituted only 1.2 per cent of the total cultivated area of the Ukraine.⁶⁰

Rice, Oryza sativa L.

Rice was first planted in the southern Ukraine in 1933, when 100 hectares were planted in the region of Kakhovka. In 1965, 1.1 thousand hectares were planted in rice in the Ukraine. The best regions for rice in the Ukraine are the valleys of the estuaries of the Dnieper, Dniester, and Bog, and in the ethnographic Ukrainian region at the mouth of the Kuban River. Professor G. Machiv planned the expansion of the cultivation of rice in the southern steppe of the Ukraine. In 1964, 3.2 thousand hectares were planted in rice in the southern Ukraine and in the steppe region of the Crimea. With the development of irrigation projects in the southern Ukraine, the cultivation of rice is now regarded with growing interest.⁶¹

Sorghum vulgare Pers.—Andropogon sorghum Brot.

Since sorghum is a crop which tolerates a dry climate and saline soil well it has attracted the attention of agricultural research workers

⁶⁰ *Ezhгодnik, 1913* (See No. 13). *Pos. Plosh., 1957*, Vol. I, pp. 32, 33, 40, 41 (See No. 25). "Atlas," Map No. 27 (See No. 8). *Nar. Khoz. SSSR, 1965*, p. 300 (See No. 27).

⁶¹ *Sel'. Khoz. SSSR, 1935*, p. 326 (See No. 17). *Pos. Plosh., 1957*, Vol. I, pp. 32, 33, 433-434 (See No. 25). *Hryhoryi Makhiv. Perspektyvy Ryzhosiyannya v Ukraini*. (Perspectives in the Cultivation of Rice in the Ukraine, Kiev. 1930). *Sel'skaya Zhizn'*, May 8, 1967.

of the southern steppe regions. Both the grain and the green fodder are used as cattle feed. In 1956, 325 thousand hectares were planted in sorghum, and in 1964, 37.3 thousand hectares.⁶²

Legumes

The most important members of this group are peas, beans, and lentils. Their cultivation is included in the Soviet statistics. The pea vine, the chick pea, and the horse beans are legumes which are not listed separately in the Soviet statistics but are included in the collective group of cereal legumes. The latter group excludes soybeans, which are listed in the Soviet statistics as an oil crop.

Peas, Pisum sativum L.

The area planted in peas includes large regions in the Forest Belt and the western parts of the Forest Grassland Belt. The expansion of pea growing to the east and south in the Ukraine is hindered by the destructive activity of the pea weevil (*Bruchus pisorum L.*), which is abundant in the southern and eastern Ukraine. In 1956 the area planted in peas in the Ukraine was 287.5 thousand hectares, and in 1964 it was 1964.6 thousand hectares.⁶³

In the eastern and southern Ukraine peas are replaced by chick peas (*Cicer arietinum L.*) and by the pea vine (*Lathyrus sativus L.*), which are better able to withstand the dry climate in these regions. The expansion in the plantings of these species is also explained by the fact that they are not attacked by *Bruchus pisorum L.*

Lentils, Lens esculenta Moench.

Since 1940 there has been a great decrease in the planting of lentils in the Ukraine. Thus in 1940, 91.5 thousand hectares were planted in lentils whereas in 1956 only 13.8 thousand hectares were planted. Most of the area planted in lentils is in the left bank Forest Grassland Belt, and half of the total area planted in lentils is in the Poltava province. In 1964 only 1000 hectares were still planted in lentils in the Ukraine.

⁶² Pos. Plosh., 1957, Vol. I, pp. 449, 450 (See No. 25) *Sel'skaya Zhizn'*, May 3, 1967. *Nar. Hosp. Ukr. RFSR, 1964*, p. 177 (See No. 12).

⁶³ Pos. Plosh., 1957, Vol. I, pp. 472-474 (See No. 25). *Nar. Hosp. Ukr. RSR, 1964*, p. 177 (See No. 12).

Beans, Phaseolus vulgaris L.

Since beans are a crop which grows best in a warm climate, they are planted chiefly in the southern Ukraine, but there are also limited plantings of beans in all of the regions of the Ukraine. In 1964 the total area planted in beans in the Ukraine was 23.9 thousand hectares.

Horse beans, Vicia faba L.

Since the horse bean requires less warmth than the bean, the crop is planted in the northern Ukraine. In 1965 all legumes occupied 1199 thousand hectares, or 3.5 per cent of the total cultivated area in the Ukraine.⁶⁴

*D. Raw material crops**Sugar beets, Beta vulgaris L.*

Sugar beets have long been the most important raw material crop in the Ukraine and still are of the greatest importance. The first sugar factory in the Ukraine was built in 1824. Before World War I the area in the Ukraine planted in sugar beets was 558.2 thousand hectares. The Ukraine was the center of the sugar beet industry for the whole Russian Empire, and 82.6 per cent of the total acreage of sugar beets in the Russian Empire was in the Ukraine. The largest areas planted in sugar beets were in the provinces of Kiev, Podillya, and Kharkhiv, and there were smaller areas in the provinces of Volyn, Chernihiv, and Poltava. The total area planted in sugar beets in Russia outside of the Ukraine was only 120 thousand hectares. During the years of the Revolution and the Civil War, a large number of sugar beet factories were destroyed, and there was a catastrophic decrease in the area planted in this crop. In the Ukraine and all of Russia in 1921 there were only 109 thousand hectares planted in sugar beets. The restoration of the sugar beet industry was very gradual, so that on the eve of World War II the area planted in sugar beets was 819.8 thousand hectares.⁶⁵

During World War II most of the area planted in sugar beets was occupied by the German army. Only 280 thousand hectares in the

⁶⁴ *Pos. Plosh.*, 1957, Vol. I, pp. 480, 482, 487, 489 (See No. 25). *Nar. Hosp. Ukr. RSR*, 1964, p. 177 (See No. 12).

⁶⁵ *Ezhegodnik*, 1913 (See No. 13). *Pos. Plosh.*, 1957, Vol. I, pp. 34, 35 (See No. 25).

unoccupied territory of the Ukraine were planted in sugar beets in 1944.

In 1956 sugar beets occupied 1273 thousand hectares, or 3.9 per cent of the total cultivated area of the Ukraine. In the Forest Grassland Belt 7.9 per cent of the total sown area was planted in sugar beets in 1956.

The percentages of the total sown area for sugar beets in the various zones of the Ukraine are as follows:⁶⁶

Forest Grassland Belt	85.7
Grassland Belt, Northern and Intermediate	10.6
Forest Belt	2.5
Submontane Carpathian Region and the Carpathians	1.2

In 1965 the area planted in sugar beets in the Ukraine was 1863 thousand hectares, which constituted 48 per cent of the total area planted in sugar beets in the entire USSR, including the Ukraine.⁶⁷

The history of the sugar beet industry in the Ukraine in the pre-revolutionary period is described by Professor S. Horodetsky.⁶⁸

The history of the restoration of the sugar beet industry after World War II is described by Professor V. Timoshenko.⁶⁹

The history of the selection of sugar beets in the Ukraine and the USSR is described in some of the author's earlier works.⁷⁰

Textile crops

First place among textile crops in the Ukraine is occupied by flax (*Linum usitatissimum* L.). Fiber flax has been cultivated in the Forest Belt for the textile industry since remote times. Farther south flax of an intermediate type was planted, the seeds of which were used for the production of oil, and fibers of which were used for the manufacture of low quality linen. In the years preceding World War I

⁶⁶ "Atlas," Map No. 29 (See No. 8).

⁶⁷ *Nar. Khoz. SSSR, 1965*, p. 303 (See No. 27).

⁶⁸ *Horodetskyi S. Kultura tsukrovyykh buriakiv na Ukrayini. (The Culture of the Sugar Beet in the Ukraine)*, Kiev, 1925, pp. 1-374.

⁶⁹ *Timoshenko, P. The Soviet Sugar Industry and Its Postwar Restoration, Stanford University, 1951*, pp. 1-53.

⁷⁰ *Archimovych, A. Seleksiya i semenovodstvo sakharnoy svekly v SSSR. Institute for the study of the History and Culture of the USSR, Munich, 1954*, pp. 1-169. *Ibid, Selective Breeding of Sugar Beets in Russia and the USSR. The Botanical Review Interpreting Botanical Progress, Vol. 22, January, 1956*, pp. 1-37.

the area in the Ukraine planted in fiber flax reached 16.4 thousand hectares. Starting in 1930 the area planted in fiber flax began to increase. The waste from the fibers and the fibers themselves were of low quality were used as raw materials for explosives. Before World War II in 1940 the area planted in fiber flax had increased to 117.8 thousand hectares. As a result of military operations this area decreased in 1945 to 50.9 thousand hectares and after the war again began to increase and reached 212.7 thousand hectares in 1956. The percentages of the total area for fiber flax in the various zones of the Ukraine are as follows:

Forest Belt	78.0
Forest Grassland Belt	15.8
Submontane Carpathians and the Mountain Regions of the Carpathians	6.2

The largest plantings of fiber flax are in the Zhytomyr province.

In 1965 in the Ukraine 224 thousand hectares, or 0.7 per cent of the total cultivated area, were planted in fiber flax.⁷¹

Second place among the textile crops of the Ukraine is occupied by hemp (*Cannabis sativa* L.). There are two types of hemp, the central Russian hemp and the southern hemp. The first type is chiefly cultivated in the RSPSR and much less in the northern Ukraine. The southern high hemp requires a long vegetative period and is planted everywhere in the Ukraine, and especially in the south and on the left bank Forest Grassland Belt.

In the period from 1913 to 1964 the area planted in hemp (in thousands of hectares) has undergone the changes shown in the following table.

1913	1940	1945	1956	1964
126.6	198.8	106.7	159.1	84.1

In 1956 in the Ukraine 87.4 per cent of the area planted in hemp consisted of southern hemp and 12.6 per cent consisted of central Russian hemp. The percentages of the total areas planted in hemp

⁷¹ *Pos. Plosh.*, 1957, Vol. I, pp. 34, 35; Vol. II, pp. 40, 41 (See No. 25). "Atlas," Map No. 30 (See No. 8). *Archimovych, A. Kultura l'onu dovhuntsya v Ukraini.* (The Culture of Fiber Flax in the Ukraine.) The Institute for the Study of the USSR. Ukrainian Review, Book 12, pp. 153-171, Munich, 1958.

and in fiber flax in the various zones of the Ukraine are shown below.⁷²

	<i>Hemp</i>	<i>Fiber Flax</i>
Forest Belt	20.5	78.0
Forest Grassland Belt	46.8	15.8
Grassland Belt	30.0	—
Carpathian Mountain Regions	2.7	6.2

Cotton, Gossypium hirsutum L.

At the beginning of the last century, the cultivation of cotton was first begun in the southern Ukraine. In some places the attempts to cultivate it were successful. This resulted in the organization of a whole series of research plots in the southern Ukraine and in southern Russia for studying the most suitable methods and conditions for the cultivation of cotton in these regions. These research plots were active during the period from 1904 to 1916. Their activity was interrupted in the first years of the Revolution and was only renewed in 1923. In 1928 the cultivation of cotton for cotton factories began. The area planted in this crop grew rapidly, and in 1940, before World War II, it reached 282 thousand hectares. During the war the cultivation of cotton in the Ukraine stopped. It was renewed after the war, and in 1952 cotton occupied 475 thousand hectares. The largest areas planted in cotton were in the oblasts of Kherson, Odessa, Zaporizhya, Mykolayiv, and Crimea. As a result of the artificial and intensive cultivation of cotton in the Ukraine, it eventually gained first place among the textile crops of the Ukraine. In 1952 the textile crops occupied the following percentages of the total sowing area of the Ukraine: Cotton—1.5%; Hemp—0.5%; Fiber flax—0.4%.

It should be noted that the climatic conditions of the southern Ukraine are not favorable for obtaining a normal harvest of cotton and that during some cold and rainy years, such as 1933, there was no cotton harvest at all. During the period 1930–1940 the harvest of cotton in the Ukraine was 4.3-fold smaller than in the provinces of central Asia, which are favorable for this crop. In addition, the textiles produced from cotton harvested in cold years are of very low quality. Nevertheless, the leaders of agriculture in the USSR stubbornly

⁷² *Pos. Plosh.*, 1957, Vol. I, pp. 34, 35; Vol. II, pp. 60, 65–67, 69, 72–74 (See No. 25). "Atlas," Map No. 31 (See No. 8). *Nar. Hosp. Ukr. RSR*, 1964, p. 179 (See No. 12).

increased the sowing area for cotton in the southern Ukraine, since it could be used for explosives. Finally, the low and unreliable harvests of cotton in the Ukraine, as well as in the other new regions for cotton cultivation (northern Caucasus, the lower Volga region, and the Crimea), came to the attention of the government, and in 1956 the growing of cotton in these regions was stopped. Secondary reasons for the interruption of the cultivation of cotton in these new regions were the changes in military techniques and the low quality of the cotton from the Ukraine and the other new regions.⁷³

The Oil Crops

The sunflower (*Helianthus annuus* L.) is the chief oil crop of the Ukraine. The area planted in this crop has increased from 76 thousand hectares in 1913 to 1777 thousand hectares in 1965. This increase can be explained by the fact that in the plan of the USSR to become the largest producer of sunflower seed oil, the greatest burden of the production was imposed on the Grassland Belt regions of the Ukraine, the northern Caucasus, the central Volga region, and the central black soil regions of the RSFSR. In the Ukraine the principal sown area for sunflowers (70 per cent) is in the Grassland Belt, and it also should be noted that the cultivation of sunflowers is far more intensive in the eastern than in the western part of the steppe.⁷⁴

Oil from the seeds of flax (*Linum usitatissimum* L.) occupies a place of secondary importance as an oil crop of the Ukraine. In 1964 in the Ukraine only 19.4 thousand hectares were planted in flax for oil production. The percentages of the total areas sown for fiber flax and flax for oil in the different zones of the Ukraine are shown below:

	<i>Fiber Flax</i>	<i>Oil Flax</i>
Forest Belt	78.0	—
Forest Grassland Belt	15.8	7.2
Grassland Belt	—	92.8
Other regions	6.2	—

The best variety of flax for the production of the oil-bearing seeds

⁷³ *Pos. Plosh.*, 1957, Vol. I, pp. 3, 35, 41; Vol. II, pp. 30–32 (See No. 25). Archimovych, A. *The End of Cotton Cultivation in the Ukraine*. Proceedings of the Shevchenko Scientific Society. Section on Mathematics, Natural Sciences and Medicine, Vol. IV (XXXII), New York, 1956, pp. 47–51.

⁷⁴ *Pos. Plosh.*, 1957, Vol. I, p. 34; Vol. II, pp. 82–88 (See No. 25). *Nar. Khoz. SSSR*, 1965, p. 304 (See No. 27). "Atlas," Map No. 32 (See No. 8).

is the crown flax which is cultivated outside of the Ukraine in Kazakhstan and Kirghizia. This is why sown areas in flax for oil production are being decreased in the Ukraine and increased in central Asia.⁷⁵

Oil from the seeds of rape (*Brassica napus oleifera* Metzg.) is also of little importance as an oil crop. Rape is cultivated in two forms—winter and spring rape—and both forms are exclusively Ukrainian crops, since 98 per cent of the winter rape and 99 per cent of the spring rape (Kolsa) are sown in the Ukraine. In 1956 in the Ukraine 26.4 thousand hectares were planted in winter rape and 5.9 thousand hectares in spring rape. In 1964 4.3 and 0.5 thousand hectares correspondently. The areas for winter rape are located chiefly on the right bank Grassland Belt.⁷⁶

Another oil crop in the Ukraine, the area of which is temporarily reduced, is that of the castor oil plant (*Ricinus communis* L.). Its oil is used for medicinal and industrial purposes. At one time castor oil, which has nondrying properties, was used as a machine oil for airplane motors.

Since 1928 the area planted in castor oil plants has fluctuated as shown by the following figures in thousands of hectares:

1928	1940	1956	1964
10.5	52.5	10.1	78.6

The largest areas planted in the castor oil plant are located in the Zaporizhyya and Dnipropetrovsk oblasts.⁷⁷

The area for growing the soybean (*Glycine hispida* Maxim.—*Soja hispida* Moench.) has been similarly reduced. This is the type of crop which sometimes temporarily attracts attention and arouses great but ill-founded expectations. After experiments in its cultivation have failed, interest in it usually disappears, and the cultivation of the crop is reduced to a minimum. With the shortage of meats and fats in the USSR, the soybean attracted the attention of the Soviet economists, since they contain a high percentage of proteins and fats. It was also supposed that the soybean is a crop which is well adapted

⁷⁵ *Pos. Plosh.*, 1957, Vol. II, pp. 42, 46, 47 (See No. 25). "Atlas," Map No. 30 (See No. 8). *Nar. Hosp. Ukr. RSR*, 1964, p. 177 (See No. 12).

⁷⁶ *Pos. Plosh.*, 1957, Vol. II, pp. 108–110, 127–130 (See No. 25). *Nar. Hosp. Ukr. RSR*, 1964, p. 179 (See No. 12).

⁷⁷ *Pos. Plosh.*, 1957, Vol. I, pp. 34, 35; Vol. II, p. 93 (See No. 25). *Nar. Hosp. Ukr., RSR*, 1964, p. 179 (See No. 12).

to a dry climate. A rapid increase in plantings of soybeans therefore occurred in regions in which they were a new crop, including the Ukraine, the border provinces of the RSFSR, the northern Caucasus; and at the same time the areas in regions naturally adapted to its cultivation, such as the far eastern parts of the RSFSR were reduced.

Thus the sowing area for soybeans in the Ukraine was increased 20-fold in one year and increased another 2-fold in the ensuing year, as the following figures in thousand hectares show:⁷⁸

1929	1930	1931	1932
4.2	80.8	191.0	150.0

However, it was soon discovered that soybeans are not a crop which can tolerate a dry climate well and that cultivation in regions with an inadequate amount of moisture was a mistake. Accordingly, a rapid reduction in plantings of soybeans in the Ukraine began. In 1956 the area planted in soybeans was reduced to 10.9 thousand hectares and in 1964 to 5.3 thousand hectares. The planting of soybeans is now concentrated in regions adopted to the crop, namely, in the four Ukrainian oblasts of Chernivtsi, Kirovohrad, Dnipropetrovsk, and Poltava, and 99 per cent of soybeans grown in the Ukraine are grown in these provinces. It thus became evident that it would be quite impossible to make the Ukraine the main center for the cultivation of soybeans for general use in the USSR. The main center for the cultivation of soybeans has been the far eastern region of the USSR, and this region is now maintaining its position in this respect.⁷⁹

Tobacco, Nicotiana tabacum L. and makhorka, Nicotiana rustica L.

Tobacco is grown chiefly in the Crimea, the submontane and tramontane Carpathian regions and the right bank Forest Grassland Belt. The best quality tobacco is grown in the Crimea, and this is used for the production of cigarettes. Tobacco produced in the Chernihiv province is used for the production of cigars.

In 1956, 24.3 thousand hectares were planted in tobacco in the Ukraine. Of this total area, 29.6 per cent was in the Crimea, 47.2

⁷⁸ Mamot, Ya, *Soya (Soybeans)*. Rasteniievodstvo SSSR, 1933, Vol. I, Part 2, pp. 339, 341, 342 (See No. 15).

⁷⁹ Pos. Plosh., 1957, Vol. I, pp. 34, 35; Vol. II, p. 94 (See No. 25). *Nar. Hosp. Ukr. RSR, 1964*, p. 179 (See No. 12).

per cent was in the submontane and tramontane Carpathian regions, 17.6 per cent was in the right bank Forest Grassland Belt, and 5.3 per cent was in the Chernihiv oblast. The planting area for makhorka was largely located in the northern regions as compared with the areas planted in tobacco. In 1964 in the Ukraine 27.3 thousand hectares were planted in tobacco, and 4.5 thousand hectares were planted in makhorka.⁸⁰

Kok-saghyz, Taraxacum kok-saghyz Rod.

The rubber-bearing plant kok-saghyz was discovered by the botanist E. Rodin. A research expedition in 1932 discovered 150 rubber-bearing plants. The best of these for the production of industrial rubber proved to be kok-saghyz, which was found in central Asia in the Tien-Shan Mountains. The Russians have based their rubber industry on this plant. Intense biological research was devoted to this plant, and methods for its cultivation were developed and the best regions for growing it were determined. However, the statistical data regarding the area planted in kok-saghyz have never been published and remain a mystery.

In the Ukraine kok-saghyz was planted in regions well provided with moisture, but the statistics for its cultivation have not been revealed. During World War II, 187 pounds of seeds of kok-saghyz were sent to the USA for experimental purposes. The best information regarding kok-saghyz was published by the United States Department of Agriculture.⁸¹

Potatoes, Solanum tuberosum L.

Potatoes are characterized by their many uses—for human nutrition, as animal feed, and as an industrial raw material. They are fur-

⁸⁰ Pos. Plosh., 1957, Vol. II, p. 138 (See No. 25). Nar. Hosp. Ukr. RSR, 1964, p. 179 (See No. 12).

⁸¹ Rodin, L. *Taxonomic Description of Taraxacum Kok-Saghyz*. Acta Instituti Botanici Academiae Scientiarum, Ser. I, fasc. I, pp. 187–189. Altukhov, M. *Osnovnye itogi i ocherednye zadachi osvoeniya sovetskikh kauchukonosov*. (Basic Results and the Next Problems in the Utilization of Soviet Rubber Plants). Sotsialisticheskoe Sel'skoe Khozyaistvo (Socialist Agriculture), 1939, NNo. 1, pp. 120–127. *Osnovnye meropriyatiya po rasshireniyu urozhaev Kok-Saghyza*. (Basic measures for extension of the plantings and increase in the harvest of Kok-Saghyz.) Izvestiya, and Pravda, February 28, 1941. W. Gordon Whaley and John S. Bowen. *Russian dandelion (Kok-Saghyz)*. An Emergency Source of Natural Rubber, United States Department of Agriculture. Miscellaneous Publication No. 618, June, 1947, Washington, D.C., pp. 1–212.

ther characterized by the fact that they can serve both as a field crop and as a kitchen garden crop. The statistical data for 1956 show that of 2212.6 thousand hectares planted in potatoes in the Ukraine, 948.8 thousand hectares consisted of plantings in the fields of the kolkhozes and radgosp, and the remaining 1263.8 thousand hectares consisted of plantings in kitchen gardens. Thus more than half of the total areas planted in potatoes consisted of the small plantings of the collective farmers and workers in lots adjacent to their houses.

The percentages of the total area planted in potatoes in the different zones of the Ukraine and the percentage of the entire sown area in each zone which was planted in potatoes in 1956 are shown below:

	<i>Percentages of total area planted in potatoes in the dif- ferent zones of the Ukraine</i>	<i>Percentages of total cultivated area in each zone which was planted in potatoes</i>
Forest Belt	21.1	15.2
Forest Grassland Belt	56.4	8.6
Grassland Belt, Northern and Intermediate	13.8	2.6
Southern Grassland Belt	2.1	1.5
Other Regions	6.6	—

As can be seen from the above table, the largest plantings in potatoes are located in the Forest Grassland Belt, and the largest percentage of the total cultivated area planted in potatoes is in the Forest Belt. The Carpathian mountain region and the Crimea contain 6.6 per cent of the total area planted in potatoes in the Ukraine. 25.6 per cent of the total sown area of the Carpathian mountain region and 20.2 per cent of the total cultivated area of the submontane Carpathian region are planted in potatoes. In 1913, 1080 thousand hectares, or 3.9 per cent of the total sown area of the Ukraine, were planted in potatoes; in 1965, 2108 thousand hectares, or 6.3 per cent of the total cultivated area of the Ukraine, were planted in potatoes.⁸²

⁸² *Pos. Plosh.*, 1957, Vol. I, pp. 34, 35, 39; Vol. II, p. 192 (See No. 25). "Atlas," Map No. 34 (See No. 8).

E. Animal Feed Crops of the Ukraine

The feed crops of the Ukraine are grass (annual and perennial grasses), corn, which is used directly as feed and for silage, root crops, and melon crops. The areas planted in these crops recently have been increased, as can be seen from the following figures in thousands of hectares:⁸³

1913	1940	1950	1960	1965
894	4,422	5,238	13,412	10,292

This considerable increase in the area planted in feed crops in 1960 is explained by Mr. Khrushchev's insistence on the cultivation of corn for silage and as green fodder for cattle.

The following annual forage crops are used as pasturage and as hay for cattle: Spring vetch (*Vicia sativa* L.), sown in combination with oats; winter vetch (*Vicia villosa* Roth), sown in combination with winter rye; seradella (*Ornithopus sativus* Brot.); Sudan grass (*Sorghum sudanense* Stapf.) and Italian millet (*Setaria italica* P.B.). The most widely used annual forage plants in the different zones of the Ukraine are as follows: In the Forest Belt—seradella; in the Forest Grassland Belt—vetch; in the Grassland Belt—Sudan grass and Italian millet. The most widely used perennial forage crops are clover (*Trifolium pratense* L.), alfalfa (*Medicago sativa* L.), sainfoin (*Onobrychis viciifolia* Scop. = *O. Sativa* Lam.), and sweet clover (*Melilotus albus* Desr. and *M. officinalis* Desr.). The grass and hay crops include timothy (*Phleum pratense* L.), wheat grass (*Agropyrum cristatum* Czern.) and tall grass (*Arrhenatherum elatium* J. et K.). Clover is the principal forage crop of the Forest Belt and one part of the Forest Grassland Belt, and alfalfa is the chief forage crop of the other part of the Forest Grassland Belt and the Grassland Belt. The borderline dividing the areas for clover and for alfalfa is situated along a line running near the towns of Drohobych, Ternopil, and Proskuriv and extending to the south of Zhytomyr, to the north of Kiev and to the south of Chernihiv.

Sainfoin is cultivated in the same regions as alfalfa but requires a drier climate. Sweet clover (the white variety) is cultivated in the solonets, the structural alkali soils in the southern Ukraine and the

⁸³ *Pos. Plosh.*, 1957, Vol. I, pp. 34, 35 (See No. 25). *Nar. Khoz. SSSR, 1965*, p. 307 (See No. 27). "Atlas," Map No. 39 (See No. 8).

Crimea. Clover is sown chiefly in combination with timothy, and alfalfa is sown in combination with tall oat grass or with wheat grass.

The chief crops cultivated for silage in the Ukraine are corn, sunflowers, sorghum, and Jerusalem artichoke (*Helianthus tuberosum* L.). Also used for silage are beet tops, potato tops, several other waste products of field crops, and even weeds.

The principal root crops used as feeds in the Ukraine are fodder beets (*Beta vulgaris* L.) and fodder carrots (*Daucus carota* L.). In the steppe and in the steppe region of Crimea, fodder watermelons (*Citrullus colocynthis* Schrad.) and fodder pumpkins (*Cucurbita pepo* L., *C. maxima* Duch., and *C. moschata* Duch.) are cultivated.

Summary

During the last fifty years (the Soviet period), a great many changes have occurred in the proportions of the field crops of the Ukraine as well as in their distribution throughout the geographical zones of the Ukraine. The proportions of the different crops underwent radical changes. Before the revolution of 1917 the cultivation of cereals predominated in the Ukraine. The area in cereals comprised 88.4 per cent of the total sown area of the Ukraine. In 1965, however, cereals occupied only 48.8 per cent of the sown area. Correspondingly, other field crops underwent great changes. First importance among cereals before the revolution was shared by spring barley and spring wheat—which occupied 20.8 and 20.6 per cent respectively of the total area used for crops in the Ukraine. In 1964 spring wheat had practically disappeared from the fields of the Ukraine, and spring barley had dropped from first to third place among cereals. Instead, winter wheat occupied first place and Indian crop (maize) second place. Before the revolution these crops were only fourth and sixth respectively in importance among cereals.

It is interesting to note the position of oats among the cereals. Before the revolution, oats were one of the main cereals of the Ukraine and occupied 10.5 per cent of the total sown area. Because of the mechanization of agriculture, the number of draft horses in the Ukraine has been considerably reduced (fourfold fewer in 1964 than in 1916). As a result of this reduction the acreage devoted to the oat crop has been greatly decreased. Thus in 1964 oats occupied only 1.7 per cent of the total sown area.

Raw material crops also underwent great changes. So called specialization of crops according to zones began to appear. In this way the sowing of sugar beets came to be located chiefly in the Forest Grassland Belt and in the northern part of the Grassland Belt. The cultivation of flax for fiber is now concentrated in the Grassland Belt. The cultivation of sunflowers became concentrated chiefly in the eastern part of the Grassland Belt. As a transitory phase, cotton was planted in the Ukraine but subsequently has virtually completely disappeared. Cotton for some time occupied first place among the textile crops of the Ukraine. In 1956, however, the sowing of cotton was completely abandoned and has never been resumed in the Ukraine.

From 1928 through 1931 there was enthusiasm for the cultivation of soybeans, and the area planted to this crop increased 45-fold. However, this crop soon proved disappointing, and accordingly its sown area was reduced to its original extent. The cultivation of Kok-Saghyz as a source for the rubber industry remains a mystery, since statistics showing the extent of its culture have never been disclosed.

A great many changes in the geographical distribution of the various crops have occurred. An interesting case is that of the "invasion" of the winter wheats into the southern territory, namely into the Grassland Belt.⁸⁴

⁸⁴ Acknowledgment. I thank Dr. Georg H. Coons (U.S. Department of Agriculture) for his assistance in editing the English text of this work.

A Cytochemical Study of *Balantidium coli*¹

1. MACRONUCLEUS

SERHIJ KRASCHENINNIKOW

Laboratory of Protozoology of the Ukrainian Academy of Arts and Sciences in the U.S.

INTRODUCTION

Bütschli (1876) and Gruber (1886) were the first investigators to distinguish between two functionally different kinds of nuclei of ciliates: a) a somatic nucleus, i.e., the macronucleus; b) a generative nucleus, i.e., the micronucleus. Later studies, such as those by Maupas (1889) and Hertwig (1889, 1907) provided new evidence in favor of the dualistic concept regarding the nuclear apparatus of the ciliates. This concept, which was adopted and somewhat extended by Schaudinn and Popoff,² was cited with virtually no modifications by several protozoologists, e.g. Enriques (1912), Kudo (1966).³

However, as early as the beginning of this century some protozoologists held views opposing the above-mentioned concept of a nuclear dualism. Mitrofanov (1903) considered the nuclear apparatus of the *Paramecium* as a single entity, as did also Mavrodiadi (1913).

Swarczewsky (1912) accepted the Hertwig-Schaudinn dualistic concept with certain reservations. The studies of Klitzke (1916) and Ivanić (1931) with amiconucleate races of ciliates showed that the micronuclei are not devoid of somatic functions, these being inherent in them along with generative functions. The investigations of Prandtl (1906) in *Didinium nasutum* and of Dogiel (1930) in *Parasitotricha colpoidea* revealed that in the exconjugants of these species the micronucleus changes into a macronucleus, without a preliminary division and formation of a new generation of micronuclei. This fact argues against the separation of the nuclear apparatus into a

¹ This investigation was supported by U. S. PHS grant 12652-01-03.

² See Doflein-Reichenow, 1949-1953, pp. 26-27.

³ Kudo states: "The macronucleus is always larger than the micronucleus, and controls the trophic activities and regeneration processes of the organism, while the micronucleus is concerned with the reproductive activity."

somatic and a generative part, and therefore against the concept of a nuclear dualism.

The observation of Ivanić (1931, 1934a) that in *Stylonychia pustulata* the micronuclei are deficient in connection with the process of cyst formation, is of interest in showing that macronucleus formation is not associated with the sexual process. This constitutes a further objection to the concept of a nuclear dualism.⁴

Special attention should also be given to the studies of amicro-nucleate strains in several species of ciliates. The investigations of Dawson (1919), Landis (1920), Woodruff (1921), Woodruff and Spencer (1922, 1924) and Beers (1946) showed that the macronucleus fulfills not only somatic functions, but in part generative functions as well.⁵

The Yugoslav protozoologist Ivanić (1928) has proposed that the macronucleus is a pathologically altered degenerate part of the nuclear apparatus of ciliates. The theory of the polyploidy of the macronucleus has been developed by Piekarski (1941); Geitler (1941, 1953); Raikov (1957, 1963) Grell (1950, 1952, 1953, 1962); Fauré-Fremiet (1953), and Poljansky and Raikov (1960, 1961). More recent studies of the nuclear apparatus of the lower ciliates have shown that the macronuclei are not always polyploid. In the genera *Nassulopsis*, Fauré-Fremiet (1959), *Loxodes*, Fauré-Fremiet (1954); Raikov (1957, 1958a, 1958b, 1959), *Trachelocerca*, Raikov (1955, 1956, 1958), *Geleia*, Raikov (1959) and *Remanella*, Raikov (1963a, 1963b) the macronuclei were found to be diploid and incapable of division. The other ciliates possess nuclei which are polyploid. The macronucleus of most ciliates is not only polyploid but also poly-energid, i.e., capable of fission and regeneration. It is rich in DNA (Feulgen reaction). Nucleolar substance containing RNA is also an important part of the macronucleus.

The hypothesis of a polyploidy allows us to understand what "amitosis" in the ciliates may be. Grell (1950, 1953) regards this process as a "segregation of genomes." A genome represents a set of chromosomes. Segregation of genomes is a division resembling

⁴ See the critical examination of the nuclear dualism in ciliates by this author (Ivanić, 1934b).

⁵ *Stephanopogon mesnili* Lwoff is a homocaryote ciliate without a nuclear dualism thus differing from other so-called heterocaryote ciliated Protozoa.

"amitosis." The question of the types of the polyloidy in ciliates is discussed by Poljansky and Raikov (1960).

The old view that the macronucleus has chiefly "vegetative" functions, and that the micronucleus is the "sexual" part of the nuclear apparatus of ciliates has been changed by the findings of Sonneborn (1942, 1946, 1947), Kimball (1942) and Nanney (1956), who have shown that the macronucleus plays a genetic role, and that the genes located in it determine the phenotype.

Zakhvatkin (1949) proposed that the higher ciliates originated from the forms with two identical nuclei. According to his view, one of these two nuclei became "hypertrophied" and gradually differentiated into a macronucleus. The mitosis of the latter was transformed into amitosis. This amitosis is regarded as a masked mitosis. Another concept regarding nuclear dualism also has been published by Raikov, (1961).

The above-described findings raise important questions regarding the structure of the macronucleus. The assumption that the DNA of the macronucleus is bound to chromosomes or chromosome-like structures is supported by the results of several studies. Schwartz (1956, 1957, 1958) has described in the macronucleus of *Paramecium bursaria* DNA-containing "granula-Ketten" (chains of granules), which are interpreted to be chromosomes. According to the latter investigator there also occasionally occur in the amiconucleate clones individuals which possess macronuclei with chromosomes. These macronuclei are capable of division. Cytologic observations indicate that such macronuclei originate from fragments of the macronuclei (macronucleus regeneration). Fibrillar structures, which appeared to be Feulgen-positive also were found by Mugge (1957) in the macronucleus of *Vorticella campanula*. DNA-containing fibrils have been found in the macronucleus of *Bursaria trucatella* by Ruthmann and Heckmann (1961).

The interpretation of these fibrillar structures as chromosomes is supported by the reported findings of Raikov (1962), who has described in the macronucleus of *Nassula ornata* distinct fission stages, which could only be explained as endomitotic duplication. Sato (1963) investigated the macronuclear changes during division in *Spirostomum ambiguum*, *Tetrahymena pyriformis* and *Paramecium caudatum*. This author says: "During the macronuclear morphogenesis (amitosis) the chromatin aggregates of the interphase macro-

nucleus become fibrous and in many cases appear paired," and he further concludes, "It is probable that the macronuclear chromatin corresponds to "macronuclear chromosomes." Seshachar 1960, 1963a using centrifugation and treatment with despiralizing agents (KCN and NaCN) demonstrated in the macronuclei of *Blepharisma* and *Spirostomum* filaments which he regards as chromosomes (Seshachar 1963b, 1964, 1965). These filaments corresponding to the length of the ciliates were very elongated bodies quite unlike the chromosomes described by other authors.

Kaneda (1960) investigated the fission of the macronucleus of *Chlamydomon pedarius*. The macronucleus of this species is almost entirely achromatic with a Feulgen-positive body part, an "endosome," and a "chromosomal" area. During division there develop from the latter about 20 strands resembling very closely the chromosomes of higher organisms. Kaneda calls these "chromonemata." Ruthmann and Heckmann (1961) described in the macronucleus of *Bursaria truncatella* fine fibrils containing DNA and RNA; Ruthmann (1963) found allegedly chromosomes in the macronucleus of *Loxophyllum meleagris*.

The recent studies of some ciliates (Ammermann, *Stylonychia mytilus*, 1964, 1965a, 1965b; Alonso, *Stylonychia muscorum*, *Oxytricha matritensis*, 1965; Pérez-Silva and Pilar Alonso, *Stylonychia muscorum*, *Histrio* sp., 1966) showed in macronuclei of the mentioned species at a certain period of their life cycle polytene chromosomes. Also Pilar Alonso and Pérez-Silva found polytene chromosomes in the macronuclear anlagen of *Stylonychia muscorum*, *S. mytilus*, *Histrio sphagni*, *Histrio* sp., *Oxytricha matritensis*, *Opistotricha* sp., *Steinia candens* and *Euplotes* sp., 1966.

The structure, degree of the polyploidy and behavior of the macronucleus vary in the different ciliates. Excluding the lower ciliates (*Remanella*, *Loxodes*, *Trachelocerca* and *Geleia*) with vesicular macronuclei, the macronuclei of the other ciliates can also be classified with respect to the location of the orthomere and paramere as one of the following two types: segmental (*Chlamydomon*, *Hartmannula*, etc.) or concentric⁶ (*Phascolodon*, *Cryptopharynx*, etc.) Fauré-Fremiet, 1957).

Electronmicroscopic studies of the macronucleus should here also

⁶ This type of the ortho- and paramere arrangement was described in *Chilodonella cyprini* by the present writer (1936) and in *B. coli* (1965).

be mentioned (Ehret and Powers, 1954, 1955; Metz and Westphall, 1956; Roth, 1957, 1960; Inaba, 1960; Randall and Jackson, 1958; Noirot-Timotheé, 1960; Vivier and André, 1961; Jurand, Gibson and Beale, 1962; Raikov, 1966).

The autoradiographic and spectrophotometric studies of the macronucleus made in the last decade: Sehsachar and Dass, 1954; Prescott, 1960; Walker and Mitchison, 1957; Kimball, Vogt-Köhne and Gasperon, 1960; Kimball and Prescott, 1962; Guttes and Guttes, 1960; De Terra, 1960; Raikov, Cheissin and Buze, 1963; Cheissin, Ovchinnikova and Kudriavtsev, 1964, Stein, 1964; Ruthmann, 1964; Raikov, 1964) have contributed considerably to our knowledge regarding DNA synthesis in the ciliates.

MORPHOLOGY OF THE MACRONUCLEUS OF *B. coli*

The shape of the macronucleus of *B. coli* has been described very differently by various authors. Malmsten (1857), who discovered *B. coli*, described it as elliptic-elongated. Wising (1871) depicted a similar shape of the macronucleus of this ciliate in his drawings, which show trophozoites and some binary fission stages. One of the two pairs of conjugants shown in his drawings has an oval elongated macronucleus, while the other one has a round macronucleus.

The macronucleus of *B. coli* also has been described as kidney-shaped (Leuckart 1879-1886; Klimenko, 1903; Prowazek, 1913; Doflein, 1916; Mayer, 1924), bean-shaped (Mosler, 1894; Askanazy, 1903; Klimenko, 1903; Glaessner, 1907; Bensen, 1908; Doflein, 1916; Hartmann and Schilling, 1917), horseshoe-shaped (Bütschli, 1887; Ortmann, 1891; Askanazy, 1903; Hartmann and Schilling, 1917; Braun and Seifert, 1925; Ruge, 1926). Prowazek, 1913 also calls it sausage-shaped, cylindrical oval; Ruge, 1926—"massig"; Solowjew, 1901—rounded or elongated, more or less curved; Chirsteller, 1922—moon-shaped; Mitter, 1891—oval sausage-shaped; Bütschli—simply oval; Casagrandi and Baarbagallo 1896—rod to biscuit-shaped, oval, kidney-shaped or round. McDonald (1922) states that the macronucleus of *B. coli* (and of *B. suis*) is "elongate and may be straight and rodlike or it may be sharply bent into a horseshoe shape. In any case its diameter increases toward either end, giving it something of a dumbbell shape. This constriction in the central region and enlargement at each end is more marked in *Balantidium coli* than in *Balantidium suis*." A table in an article by Jameson (1927) shows several

conjugation stages (table on page 317). The latter author in referring to his Fig. 15 states that the macronucleus in exconjugants is kidney-shaped and later becomes a sausage-shaped structure.

Pritze (1928) has reviewed the literature (1857-1924) regarding the shape of the macronucleus of *B. coli* and has provided figures depicting its various shapes (pp. 390-391, Figs. a-u), including vesicular, cylindrical horseshoe-shaped and dumbbell-shaped with different degrees of bending of the macronuclei. The macronuclear anlagen (Figs. s, t, u) are round. Pritze states (p. 379) that the shape of the macronucleus depends on its age. He further states (p. 392): "Wie schon oben engedeutet worden ist, ist der Ruhe Kern zylindrisch-drehrund bis zylindrisch-flach und kann sich im letzteren Falle als Bogen oder Schleife darstellen. Geht der Kern in Teilung über, so verkürzt er sich, wird kompakter, drehrund bis bohnenförmig, während die Kernmembran bisher keine Einbuchtungen erleidet." In an article by Cunha and Muniz (1930) there are illustrations of the binary fission stage of *B. coli* (Table XVIII, Fig. 45, Table LXI, Microphotograph 8). The elongated future daughter parts of the macronucleus in both the proter and the opisthe are tapered toward the division plane. Besides (Table LII, Figs. 17, 18; Table LIII, Figs. 21, 22, 26; Table LVIII, Figs. 47-49; Table LIX, Figs. 2, 3) anlagen are depicted and also cysts of this ciliate (Table LVIII, Fig. 46, macronucleus sausage-shaped, slightly curved; Table L, Figs. 7, 9, macronuclei round; Fig. 5, macronucleus oval; Figs. 6, 8, predivision stage, macronuclei elongated; Table LX, Fig. 7, macronucleus rod-shaped). Hegner (1934) in his article (p. 47, Figs. 14, 15) presents outlines of macronuclei of *B. coli* and *B. suis* varying from kidney-shaped to curved dumbbell-shaped. Nelson and Clifford (1934) show sketches (p. 110, Fig. A, c) of macronuclei of the vegetative form of *B. coli* resembling those depicted by Hegner but also including V-shaped variants.

Cunha and Muniz (1937) show the developmental process of round anlagen (Table 2, Figs. 15-22). The degrees of bending of the macronuclei of *B. coli* have been measured by Hsiung (1938) (Table on page 115). Pick-Levontin and Cheissin (1940) show on page 111 of their article the variations of the macronuclei in seven lines of *B. coli*. These variations are essentially in agreement with those described by previous authors. In this same article there are illustrations of two preconjugants (Fig. 3, page 101), one with a

slightly bent macronucleus and the other with a horseshoe-shaped macronucleus. Sketches of the macronuclei in conjugants are shown in Fig. 5 on page 103. The latter authors (Cheissin and Pick-Levontin, 1946) in Figs. 1 a and b on page 222 of their article also show the macronuclei of *B. coli* from cultures of a human and a rat strain. Their shape is elongated and somewhat dumbbell-like. Figs. 2 a and b in this article show the macronuclei of *B. coli* cultured from the pig and rat, which are nearly bean-shaped, and Figs. 3 a and b show the slender macronuclei of *B. coli* from a culture and from a rat (*suis* type), which are elongated and slightly bent.

McDonald (1922), Hegner (1934), Hsiung (1938), Pick-Levontin and Cheissin (1940), and Cheissin and Pick-Levontin (1946) determined the length: width ration of the macronucleus of *B. coli* (and *B. suis*) and gave the corresponding measurements for many specimens of this ciliate. Trophozoites of *B. coli* possess one macronucleus. The presence of two or more macronuclei indicates an irregularity or occurs in certain developmental stages (Wenrich, 1959).

Data regarding the constitution of the macronucleus are rather sparse. According to Prowazek (1920) the chromatin in fixed preparations is distributed in very fine granules on the nuclear framework and nucleolar-like bodies occasionally are present. Dobell and O'Connor (1921) refer to a few larger nucleoli "among the densely packed chromatin granules." These "nucleoli" are illustrated in their Figs. 106 and 109.

Studies of the macronucleus of *B. coli* using cytochemical methods have been reported by Auerbach (1953), who in addition to other staining techniques also used the Feulgen reaction. He gives the following description (pp. 413-414): "The macronucleus is a prominent rope-like structure usually in the middle portion of the body and assumes a variety of shapes. Some of the more commonly encountered shapes are rods, crescents and rings (presumably formed by the coiling of the macronucleus). The length of this structure varies from 20 to 80 μ (averaging about 40 μ). The state of nuclear reorganization determines the size of this structure. The micronucleus lies in a depression of the macronucleus. Reproduction is by binary fission, and conjugation occurs periodically except in amiconucleate forms. The cyst or inactive form is usually found in the host's intestine, rarely during *in vitro* cultivation of this organism."

On page 430 of his article Auerbach states that "The macronucleus consists of three elements: a dense ground substance (matrix) a large number of vacuoles and vesicles imbedded within the matrix, and a hyaline membrane surrounding the entire structure (Figs. 9 and 10).

"Not always visible in fixed preparations, but quite distinguishable with phase contrast microscopy is the macronuclear membrane." According to the latter author (pp. 432-433) the matrix as well as the vesicles contains DNA. The vacuoles presumably contain RNA, which possibly also is contained in the cytoplasm. Sen Gupta and Ray (1955) have reported the presence of DNA and RNA in the macronucleus of *B. coli*. But these authors do not provide any detailed descriptions of the constituents of the macronucleus and their illustrations (Fig. 1, p. 105) very poorly reproduce the results of the staining by the Feulgen reaction. They make no mention of the above-cited article by Auerbach (1953).

TAXONOMIC STATUS OF *Balantidium coli* AND THE STRUCTURE OF ITS MACRONUCLEUS

The genus *Balantidium*, in accord with the suggestion of Fauré-Fremiet (1955, 1957) and of Krascheninnikow and Wenrich (1958), is now regarded as a trichostome rather than as a heterotrich in a subclass Spirotricha (Corliss, 1961).

In view of this fact and also because there is still little information regarding the cytochemical constituents of the macronucleus of *B. coli*, it appeared to be of interest to make a more detailed study of the macronucleus of this species using the Feulgen reaction in whole mounts as well as in paraffine sections.

Fauré-Fremiet (1957) states that the macronucleus in the great majority of ciliates has a uniform structure, i.e., that the dense mass of microsomes consisting of DNA is equally distributed throughout the entire space bounded by the nuclear membrane. This type of macronucleus structure has been termed "homeomerous" by Fauré-Fremiet.

On the other hand, in ciliates belonging to the two gymnostome families, Chlamyodontidae and Dysteridae as well as to the order Chonotricha the macronucleus consists of two distinct parts which are in close juxtaposition.

One part, the "orthomere," consisting of microsomes, contains

DNA and several nucleoli (RNA). The other part, the "paramere," contains DNA apparently diffused through the karyolymph and possesses several nucleoli and an endosome of desoxyribonucleoprotein (DNA-protein). Such macronuclei have been termed "heteromeric" by Fauré-Fremiet.

However, in addition to a juxtaposed arrangement of the orthomere and paramere in the above-mentioned families of the ciliates there also are cases in which the orthomere surrounds the paramere (*Phascalodon*, *Cryptopharynx*, *Chilodonella*). Such an arrangement of the orthomere and paramere has been termed concentric by Fauré-Fremiet.

During the initial stages of binary fission in *Dysteria* (the initial stage of which shows a juxtaposed heteromery) the orthomere glides around the paramere and surrounds it entirely, thereby producing the concentric arrangement which is constantly present in *Chilodonella*.

On page 16 of his above-cited article Fauré-Fremiet states: "La structure hétéromère macronucléus doit être considérée dans ses rapports avec la systématique et l'évolution de Ciliés."

In this article the author will describe the results of an investigation of the cytochemical structure of *B. coli*.

MATERIAL AND METHODS

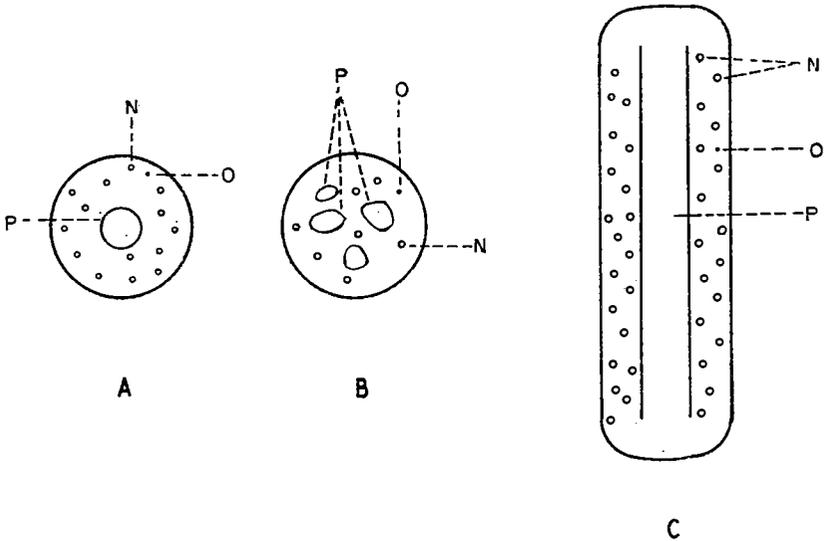
The trophozoites of *B. coli* were obtained from cultures and fixed with Schaudinn's fluid. Paraffine sections 2 and 5 μ thick were prepared and stained by the Feulgen reaction.

The sexual stages were prepared by Nissenbaum's method (1953) and stained by the Feulgen reaction in whole mount preparations. Afterward the slides were studied in the phase contrast microscope.

OBSERVATIONS

The long axis of the macronucleus of *B. coli* or of its parts may run parallel to that of the whole specimen or may lie at various angles to it. Therefore, we shall use the terms cross, cross-oblique, longitudinal and longitudinal oblique to indicate the plane of the microscopic section with reference to that of the macronucleus itself.⁷

⁷ The micronucleus was not found in the preparations stained by the Feulgen reaction. The cause of the absence of staining of the micronucleus is unknown but it was not due to an amiconucleate strain (the presence of conjugating pairs in the culture.)



Text-Fig. 1 A, B. The cross sections through the macronuclei of two specimens of *B. coli*.

A, a "typical" picture of the reciprocal ortho- and paramere arrangement, the latter forming a solid structure (inner circle), surrounded by the former (orthomere). B, a case when the paramere of the macronucleus is broken into several pieces. Fig 1 C, a longitudinal section through the macronucleus of *B. coli*. P, paramere; O, orthomere; N, nucleoli.

The whole mount of a trophozoite of *B. coli* (Fig. 1, Pl. I) shows a figure-8-shaped macronucleus, in which two different constituents can be distinguished. Thus the framework of the macronucleus consists of dark violet-staining DNA, and scattered over its surface are nucleoli consisting of unstained RNA. Between the macronucleus and the cytoplasm there is a bright halo. Fig. 2, Pl. I shows a cross section through a trophozoite of *B. coli* in which there is a horseshoe-shaped portion of the macronucleus with the above-described arrangement of DNA and RNA. A bright halo surrounding the macronucleus is also present here.

The author was unable to see a macronuclear membrane in fixed preparations. Dobrzanska-Kaczanowska (1936) in her description of the changes of several heteromeric macronuclei (*Nassula ornata*, *Dysteria monostyla*, *Chlamydon pedarius*, *Allospiraerium paraconvexa*) during binary fission makes the following observation (pp. 375-376): "On observe à la limite du noyau et du cytoplasme un

net halo. Il s'agit probablement d'une zone d'échange de substances entre le nucléus et du cytoplasme." Possibly this interpretation could also be applied to the halo observed in *B. coli*.

The most important new data concerning the DNA-RNA arrangement in the macronuclei of trophozoites were obtained from the studies of the 5 μ and 2 μ sections. Fig. 3, Pl. II shows a cross-oblique section through the macronucleus of a trophozoite of *B. coli*. Here the orthomere (dark violet) can be seen surrounding the white paramere in a concentric arrangement. The brighter shadings in the orthomere evidently indicate the presence of a certain amount of RNA and the pale violet cloudiness at one side of the orthomere indicates the presence of traces DNA (Figs. 3-4, Pl. II, Figs. 5-9, Pl. II.)

Fig. 4, Pl. II shows nearly a cross section through the macronucleus, while Figs. 3, Pl. II, 5 and 6, Pl. III, show cross-oblique sections through the macronucleus.

In a comparison of Fig. 5 with Fig. 6 (Pl. III) it is found that the amount of the nucleolar substance in the orthomere shown in Fig. 5 is greater than that in the orthomere shown in Fig. 6, in which it occurs in the form of small granules.

Fig. 7, Pl. IV shows a 2 μ cross section through a trophozoite nucleus with an orthomere which contains a large number of pale violet granules contrasting with the dark violet background. The interpretation of these structures is difficult. Perhaps they represent a stage in the formation of DNA.

A very interesting topographic relationship between the orthomere and paramere can be seen in the cross section of a macronucleus shown in Fig. 8, Pl. IV. Here the nucleolar substance is present in the form of three large and one smaller structure, in addition to which several small scattered granules can be seen in the orthomere. Thus this picture shows a certain departure from the pattern ordinarily observed in the macronuclei of trophozoites. In Fig. 4, Pl. II, Figs. 5, 6, Pl. III and 9, Pl. IV the halos between the macronuclei and the cytoplasm are quite distinct. Fig. 9, Pl. IV shows an oblique longitudinal section through the macronucleus of a trophozoite. The plane of the cut passed through the middle portion of the macro-

⁸ On the other hand Kretschmar (*Zeitschrift Tropenmed. u. Parasitol.*, 14 (2), 141, 1963) states regarding the macronucleus of *Balantidium coli*: "Im fixierten und gefärbten Präparat liegt der Kern in einem schmalen Hof von nur schwach granuliertem Entoplasma, der wiederum von einer Zone besonders dicht strukturiertem Plasmas umschlossen ist." (Figs. 5, 7, pp. 134, 136).

nucleus but missed its two ends. In the middle of this macronucleus there is a large unstained mass. This white portion represents the paramere, which is surrounded by a dark violet layer of DNA, on the surface of which pale nucleoli are scattered.

A longitudinal section through the middle portion of the macronucleus of a trophozoite (Fig. 10, Pl. V) shows the topographic relationships between the orthomere and paramere of *B. coli*. Here the outer portion (layer) of the macronucleus the orthomere is stained a dark violet and surrounds like a cartridge case the central white axial portion, the paramere.

A schematic drawing (Text Fig. 1) shows the special relationships between the orthomere and paramere of the whole macronucleus, sections of which are shown in the above-cited figures. Here it should be noted that neither of the "counterpartners" (orthomere and paramere) consist exclusively of one type nucleic acid, and that the orthomere contains in addition to DNA a certain amount of RNA (nucleoli), and the paramere contains traces of DNA.

A whole mount preparation of a preconjugant (Fig. 11, Pl. V) shows a dark violet orthomere, while the central portion of the macronucleus is only a light violet color. Although here appears to be a concentric arrangement of the orthomere and paramere, the structure of the macronucleus in conjugants requires further study in sectioned preparations.

In another whole mount preparation of a preconjugant (Fig. 12, Pl. V) bright pink granules (paramere) are seen against the dark violet background (orthomere). These are scattered over the surface of the macronucleus. Perhaps they represent a certain stage in the development of the nucleoli and later become colorless in preparations stained by the Feulgen reaction.

The latter assumption is supported by the findings in whole mount preparations of the conjugants (Fig. 13, Pl. VI), in which both macronuclei are reminiscent of the macronucleus of the preconjugant in Fig. 12, Pl. V, whereas in Fig. 14, Pl. VI the white portions of the macronucleus have the typical appearance of the nucleolar substance. However, additional studies of macronuclei of conjugants in sectioned material are required.

An exconjugant (Fig. 15, Pl. VII) contained two macronuclear anlagen characterized by the presence on their surface of darker and lighter violet areas without sharply defined boundaries between them. The

irregular outlines of both anlagen are due to the apposition of starch granules filling the cytoplasm.

In some exconjugants the anlagen of the macronuclei stain intensely by the Feulgen reaction, while others stain a pale pink color, which evidently represents an earlier developmental stage. Further studies of the relationship between DNA and RNA must be made in the sectioned preparations.

DISCUSSION

The object of this study was to investigate the actual location of DNA and RNA in the macronucleus of *B. coli*. For this purpose whole mounts and paraffine sections of the macronuclei of trophozoites and whole mounts of preconjugants, conjugants and exconjugants were examined.

The most important data regarding the arrangement of DNA and RNA in the macronuclei of trophozoites were obtained from the studies of 2 μ and 5 μ paraffine sections.

The macronuclei of trophozoites showed a heteromeric arrangement of DNA and RNA. The whole mounts showed a dark violet framework with unstained nucleoli (RNA) scattered over its surface. A bright pink-orange halo usually surrounded the macronucleus. The true biological significance of the halo is unknown.

Cross, cross-oblique and longitudinal sections through the macronuclei of trophozoites showed a concentric arrangement of the orthomere and paramere, like that previously reported by the author in *Chilodonella syprini* (1939) and by Fauré-Fremiet (1957) in *Phascalodon*, *Cryptopharynx*, *Chilodonella*, and *Scaphiodon*. This means that in cross sections the DNA layer (orthocaryomere) stains by the Feulgen reaction as a violet "ring" surrounding a central disk-shaped space (paracaryomere), or that instead of this a few small RNA structures may be present. The orthocaryomere of the macronucleus also contains colorless granules of RNA.

Sometimes traces of diffuse DNA are located in the paramere. A longitudinal section through the macronucleus shows a dark violet outer layer (orthocaryomere) surrounding like a cartridge case the inner axial portion (paracaryomere).

The whole mounts of preconjugants showed a reciprocal arrangement of the ortho- and paracaryomere in the macronucleus similar to that in trophozoites.

The round or oval macronuclei of conjugants showed a dark violet background (DNA) in which pale structures (nucleoli) were present.

An exconjugant with macronuclear anlagen in a whole mount showed the presence on the surface of each of the anlagen of darker and lighter violet areas without sharply fixed contrasting boundaries between them. In some exconjugants the anlagen of the macronuclei stained intensely by the Feulgen reaction, whereas in others they stained a pale pink color. The latter probably correspond to an earlier developmental stage than the former.

ADDENDUM

Sukhanova, K. M. "Tsitofiziologicheskaya kharakteristika zhiznennykh tsiklov infuzorii roda *Balantidium* iz Amfibii" (Voprosy tsitologii i protistologii, 285-312, 1960) gives Figs. 12, 13, 14 illustrating DNA-RNA arrangement in the macronucleus of a trophozoite in *B. elongatum*, *B. duodenum* and *B. entozoon*. The macronucleus of *B. elongatum* (a whole mount and a section stained with Feulgen) shows a homomerous type thus differing from the heteromerous macronucleus of *B. coli*. The lack of sections of the macronucleus in *B. duodenum* and *B. entozoon* stained with Feulgen does not allow to characterize the type of it in these two species.

SUMMARY

The author presents a critical review of the literature dealing with the question of the nuclear dualism of the ciliates and also of the literature dealing with the structure and role of the macronucleus.

The DNA-RNA arrangement in the macronucleus of *B. coli* in whole mounts and in sections of trophozoites and whole mounts of preconjugants and conjugants, and in the macronuclear anlagen of exconjugants was studied using the Feulgen reaction.

In trophozoites it appeared to be of the concentric type, as reported by Fauré-Fremiet in *Phascalodon*, *Cryptopharynx*, *Chilodonna* and *Scaphiodon*.

Cross as well as longitudinal sections of the macronucleus showed the paracaryomere surrounded by the orthocaryomere. However, paramerous structures (nucleoli) also were found in the orthocaryomere. The apparent DNA-RNA arrangement in the macronucleus of preconjugants and conjugants, and also in the macronuclear anlagen of exconjugants is discussed.

REFERENCES

1. Alonso, P. (1965). Polytene chromosomes in oxytrichous ciliates. Progress in Protozoology. Abst. of papers read at The Second International Conference on Protozoology, 230, London.
2. Alonso, P. y J. Pérez Silva (1966). Chromosomes politenicos en cilialos hipotricos. Bol. R. Soc. Española Hist. Nat. (Biol.), 64, 171-176.
3. Ammermann, Dieter (1964). Riesenchromosomen in der Makronucleusanlage des Ciliaten *Stylonychia* sp. Die Naturwissenschaften, 51, 249.
4. ——— (1965a). The development of the macronucleus—anlage in the ciliated protozoan *Stylonychia mytilus*. Progress in Protozoology, Excerpta Medica Foundation, 229-230. Amsterdam, New York, London, Milan, Tokyo, Buenos Aires.
5. ——— (1965b). Cytologische und genetische Untersuchungen an dem Ciliaten *Stylonychia mytilus* Ehrenberg. Arch. Protistenk., 108, 109-152.
6. Askanazy, M. (1903). Über die pathologische Bedeutung des *Balantidium coli* Wien. Med. Wschr., 53, 127-133.
7. Auerbach, Earl. (1953). A study of *Balantidium coli* Stein 1863 in relation to cytology and behavior in culture. J. Morph., 93, 3, 405-442.
8. Beers, C. D. (1946). *Tillina magna*: micronuclear number, encystment and vitality in diverse clones; capabilities of amiconucleate races. Biol. Bull., 91, 256-271.
9. Bensen, W. (1908). Die Darmprotozoen des Menschen. Arch. für Schiffs- und Tropenhygiene, 20.
10. Braun und Seifert. (1925). Die tierischen Parasiten des Menschen. Kabitsch, Leipzig.
11. Bütschli, Oscar (1876). Studien über die ersten Entwicklungsvorgänge der Eizelle, der Zellteilung und die Conjugation der Infusorien. Abh. Senckenberg. naturforsch. Ges. Frankfurt a. M., 10, 1-250.
12. ——— (1887). Infusoria. Bronns Klass. u. Ordn. d. Tierreiches.
13. Casagrandi, O. und Barbagallo, P. (1896). *Balantidium coli* s. *Paramecium coli* Malmsten-Loven, 1857. Catania: Monaco e Mollica.
14. Cheissin, E. M. and Ovchinnikova, L. P. (1964). A photometric study of DNA content in macronuclei and micronuclei of different species of *Paramecium*. Acta Protozoologica, 2, 19-29, 225-236.
15. Cheissin, E. M., Ovchinnikova, L. P. and Kudriavtsev, B. N. (1964). A photometric study of DNA content in macronuclei and micronuclei of different strains of *Paramecium caudatum*. Acta Protozoologica, 2, (19-29), 237-45.
16. Cheissin, E. M. and E. M. Pick-Levontin. (1946). Introduction of various lines of *Balantidium coli* from man and pig into the intestine of a new host (the rat). Zool. Zh., 25, 219-224.
17. Corliss, John (1961). The ciliated Protozoa. 1-310, New York-Oxford-London-Paris.
18. Cuhna, A. Da Marques, J. Muniz (1930). Do phenomeno de endomixis em cliados do genero *Balantidium*. Observações sobre o enkystamento desses ciliados e descrição de uma nova especie parasita do

Macacus rhesus. Mem. Inst. Oswaldo Cruz, 23, 5, 189-235.

19. ——— (1937). Conjugação e endomixis em ciliados do genero *Balantidium* Mem. Inst. Oswaldo Cruz, 32, 1, 75-93.

20. Dawson, J. A. (1919). An experimental study of an amiconucleate *Oxytricha*. 1. Study of the normal animal, with an account of cannibalism. J. exp. Zool., 29, 473-514.

21. De Terra, N. (1960). A study of nucleo-cytoplasmic interactions during cell division in *Stentor coeruleus*. Exp. Cell. Res. 21, 41-48.

22. Dobrzanska-Kaczanowska, Janina (1963). Comparaison de la morphogenèse des Ciliés *Chilodonella uncinata* Ehrb., *Allospiraerium paraconveva* sp. n. et *Heliochona scheuteni*. Stein. Acta Protozoologica, 1, 32, 353-394.

23. Dobell, C. and O'Connor, F. W. (1921). The intestinal protozoa of man. London.

24. Doflein, F. (1916). Lehrbuch der Protozoenkunde. 4th ed., 1-1214, G. Fischer, Jena.

25. Doflein, F. und Reichenow, E. (1949/1953). Lehrbuch der Protozoenkunde. 6 Aufl. Jena.

26. Dogiel, V. (1930). Die prospektive Potenz der Syncaryonderivate und der Konjugation von *Paraisotricha* erläutert. Arch. Protistenk., 70, 497-516.

27. Ehret, C. F. and Powers, E. L. (1954). On the structure and development of the macronucleus in *Paramecia bursaria* Focke. J. Protozool. 1. (Suppl).

28. ——— (1955). Macronuclear and nuclear development in *Paramecium bursaria*. Cell. Res., 9, 2, 241-257.

29. Enriques, P. (1912). Il dualismo nucleare negli Infusori e il suo significato morfologico e funzionale. 2 Abth. Die Nahrung und die Struktur des Macronucleus. Arch. Protistenk., 26, 420-434, 1912.

30. Fauré-Fremiet, E. (1953). L'hypothèse de la sénescence et les cycles de réorganisation nucléaire chez les ciliés Rev. suisse Zool., 1, 60, 426-438.

31. ——— (1954). Réorganisation du type endomixique chez les Loxodidae et chez les *Centrophorella*. J. Protozool., 1, 20-27.

32. ——— (1955). La position systématique du genre *Balantidium* J. Protozool., 2, 54-58.

33. ——— (1957). Le macronucléus hétéromère de quelques ciliés. J. Protozool., 1, 7-17.

34. ——— (1959). La famille des Nassulidae (Ciliata gymnostomatida) et le genre *Nassulopsis* n. gen. C.R. Acad. Sci., Paris, 249, 1929-1933.

35. Glaessner, K. (1907). Ein Fall von *Balantidium coli*. Dtsch. med. Wschr., 1846.

36. ——— (1907). Demonstration über *Balantidium coli*. Wien. klin. Wschr., 20, 750.

37. Geitler, L. (1941). Das Wachstum des Zellkerns in tierischen und pflanzlichen Geweben. Ergeb. Biol. 18, 54.

38. ——— (1953). Endomitose und endomitotische Polyploidisierung. Protozoologia, 6, 1-89.

39. Golikova, M. N. (1963). Morphological and cytochemical study of the life cycle of *Nyctotherus cordiformis* Stein. Acta Protozool., I, 31-42.
40. Golikova, M. N. (1965). Der Aufbau des Kernsapparates und die Verteilung der Nukleinsäuren und Proteine bei *Nyctotherus cordiformis* Stein. Archiv Protistenk., 108, 191-216.
41. Grell, Karl G. (1950). Der Kerndualismus der Ciliaten und Suktorien. Die Naturwissenschaften 37, 15, 347-356.
42. ——— (1952). Der Stand unserer Kenntnisse über den Bau der Protistenkerne. Vehr. Deutsch. Zool. Ges. Freiburg, 212-251.
43. ——— (1953). Die Struktur des Makronucleus von *Tokoprya* Arch. Protistenk. 98, 466-468.
44. ——— (1962). Morphologie und Fortpflanzung der Protozoen. Fortschritte der Zoologie, 14, 1-85.
45. Gruber, August (1886). Sexuelle Fortpflanzung und Konjugation. Humboldt., 7.
46. Gupta, H. C. Sen. and H. N. Ray (1955). A cytochemical study of *Balantidium coli* Malmsten, 1857. Proc. zool. Soc., 8 (2), 103-110. Calcutta.
47. Guttes E., Guttes S. (1960). Incorporation of tritium-labeled thymidine into the macronucleus of *Stentor coeruleus* Exp. Cell. Res. 19, 626-628.
48. Hartmann, M. und Schilling C. (1917). Die pathogenen Protozoen. Julius Springer. Berlin.
49. Hegner, Robert. (1934). Specificity in the genus *Balantidium* based on size and shape of body and macronucleus, with descriptions of six new species. Am. J. Hyg., 19, 38-67.
50. Hertwig, R. (1889). Über die Konjugation der Infusorien. Abh. bayr. Akad. Wiss., 17, 150-233.
51. ——— (1907). Über den Chromidialapparat und den Dualismus der Kernsubstanzen. Sitz. Ber. Ges. Morph. Physiol. 1-22, München.
52. Hsiung, I. (1938). Biometrische Untersuchungen an *Balantidium* des Schweines in der Kultur. Zeitschr. f. Parasit. 10, 108-131.
53. Inaba, F. (1960). The fine structure of the nuclei of *Spirostomum ambiguum* seen by electron microscope, Biol. J. Nara Women's Univ., 10, 26-29.
54. Ivanič, Momčilo (1928). Über die mit den Parthenogenetischen Reorganisationsprozessen des Kernapparates verbundenen Vermehrungscysten von *Chilodon uncinatus* Ehrbg. Arch. Protistenk., 61, 293-348.
55. ——— (1931). Über die mit der Encystierung verbundene Entstehung der kleinkernlosen Stämme, nebst einem Beitrag zur Entstehung des Grosskernlosen Stämme bei *Stylonychia pustulata* Ehrb. Arch. Protistenk., 74, 429-448.
56. ——— (1934a.) Über die Ruhestadienbildung und die damit im Kernapparate verbundenen Veränderungen bei *Lionotus cygnus* (O.F.M.) (*Amphileptus anser* Ehrbg.) Zool. Anz., 108, 1/2, 17-22.
57. ——— (1934b). Zur Kritik der Doppelkernigkeitstheorie bei Infusorien. Zool. Anzeiger, 105, 1/2, 44-53, 1934.

58. Jameson, A. Pringle. (1927). The behavior of *Balantidium coli* Malm. in cultures. Parasitology, 5, 19, 411-419.

59. Jurand, A., I. Gibson and G. H. Beale (1962). The action of ribonuclease on living Paramecia. Exp. Cell. Res., 26, 598-600.

60. Kaneda, M. (1960). The structure and reorganisation of the macronucleus during the binary fission of *Chlamydomon pedarius*. Japan. J. Zool. 12, 477-491.

61. Kimball, R. F. (1942). The nature and inheritance of mating types in *Euplotes patella*. Genetics, 27, 296-285.

62. Kimball, R. F. and Prescott, D. M. (1962). Desoxyribonucleic acid synthesis and distribution during growth and amitosis of the macronucleus of *Euplotes*. J. Protozool., 9, 88-92.

63. Kimball, R. F. Vogt-Köhne, L. and Casperson, T. O. (1960). Quantitative cytochemical studies on *Paramecium aurelia*. 3. Dry weight and ultra-violet absorption of isolated macronuclei during various stages of the interdivision interval. Exp. Cell. Res., 20, 368-377.

64. Klimenko, W. (1903). Beitrag zur Pathologie des *Balantidium coli*. Beitr. path. Anat., 33, 281-301.

65. Klitzke, M. (1916). Ein Beitrag zur Kernentwicklung bei den Ciliaten. Arch. Anat., 36, 215-239.

66. Krascheninnikow Serhij (1936). Sposterezhennya nad budowoyu yadrowo aparata *Chilodonella syprini* ta *Blepharisma* sp. (Ukrainian text; Russian and English summary). Trudy institutu zoolohii ta biolohii Vseukr. Akad. Nauk Ukr. R.S.R., 10, 177-200, Kyjiv.

67. Krascheninnikow S. (1965). Cytochemical study of *Balantidium coli*. Progress in Protozoology. The Second International Conference of Protozoology, 232-233, 1965. Amsterdam, New York, London, Milan, Tokyo, Buenos Aires.

68. Krascheninnikow Serhij and D. H. Wenrich (1958). Some observations on the Morphology and Division of *Balantidium coli* and *Balantidium caviae* (?) J. Protozool., 5 (3), 196-202.

69. Kudo, Richard R. Protozoology. Fifth edition. Charles C. Thomas Publisher. Springfield, Illinois, 1966.

70. Landis, E. M. (1920). An amiconucleate race of *Paramecium caudatum* Amer. Natur., 54, 453-457.

71. Leukart, Rudolf (1879-1886). Die Parasiten des Menschen und die von Ihnen Herrührenden Krankheiten, 1, 1, zweite Auflage. C.F. Winter'sche Verlagshandlung. 1-xxxI, 1-VIII, 1-1000, Leipzig und Heidelberg.

72. Malmsten, P. H. (1957). Infusorien als Intestinaltiere beim Menschen. Virchow's Arch. f. pathol. Anat., 12, 302-309.

73. Maupas, E. (1889). La rajeunissement karyogamique chez len ciliés. Arch. Zool. exp. gén. (ser. 2), 7, 149-517.

74. Mavrodiadi, N. (1913). K voprosu ob yadernom apparate infusorii. Warsh. Univ. Izvestiya.

75. Mayer, M. (1924). Exotische Krankheiten. Berlin.

76. Metz and Westphall (1956). The structure of the *Tetrahymena* macronucleus as revealed by the electron microscope, *Anat. Rec.*, 125, 564-565.

77. Mitrofanov, P. I. (1903). O stroyenii, razvitiu i sposobe deistviya trikhotsist u parametsii. Warsaw.

78. Mitter, J. (1891). Beitrag zur Kenntniss des *Balantidium coli*. Inaug.-Diss. Kiel.

79. Mosler and Peiper. (1894). Tierische Parasiten. In: Nothnagel, Spez. Path. u. Ther. Wien: Holder.

80. Mugge, E. (1957). Die Konjugation von *Vorticella campanula* Ehrb. *Arch. Protistenk.*, 102, 165-208.

81. Nanny, D. L. (1956). Caryonidal inheritance and nuclear differentiation. *Amer. Natur.* 90, 291-307.

82. Nelson, E. Clifford (1934). Observations and experiments on conjugation of the *Balantidium* from the chimpanzee. *Am. J. Hyg.*, 20, 11, 106-134.

83. Nissenbaum, G. (1953). A combined method for the rapid fixation and adhesion of ciliates and flagellates. *Science*, 113, 31-32.

84. Noirot-Timothee, C. (1960). Etude d'une famille des Ciliés: les "Ophryoscolecidae." Structures and ultrastructures. *Ann. Sci. Nat., Zool.*

85. Ortmann, K. (1891). Über *Balantidium coli*. Berlin, klin. Wschr., 814-816.

86. Pérez-Silva, Julio and Alonso Pilar. (1966). Demonstration of polytene schromosomes in the macronuclear anlage of oxytrichous ciliates. *Arch. Protistenk.*, 109, 65-70.

87. Piekarski, G. (1941). Endomitose beim Grosskern der Ziliaten. Versuch einer Synthese. *Biol. Zbl.*, 61, 416-426.

88. Pick-Levontin, E. M. and Cheissin, E. M. (1940). The variability of infusoria *Balantidium coli* from man and pig. *Zool. Zhurn.*, 19, 1, 99-118.

89. Poljansky, G. I. and I. B. Raikov. (1960). The role of the ploidy in the evolution of Protozoa. *Tsitologiya*, 2, 509-518. (Russian).

90. ——— (1961). Nature et origine du dualisme nucléaire chez les infusoires ciliés. *Bull. Soc. Zool. France*, 86, 4, 402-411.

91. Prandtl, H. (1906). Die Konjugation von *Didinium nasutum* O.F.M. *Arch. Protistenk.*, 7, 229-258.

92. Prescott, D. (1960). Relation between cell growth and cell division. 4. The synthesis of DNA, RNA and Protein from division in *Tetrahymena*. *Exper. Cell. Res.* 19, 228-238.

93. Provazek, S. V. (1913). Zur Kenntniss der Balantidionitis *Arch. Schiffs- u. Tropenhyg. Beih.* 6, 369-390.

94. ——— (1920). Infusoria ciliata. *Hdb. path. Protozoen*, 4 Afl., 842-874.

95. Raikov, I. B. (1955). Division and reorganisation processes in the ciliate *Trachelocerca phoenicopterus*. (Holotricha) *Cohn. Zoologicheskii zhurnal*, 34, 4, 747-759.

96. ——— (1957). Reorganisation of the nuclear apparatus in ciliates and the question about origin of their nuclear dualism (Russian). *Vestnik Leningradskogo Universiteta*, 15, 21–36.
97. ——— (1956). Nucleic acids in the ciliate *Trachelocerca phoenicopterus* (Holotricha). *Doklady Akademii Nauk SSSR*, 110, 2, 289–292.
98. ——— (1958a). Cytochemical peculiarities of the nuclear apparatus of the holotrichous ciliates *Loxodes striatus* and *L. magnus*. *Doklady Akademii Nauk SSSR*, 121, 6, 1079.
99. ——— (1958b). Der Formwechsel des Kernapparates einiger niedriger Ciliaten. 1. Die Gattung *Trachelocerca*. *Arch. Protistenk.*, 103, $\frac{1}{2}$, 129–192.
100. ——— (1959a). Der Formwechsel des Kernapparates einiger niederer Ciliaten. 2. Die Gattung *Loxodes*. *Arch. Protistenk.*, 104, 1–42.
101. ——— (1959b). The cytological and cytochemical peculiarities of the nuclear apparatus and fission in the holotrichous ciliate *Geleia nigriceps*. *Tsitologiya*, 1, 566–579.
102. ——— (1962). Der Kernapparat von *Nassula ornata* Ehrb. (Ciliata Holotricha). Zur Frage über den Chromosomenaufbau des Makronucleus. *Arch. Protistenk.*, 105, 463–488.
103. ——— (1963a). The nuclear apparatus of *Remanella multinucleata* Kahl (Ciliata, Holotricha). *Acta Biologica Academiae Scientiarum Hungaricae*, 14, 3, 221–229.
104. ——— (1963b). The nuclear apparatus and division in *Remanella granulosa* Kahl and *R. rugosa* Kahl (Holotricha, Gymnostomatida). In: *Morphology and Physiology of Protozoa. Symposium 3 Inst. Cytology Ak. N. SSSR, Moscow-Leningrad*, 20–34.
105. ——— (1963c). The nuclear apparatus of the holotrichous ciliates *Geleia orbis* Fauré-Fremiet and *G. murmanica* Raikov. *Acta Protozoologica*, 1, 4, 21–30.
106. ——— (1963d). On the origin of nuclear dualism in ciliates. *Progress in Protozoology. Publishing House of the Czechoslovak Academy Sci.*, 253–257. Prague.
107. ——— (1964). DNA content of the nuclei and nature of macronuclear chromatin strand of the ciliate *Nassulopsis elegans* (Ehrb.). *Acta Protozoologica*, 2, 34, 339–355.
108. ——— (1966). Elektronenmikroskopische Untersuchung des Kernapparates von *Nassula ornata* Ehrb. (Ciliata, Holotricha). *Arch. Protistenk.*, 109, 71–98.
109. Raikov, I. B., Cheissin, E. M. and Buze, E. G. (1963). A photometric study of DNA content of the macro- and micronucleus in *Paramecium caudatum* and *Loxodes magnus*. *Acta Protozool.*, 1, 285–300.
110. Randall, J. T. and Jackson, F. S. (1958). Fine structure and function in *Stentor polymorphus*. *J. Biophys. Biochem. Cytol.*, 4, 807–830.
111. Roth, L. E. (1957). An electron microscope study of the cytology of the protozoan *Euplotes patella*. *J. Biophys. Biochem. Cytol.*, 3, 985–1000.
112. ——— (1960). Observations on division stages in the protozoan

- hypotrich *Stylonychia*. Proc. 4 Int. Conf. Elect. Micr. 241-244, 1958, Berlin.
113. Ruge, R. (1926). Die Balantidien-Ruhr. In: Mense, Hdb. Tropenkrankh. 3 Aufl., 4, 258-264.
114. Ruthmann, A. (1963). Die Struktur des Chromatins und die Verteilung der Ribonucleinsäure im Makronucleus von *Loxophyllum meleagris*. Arch. Protistenk., 106, 422-436.
115. ——— (1964). Autoradiographische und mikrophotometrische Untersuchungen zur DNS-Synthese im Makronucleus von *Bursaria truncatella*. Arch. Protistenk., 107, 117-130.
116. Ruthmann, A. und K. Heckmann (1961). Formwechsel und Struktur des Makronucleus von *Bursaria truncatella*. Arch. Protistenk., 105, 3, 313-340.
117. Sato, H. (1963). The structural changes of the macronuclear constituents during the division cycle in ciliated Protozoa. 16 Intern. Congr. Zool., 2, 294, Washington.
118. Schwartz, Victor (1956). Nukleolenformwechsel und Zyklen der Ribonucleinsäure in der vegetativen Entwicklung von *Paramecium bursaria*. Biol. Zentrbl. 75, ½, 1-16.
119. ——— (1957). Über den Formwechsel achromatischer Substanz in der Teilung des makronucleus von *Paramecium bursaria*. Biol. Zentrabl., 76, 1, 1-23.
120. ——— (1958). Chromosomen im Makronucleus von *Paramecium bursaria*. Biol. Zentralbl., 77, 3, 347-364.
121. Seshachar, B. R. (1960). Effect of centrifugation on the macronucleus of *Spirostomum* and *Blepharisma*. Nature, 186, 333-334.
122. ——— (1963a). Experiments with the ciliate macronucleus. Progress in Protozoology. Proceedings of the First Intern. Congress on Protozoology held in Prague, 275-277, Prague.
123. ——— (1963b). The chromosomes in the ciliate macronucleus. 16 Intern. Congr. Zool. Proceedings 2, 295, Washington.
124. ——— (1964). Observations on the Fine Structure of the Nuclear Apparatus of *Blepharisma intermedium* Bhandary (Ciliata: Spirotricha). J. Protozool., 11, 3, 402-409.
125. ——— (1965). The fine structure of the nuclear apparatus and the chromosomes of *Spirostomum ambiguum* Ehrbg. Acta Protozoologica 3, 31, 337-343.
126. Seshachar, B. R. and Dass, C. (1954). The macronucleus of *Epistylis articulata* From. during conjugation: a photometric study. Physiol. Zool., 27, 280-286.
127. Solowjew, N. S. (1901). Das *Balantidium coli* als Erreger chronischer Durchfälle. Zbl. Bakter. 29, 821-830, 849-860.
128. Sonneborn, T. M. (1942). Inheritance in ciliate Protozoa. Amer. Natur. 76, 46-62.
129. ——— (1946). Inert nuclei: inactivity of micronuclear genes in variety of 4 of *Paramecium aurelia*. Genetics, 31, 231.

130. ——— (1947). Recent advances in the genetics of *Parmecium* and *Euplotes*. Adv. Genet., 1, 263–358.

131. Stein, G. A. (1964). The life cycle of *Trichodina cottidarum* Dogiel, 1948. (Peritricha, Urceolariidae); a photometric study of DNA changes in macronucleus. Acta Protozoologica, 2, 30–38, 357–365.

132. Swarczewny, B. (1912). Chromidial structures in Protozoa in connection with the question of the dualism of the nuclear substance. Kiev, (Russian).

133. Vivier, E. et André, J. (1961). Existence d'inclusions d'ultrasturcture fibrillaire dans le macronucléus de certaines souches de *Paramecium caudatus* Ehrb. C. R. Acad. Sci., 252, 1848–1850.

134. Walker, P.M.B. and Mitchison, I.M. (1957). DNA synthesis in two ciliates. Exp. Cell. Res. 13, 167–170.

135. Wenrich, D. (1959). Some nuclear developmental processes in Balantidia (Ciliata). J. Protozool., 6. (Suppl., 14).

136. Wising, P.J. (1871). Till kannedomen on *Balantidium coli* hos maniskan. Nordiskt Med. Ark., 3, 1–30, 1 pl.

137. Woodruff, L. L. (1921). The present status of the long continued pedigree culture of *Paramecium aurelia*. Biol. Bull. Marine Biol. Lab., Woods Hole, Mass., 33, 51.

138. Woodruff, L. L. and H. Spencer (1922). Studien on *Spathidium spatula*. 1. The structure and behavior of *Spathidium* with special reference to the capture and ingestion of its prey. J. exp. Zool., 35, 189–205.

The significance of conjugation. J. exp. Zool., 39, 133–196, 1924

139. ——— (1924). Studies on *Spathidium spatula*. 2. The significance of conjugation. J. exp. Zool., 39, 133–196, 1924.

140. Zakhvatkin, A. A. (1949). Sravnitel'naya embriologiya nizshikh bezpozvonochnykh, 1–395, Moskva.

PLATES I-VII

Phase contrast micrographs of *Balantidium coli* from preparations made by Feulgen's technique.

Leitz obj. 40 \times ; eyepiece 10 \times . Enlarged 3 \times ; Total magnification \times 1200. White particles in the cytoplasm are starch granules.

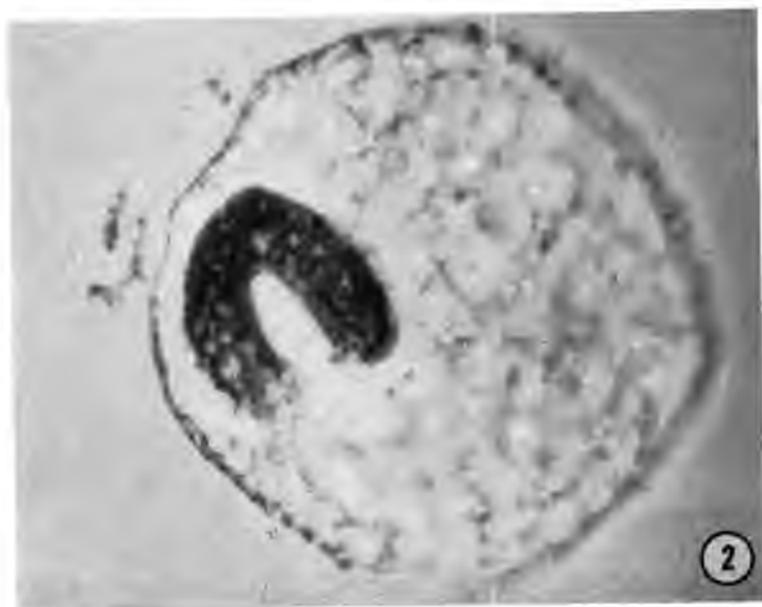


PLATE I.

1. Trophozoite, whole mount.
2. Trophozoite, 5- μ section through the macronucleus.

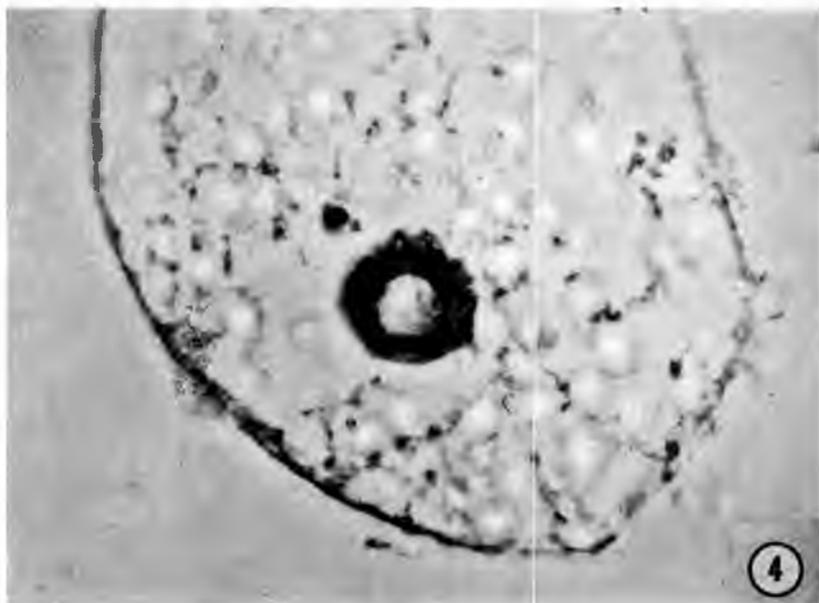


PLATE II.

3. Trophozoite, 2- μ cross-oblique section through the macronucleus.
4. Trophozoite, 2- μ cross section through the macronucleus.



PLATE III.

5. Trophozoite, 2- μ cross-oblique section through the macronucleus.

6. Trophozoite, 2- μ cross-oblique section through the macronucleus.

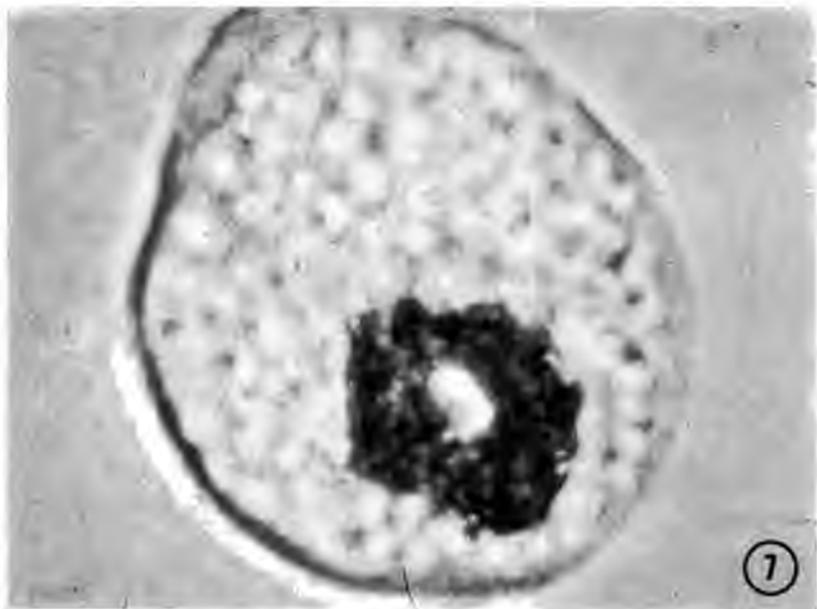


PLATE IV.

7. Trophozoite, 2- μ cross section through the macronucleus.
8. Trophozoite, 2- μ cross section through the macronucleus.
9. Trophozoite, 5- μ oblique-longitudinal section through the macronucleus.

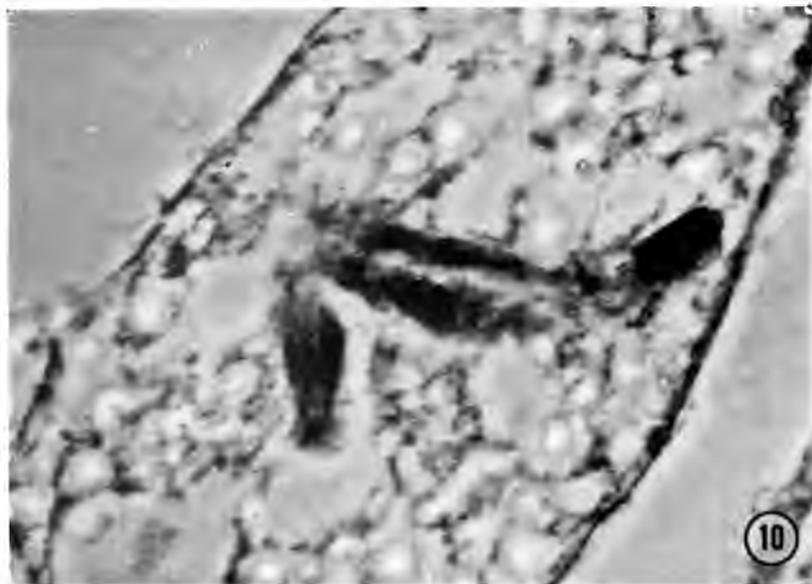


PLATE V.

10. Trophozoite, 5- μ longitudinal section through the middle part of the macronucleus.

11-12. Preconjugants, whole mounts.

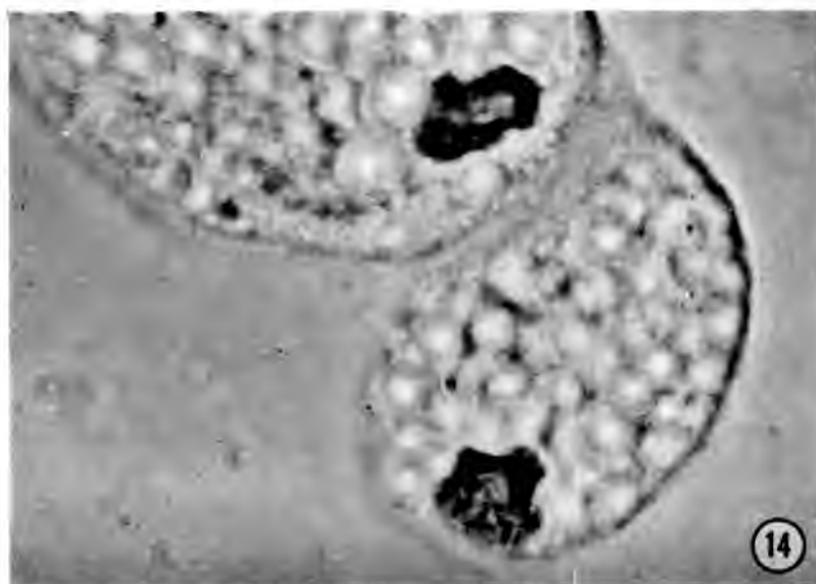


PLATE VI.

13-14. Conjugants, whole mounts.



PLATE VII.

15. Exconjugant with two macronuclear anlagen. Whole mount.

Major Results of Research Work by V. F. Savitsky in Genetics and Breeding of Sugarbeets in the United States

HELEN SAVITSKY (Salinas, Cal.)

Dr. V. F. Savitsky¹ began research work in sugarbeets at the Bila Tserkva Breeding Station, near Kiev, in 1925, and continued it at the Research Institute for Sugar Industry in Kiev, Ukraine (1930-41).

The investigations conducted during this period chiefly concerned the following studies: variability in sugarbeets (1, 2, 3, 4);² sucrose inheritance (5, 6, 7); individual characters and chromosome aberrations (6, 13, 14, 15, 16); breeding methods (17, 18, 19, 20, 21, 22, 23); and ontogenetic development (6, 24, 25).

Professor V. F. Savitsky arrived in the United States in 1947. He was employed by the Beet Sugar Development Foundation and appointed as a collaborator of the U.S. Department of Agriculture. These organizations entrusted him with the development of monogerm beets.

The discovery of monogerm sugarbeet races and the study of their characteristics and mode of inheritance led, in a few years, to the development of monogerm strains which are equivalent to multigerm beets in agronomic qualities. From a little, self-fertile mutant which was resistant to bolting and susceptible to diseases, many new self-fertile, male-sterile, and self-sterile lines and populations were obtained. These new monogerm strains had normal vigor and percent sucrose and were sufficiently resistant to curly top and leaf spot. The size of monogerm fruits was also improved. In 1955, Utah-Idaho Sugar Company propagated some of these strains and used them in their commercial seed productions. In succeeding years the monogerm lines were released to all sugar companies for development of commercial monogerm varieties. In 1963, 90% of the sugarbeet acreage in the United States was planted to monogerm seed. Obviously, 100% of the acreage is now planted with monogerm seed.

¹ Deceased April 16, 1965.

² Numbers in parentheses refer to literature cited.

Genetic stocks of monogerm sugarbeets were also sent to different European and Asiatic countries, on the basis of which they started breeding work with monogerm sugarbeets.

A study and breeding of monogerm sugarbeets

The results of research and breeding work which, in the United States, led to substitution of the monogerm sugarbeet varieties for the multigerm varieties, are briefly reported here.

A search for monogerm plants was conducted in the states of Utah, California, and Oregon in 1948. Detection of monogerm beets was difficult due to their late bolting tendency. Therefore, they were usually eliminated in seed production by either natural or artificial selection. Professor Savitsky examined many beet plantings and succeeded in finding 5 monogerm plants in the variety Michigan Hybrid-18 in Oregon. Only 2 of these plants, SLC 101 and SLC 107, could be considered true monogerm plants. The 5 plants were self-fertilizing.

The original monogerm beet represented a mutation which reduced the number of flowers to one per inflorescence unit. The monogerm line SLC 101 obtained from the original monogerm plant was not vigorous (as the self-fertile inbreds usually are, was susceptible to curly top and leaf spot, and could not be used directly for commercial purposes. To develop new monogerm varieties, the monogerm character of this line had to be combined with many other valuable characters, such as disease resistance, good vigor, earlier bolting tendency, etc., which were present in the multigerm sugarbeet varieties. Immediately after the monogerm beet was found, Professor Savitsky started an intensive study and breeding for development of monogerm varieties.

Inheritance of monogerm character and inheritance in the number of flowers per flower cluster. A genetic study of monogerm and multigerm character showed that in all F_1 hybrids between SLC 101 and different multigerm varieties, multigerm character was dominant, but the dominance was not complete. The number of flowers per flower cluster was less in F_1 hybrids than in the multigerm parent. Difference in the number of flowers per cluster in F_1 hybrids depended upon the number of flowers per cluster in the multigerm parent. The F_2 hybrids segregated in agreement with monofactorial scheme. Segregation in b_1 ($F_1 \times$ SLC 101) was close to 1:1 monohybrid ratio. Four hundred

F₃ plants (in 19 lines) derived from selfed monogerm F₂ hybrids were all monogerm. The monogerm character is caused by 1 recessive gene in homozygote (mm). Some homozygous monogerm plants produced few double germ fruits on the basal part of the main floral axis, or on the basal part of lateral branches. The appearance of double germ fruits was caused by the genes which modify the action of the basic gene *m*. (27).

The inheritance of different number of flowers per flower cluster was studied in the hybrids between monogerm line SLC 101 and multigerm beets having different number of flowers per cluster (132 flowers per 100 clusters, 170 flowers per 100 clusters, and 200–250 per 100 clusters).

All F₂ hybrids segregated according to the monohybrid pattern. The number of flowers in the flower clusters of the multigerm parent did not affect the percentage of the recessive monogerm plants recovered. Monogerm plants obtained from the most diverse F₂ hybrids never segregated for the multigerm type. They retained monogerm character when crossed with each other. The selfed multigerm F₂ plant produced F₃ lines some of which were consistently multigerm. Monogerm plants were never recovered from crosses of "few-germed" plants to multigerm beets.

F₂ hybrids between monogerm and "few-germed" beets do not segregate for highly multigerm types. F₂ hybrids between monogerm and ordinary multigerm beets do not segregate for "few-germed" beets. When "few-germed" races were crossed with each other neither monogerm, nor highly multigerm plants were obtained.

The type of segregation in the hybrids studied could not be explained on the basis of the multiple factor hypothesis. It is more probable that genetic differences in any of these hybrids were caused by different genes from the same allele. There are also a number of genes which modify the effect of the basic gene *m*. The modifying genes are not allelic to the M-m allele (28).

A study of the weight of fruits and germs in the monogerm and multigerm beets.

The weight of fruits and germs in monogerm beets is of practical importance in agriculture, as one of the factors determining the quality of seed (29, 30).

In multigerm sugarbeet races the weight (or size) of fruits and

germs is determined by joint action of genes responsible for the weight (size) of individual fruits within a seedball and of genes controlling the number of flowers in the flower cluster. This complicated the study of the variability and selection for the weight of fruits in multigerms races. Genetic and environment variability is different for these 2 characters. The environment coefficient of correlation equals 0.42, while the genetic coefficient of correlation equals 0.24. The weight of 1000 germs in the seedballs varied from 4.75 gms. to 6.65 gms.

The weight of 1000 fruits in the original monogerm line SLC 101 was 5–8 gms. In F_2 and F_3 monogerm lines obtained from hybridization of SLC 101 with different multigerms varieties, the weight of 1000 fruits varies from 2 to 25 gms. The large fruits contain very large germs.

Fruits and germs were investigated in 70 F_3 and F_4 monogerm inbreds obtained from hybridization of SLC 101 with different American and European multigerms varieties. Increase in weight of seedballs in multigerms beets is caused mainly by the increase in the number of flowers in the flower clusters, but the weight of germs decreases as the number of flowers in the cluster increases.

In monogerm beets, the weight of the germs increased in proportion to the size of fruits. The multigerms plants which segregated in F_2 generation developed heavier fruits than the monogerm segregates in the same hybrid, but the average weight of germs in monogerm plants was higher than in multigerms plants.

In monogerm beets the variability of weight of germs is determined by the variability of weight of fruits only. The coefficient of correlation between weight of fruit and germ equals 0.949. Weight per 1000 germs is small and varied in large monogerm fruits from 2.9 to 4.70 gms.

In spite of different origin, the monogerm diploid populations obtained from backcrosses to different multigerms varieties did not differ in the weight of monogerm fruits. But when inbreeding, or selection for the weight of fruits was started within a population, the monogerm lines with different weight of fruits were obtained. The breeding for the weight of monogerm fruits was based on the genes that were present in the multigerms populations. The stored genetic variability of the multigerms varieties furnishes the genes which produce variations in weight of fruits in monogerm beets. Selection for the increased weight of fruits and germs was not attempted in multigerms popula-

tions. No multigerm sugarbeet populations of proven high quality of fruits are available which can be used as a recurrent parent for improvement of monogerm fruits. The improvement of monogerm fruits is possible only by hybridization with multigerm races and following selection within monogerm populations.

A study of male-sterility in monogerm beets. Many hybrid populations obtained after repeated backcrosses of multigerm hermaphrodite plants to monogerm lines segregated for male-sterile plants. The appearance of male-sterile plants was caused by the presence of cytoplasmic male-sterile races in the multigerm hermaphroditic populations. Process of substitution of dominant genes which recover pollen fertility by the genes causing abortion of pollen occurs faster in monogerm plants because of linkage between non-recovery genes and the gene *m*. The multigerm populations contain different types of male-sterile races which react differently to nuclear genes which do not restore pollen fertility (31).

Inheritance of chlorophyll deficiencies. Results of genetic analysis were given for the following chlorophyll deficiencies: albino (gene w_1), Aurea (gene *Au*), lutescens (gene *lu*), virescence (3 genes vi_1, vi_2, vi_3), and chlorina (genes ch_1 and ch_2). The inherited differences in the quantity of chlorophyll are determined by the nuclear inheritance, that is, by the action of polygenes. The differences in the color of the leaves and in the quantity of chlorophyll are independent of cytoplasmic inheritance. The inheritable variability of production of chlorophyll is caused by the following factors: a./variability of cyto-genes, b./major chromo-genes (the genes of chlorophyll deficiencies); c./system of nuclear polygenes which cause the polymorphism of chlorophyll quantity in ordinary beet populations (12).

Methods of combining the monogerm character with desirable characters of multigerm populations. The contemporary sugarbeet breeding is using different methods based on utilization of different breeding stocks. The self-sterile populations, self-fertile inbred lines, and their male-sterile equivalents are involved in breeding process. To enable the application of all methods used for the selection of multigerm beets, it was necessary to develop from the original monogerm self-fertile inbred line SLC 101, self-sterile monogerm populations, new monogerm inbreds and male-sterile equivalents for them.

The schemes of methods for the breeding of monogerm varieties, obtaining of elite and commercial seed, were published (32, 33).

The most important method in breeding for monogerm varieties is the backcross method. By using this method and selection for monogerm plants, the monogerm character was combined with the valuable characters of the multigerm populations. Two backcrosses were often sufficient with multigerm varieties which were resistant to diseases, or high in percent sucrose, or in tonnage, to produce monogerm populations with desirable characters. If male-sterility is used in the breeding program, 2 types of hybrids (by using backcrosses) should be obtained: 1/ hybrids with multigerm male-sterile races and 2/ hybrids with multigerm inbreds which do not recover pollen fertility in male-sterile races.

Selection for curly top and leaf spot resistance in monogerm beets.

Study and selection of F_1 , F_2 , and b_1 hybrids were conducted in cooperation with A. M. Murphy in a special nursery at Jerome, Idaho. The self-sterile curly top resistant multigerm varieties were pollinated by the monogerm inbred line SLC 101. In F_1 hybrids the resistance to curly top was increased as compared with the susceptible parent. Both curly top resistant and susceptible plants appeared in F_2 hybrids. In 43 F_2 hybrid populations the most resistant 1,212 plants were selected. Of these 1,212 hybrids only 69 plants were monogerm. By repeated backcrosses of these plants to curly top resistant varieties, the new monogerm curly top resistant lines were obtained.

Resistance to curly top seemed to be a dominant character under a mild curly top exposure. The experiments led to the conclusion that many curly top susceptible varieties carry genes which cause partial resistance. The development of highly resistant beets requires synthesis of such genes in one genotype. The resistance to curly top is caused by more than 2 pair of genes. Among F_2 lines, selected for resistance to curly top, an obvious deficiency of monogerm plants was observed. The same hybrids segregated for normal percentage (25%) of monogerm plants when they were not eliminated by curly top. Thus, one of the allele which controls the resistance to curly top is in the same linkage group with $M-m$ allele (34, 45).

By hybridization of monogerm line SLC 101 with leaf spot resistant multigerm variety US 201, a highly leaf spot resistant monogerm line, which surpassed in the grade of resistance parental multigerm variety, was obtained.

A study and selection for high sucrose and tonnage in the hybrids with monogerm beets. Monogerm inbred lines obtained from hybrids between SLC 101 and multigerm varieties with different percent sucrose, showed a considerable range of sucrose percentage. In most cases, hybrids derived from crosses with high sugar type varieties were higher in sugar. Each self-fertile F_2 monogerm segregate with high percent of sucrose is a potential inbred line. These high sugar monogerm inbreds represent a source of improvement of sugar percentages. The easiest way to obtain good combinations of yield and sugar consists of making subsequent backcrosses to varieties distinct in sugar and tonnage.

New monogerm lines obtained from hybridization of the original monogerm line SLC 101 to multigerm curly top resistant varieties are often good in sugar. This advantage in sugar content may have been caused by the linkage of *M-m* allelomorph with one allele determining the percent sucrose in beets, but not by a general pleiotropic action of the gene *m* itself. Therefore, in those hybrids where gene *m* is linked with a gene causing high sugar percentage, the monogerm segregates may exceed the multigerm segregates in sugar content (36, 37).

Many new inbreds and populations of monogerm beets were obtained as a result of this work. The new monogerm strains showed a large diversity in sizes and type of fruits, in bolting tendency, in percent sucrose and in tonnage. Many lines and populations had a sufficient grade of curly top resistance to be planted in field conditions.

A study of polyploidy in sugarbeets

From 1958 Professor Savitsky worked mainly in polyploidy of sugarbeets. The basic tetraploid stocks of self-sterile populations, self-fertile inbreds, and male-sterile equivalents of monogerm and multigerm beets were obtained by Helen Savitsky after colchicine treatment. Professor Savitsky produced many new tetraploid populations and lines by hybridization of these original tetraploids. He studied the influence of different mating systems on weight of root and sucrose in tetraploids, the tetraploid inheritance of monogerm character and male-sterility, the resistance to curly top and to leaf spot, the combining ability in polyploids.

Tetraploid inheritance of monogerm character and male-sterility in sugarbeets. Monogerm character (gene *m*) is inherited in tetraploids

on the basis of chromatid assortment at the intermediate frequency of double reduction (parameter). At duplex segregation the value of parameter α for the gene m is 0.05098 and the expected segregation ratios for F_2 and b_1 hybrids are 28.65:1 and 3.44:1, respectively. For the gene a (Mendelian male-sterility) the value of parameter α is 0.082282; the expected segregation ratios for F_2 and b_1 hybrids are 25.30:1 and 4.15:1. For the gene *rest* (cytoplasmic-genetic male-sterility) the value of parameter α is 0.08677 and the expected segregation ratios are 25.14:1 and 4.11:1 for F_2 and b_1 hybrids, respectively. Only the nulliplex homozygotes are the true monogerm and male-sterile types. The monofactorial hypothesis is the most suitable model for tetraploid inheritance of these genes (38, 39).

Variability of the weight of fruits and germs in monogerm tetraploid strains. Individual self-fertile and self-sterile plants differed in the weight of fruits. In 18 tetraploid monogerm self-sterile lines, weight of fruits fluctuated from 20 to 31 gms. In tetraploid monogerm in-breds, weight of fruits fluctuated from 7 to 21 gms. In the diploid male-sterile line SLC 91 fruits weighed 8 gms., and in the tetraploid male-sterile line SLC 91—18 gms. Thus, genetic variability was recorded for the weight of fruits in tetraploid self-fertile and self-sterile monogerm lines.

Weight of fruits and weight of germs are highly correlated in monogerm beets. The average weight of fruits of the diploid monogerm strains was 13.12 ± 0.78 gms., and in tetraploid monogerm strains 21.43 ± 0.64 gms. or an increase of 63.3%. Difference between weight of fruits in diploids and tetraploids is significant.

Average weight of 1000 germs in the diploid monogerm strains was 2.109 ± 0.073 gms., and in tetraploid monogerm strains 3.631 ± 0.78 gms., or an increase of 67.4%. This difference is statistically significant. Thus, tetraploid monogerm beets developed larger fruits and larger germs.

Of 3 factors—environment, genetic variability, and ploidy level, ploidy level is the most significant and universal. The effectiveness of breeding for larger fruits in the monogerm populations may be increased if the tetraploid monogerm strain, or the hybrids between tetraploid monogerm and tetraploid multigerm beets are used (40).

Influence of different mating systems on percent sucrose and weight in tetraploids. Professor Savitsky indicated new possibilities in breeding opened by polyploids. Aberration in weight of root and in percent

sucrose are provided not only by doubling of chromosomes, but by the shift from diploid to tetraploid heredity. Percent sucrose and weight may increase, decrease, or remain at the same level when diploids are turned into tetraploids. Tetraploids are more resistant to inbreeding than diploids. This is manifested by lower reduction of their vigor and yield. Therefore, sib-progenies show the same yield as the open pollinated F_2 populations. Effectiveness of sibbing as a method of inbreeding, appeared to be very low in tetraploids.

In panmictic tetraploid populations percent heterozygotes rapidly increases and percent of homozygotes reduces during the first generations until the equilibrium between homo- and heterozygotes is reached. Therefore, fresh tetraploid population propagated by several generations may increase vigor and productiveness. Hybridization causes extensive changes in percent sucrose and in weight of root in F_2 and backcross hybrids. Many tetraploid populations with increased yield and percent sucrose were obtained by using backcrosses and application of different mating systems. Heterosis observed in F_1 tetraploid hybrids could be maintained at a much higher level in the F_2 generation than in diploids. Because of tetraploid type of segregation, the heterogenic characters remained more stable in tetraploids in the later generations.

Percent sucrose in F_1 , F_2 , and in backcross hybrids modified in the same way as in diploids. F_1 and F_2 hybrids between 2 tetraploids showed an intermediate sucrose. In b_1 generation percent sucrose increased, or decreased in correspondence to percent sucrose in the recurrent parent. Hybridization of F_1 hybrids with high in sucrose recurrent parent significantly increased percent sucrose in b_1 hybrids.

Monogerm triploid hybrids with the same gene pool as the diploid and tetraploid hybrids showed the highest root weight and high percent sucrose. Genetic control of heterosis in triploids is determined by heterozygotes. This constitutes the main difference in gene relation in triploid genetics (41).

A study and selection for curly top and leaf spot resistance in tetraploids. Tetraploid sugarbeet strains were studied for resistance to curly top in comparison with diploids. Almost all tetraploid populations, F_1 , F_2 , and backcross hybrids were considerably less injured than the corresponding diploids, and these differences were statistically significant. The observed curly top resistance in F_1 tetraploid hybrids was also significantly higher than the mean resistance of both parents.

Thus, the phenomenon of dominance of curly top resistance is established also for tetraploid F_1 hybrids.

In both diploids and tetraploids, when F_1 was crossed to a low resistant parent (MS SLC 91), resistance in backcross generation was reduced, but in diploids b_1 generation did not differ in resistance from the low in resistance parent, whereas in the tetraploid backcross hybrids the resistance significantly exceeded that of the low resistant parent. Numerous tetraploid self-sterile and self-fertile strains (F_3 and F_4 hybrids) were studied under severe curly top exposure. Many tetraploid hybrids in later generations exceeded in resistance their resistant parent.

Study of curly top resistance showed that the polygene complex, responsible for inheritance of curly top resistance, involves additive reactions of genes and also the effect of dominance and non-allelic gene reactions.

A simultaneous study and selection for curly top and leaf spot resistance led to combining of resistance to both diseases in the same population. Test and selection for leaf spot resistance was conducted in cooperation with J.O. Gaskill (at Fort Collins, Colorado). Leaf spot resistant and curly top resistant lines were selected from the tetraploid population of US 401 which is leaf spot resistant, but susceptible to curly top. The tetraploid lines-offsprings of the plants selected for leaf spot resistance showed mostly the same grade of resistance to curly top as the tetraploid population US 401. At the same time, the majority of these lines exceeded the resistance to curly top of the diploid variety US 401. The best combination of resistance to both diseases did not result from selection within population. The combination of the highest degree of resistance to leaf spot and to curly top was more often obtained in the tetraploid lines selected in F_2 generation of hybrids derived from hybridization of 2 different tetraploid populations, every one of which was resistant to only one disease. The F_1 hybrids of such crosses carried 2 genomes of leaf spot resistant parent and 2 genomes of curly top resistant parent, and combined resistance to both diseases on the level at which this resistance was present in both parents used in hybridization. Such a combination of disease resistance was maintained in some tetraploid hybrids by propagation during 4 generations. A method of combining 2 desirable genomes from different tetraploids in one tetraploid population is an important breeding method for association of polygenic

traits, if the desirable grade of both traits is manifested in F_1 hybrid generation.

A study of combining ability in polyploids. F_1 monogerm diploid, triploid, and tetraploid hybrids, as well as tetraploid populations, were tested during a 3 year period for yield and sucrose percent. Diploid, triploid, and tetraploid hybrids were always obtained from hybridization of the same strains at different ploidy levels (for example: $2n\ 91\ MS \times 2n\ 401 = 2n$ hybrid, $2n\ 91\ MS \times 4n\ 401 = 3n$ hybrid, $4n\ 91\ Ms \times 4n\ 401 = 4n$ hybrid). The trials led to the following conclusions: 1. Many tetraploid populations were more vigorous and showed higher yield than their diploid ancestors. F_1 hybrids between tetraploid multigerm populations were distinguished by good vigor. Some F_1 tetraploid hybrids exceeded in yield and percent sucrose the open pollinated diploid varieties and their F_1 hybrids. 2. The majority of diploid self-fertile monogerm lines did not exhibit good combining ability when crossed with each other. F_1 hybrids between 2 inbreds had the lowest tonnage. 3. Triploid hybrids were often higher in yield than the diploid hybrids obtained from crosses with the same pollinator. Triploid hybrids exceeded all other strains in gross sugar. 4. By using tetraploid pollinators high in sucrose or with high degree of disease resistance, it is possible to produce triploid hybrids with high percent sucrose and disease resistance.

A study of polyploidy disclosed several unknown unique characteristics of sugar beet tetraploids: the tetraploid inheritance of monogerm character and male sterility, a higher resistance of tetraploids to curly top infection, a higher resistance to deleterious effects of inbreeding, a higher stability of the heterosis effect than in diploids. The proposed method of genome combination showed the way of combining of 2 desirable characters (in the given case resistance to 2 diseases) in one tetraploid population. The test of combining ability in polyploids indicated that exclusively productive hybrids may be obtained by using tetraploid strains in breeding work. Many tetraploid monogerm and multigerm strains produced by V. F. Savitsky and Helen Savitsky were released to the American sugar companies.

Polyploidy widely used in European sugarbeet industry is not yet applied in America for production of commercial varieties. It is likely that with the removal of some difficulties in production of polyploid varieties, these varieties will be more widely used in the United States. Breeding of diploid beets for more than 100 years had ex-

hausted many possibilities for variety improvement. New ideas and new methods should be applied if we are to advance in the breeding of sugarbeets. Recent discoveries with polyploid beets offer additional prospects in breeding work.

LITERATURE CITED

1. Savitsky, V. F. 1928. Variability of the assimilation surface in *Beta vulgaris* L. Trudy Belotserkovskoi Selektionnoi Stantsii (Transactions of the Bila Tserkva Breeding Station), 4 (1).
2. Savitsky, V. F. 1930. A study of variability in *Beta vulgaris* L. Sbornik Sortovodno-Semennogo Upravleniya (Collection of the Plant Breeding and Seed Growing Administration), 9, Kiev.
3. Savitsky, V. F. 1930. A study of variability of the characters of seed beets. Trudy Belotserkovskoi Selektionnoi Stantsii (Transactions of the Bila Tserkva Breeding Station), 5 (1).
4. Savitsky, V. F. 1932. Materialy k rasovomu izucheniyu sakharnoi svekly (Materials to the study of sugarbeet races), Kiev, Ukrainian Research Institute for Breeding.
5. Savitsky, V. F. 1939. Two types of sugar inheritance in *Beta vulgaris* L. Osnovnye Vyvody Nauchno-Issledovatel'skikh Rabot VNIS'a za 1937 god (The Main Results of the Research Work Performed by the All-Union Institute for Sugar Industry).
5. Savitsky, V. F. 1940. Genetics of sugarbeets. Sveklovodstvo. Biologiya, genetika i selektsiya sakharnoi svekly (Sugarbeet Production. Biology, Genetics, and Breeding of Sugarbeet), 1:552-683, Kiev.
7. Savitsky, V. F. 1936. Genetics of sugarbeets. Breeding and seed production in sugarbeets. Issledovatel'skie Raboty Akademii Sel'sko-Khozyaystvennykh Nauk imeni Lenina (Research Works of the Lenin Academy of Agricultural Sciences), 27 (2).
8. Savitsky, V. F. and A. S. Okanenکو. 1935. A genetic study of biochemical characters in *Beta vulgaris* L. Nauchnye Zapiski po Sakharnoi Promyshlennosti VNIS (Proceedings of the All-Union Research Institute for Sugar Industry), 4:35-42.
9. Savitsky, V. F. and A. S. Okanenکو. 1938. A study of sugar content and biochemical characters in the hybrids between sugar beets, fodder beets, red table beets, and Swiss Chard. Nauchnye Zapiski po Sakharnoi Promyshlennosti VNIS (Proceedings of the All-Union Research Institute for Sugar Industry), 1-2: 153-172.
10. Savitsky, V. F. and A. S. Okanenکو. 1940. The distribution of sucrose in the roots of different sugarbeet varieties. Doklady Akademii Sel'sko-Khozyaystvennykh Nauk imeni Lenina (Reports of the Lenin Academy of Agricultural Sciences), 12.
11. Savitsky, V. F. and A. S. Okanenکو. 1940. A study of the biotypes of sugarbeets and their hybrids differing in the rate of growth of roots and

leaves. Nauchnye Zapiski po Sakharnoi Promyshlennosti VNIS (Proceedings of the All-Union Research Institute for Sugar Industry), 12: 13-86.

12. Savitsky, V. F. 1957. Inheritance of chlorophyll deficiencies in *Beta vulgaris* L. Journal Amer. Soc. Sugar Beet Technol. 9 (4): 321-334.

13. Savitsky, V. F. 1934. Linkage between the color of root and foliage and weight of root and percent sucrose in *Beta vulgaris* L. Nauchnye Zapiski po Sakharnoi Promyshlennosti VNIS (Proceedings of the All-Union Research Institute for Sugar Industry), 1:1-17.

14. Savitsky, H. and V. F. Savitsky. 1930. Hetero- and polyploids in *Beta vulgaris* L. Trudy Ukrainskogo Geneticheskogo S'ezda v Odesse (Proceedings of the Ukrainian Genetic Congress in Odessa), 99-105.

15. Savitsky, V. F. 1937. Experiments with X-ray irradiation in sugarbeets. Nauchnye Zapiski po Sakharnoi Promyshlennosti VNIS (Proceedings of the All-Union Research Institute for Sugar Industry).

16. Savitsky, V. F. and M. F. Kovalevsky. 1937. X-ray irradiation in sugarbeets. Osnovnye Vyvody Nauchno-Issledovatel'skikh Rabot VNIS za 1936 god (The Main Results of the Research Work Performed by the All-Union Institute for Sugar Industry).

17. Savitsky, V. F. 1930. Hybrid method in sugarbeet breeding. Trudy VNIS (Works of the All-Union Research Institute for Sugar Industry), 30: 57-78.

18. Savitsky, V. F. 1936. The use of the diallel method and hybrid methods in sugarbeet breeding. Nauchnye Zapiski po Sakharnoi Promyshlennosti VNIS (Proceedings of the All-Union Research Institute for Sugar Industry).

19. Savitsky, V. F. 1940. Hybrid method, diallel- and backcross method in sugarbeet breeding. Sveklovodstvo. Biologiya, genetika i selektsiya sakharnoi svekly (Sugarbeet Production. Biology, Genetics, and Breeding of Sugarbeet), 1:741-751.

20. Savitsky, V. F. 1934. The backcross method in sugarbeets. Nauchnye Zapiski po Sakharnoi Promyshlennosti VNIS (Proceedings of the All-Union Research Institute for Sugar Industry), 9 (2):1-17.

21. Savitsky, V. F. 1927. The methods of field experiments. The technique of calculations. Trudy Belotserkovskoi Seleksionnoi Stantsii (Transactions of the Bila Tserkva Breeding Station), 2 (3):57-80.

22. Savitsky, V. F. 1926. Calculation of data of refractometer readings for sugarbeet breeding. Trudy Belotserkovskoi Seleksionnoi Stantsii (Transactions of the Bila Tserkva Breeding Station), 1 (1):96-114.

23. Savitsky, V. F. 1930. Materials for the evaluation of breeding methods based on polarimeter reading. Trudy Belotserkovskoi Seleksionnoi Stantsii (Transactions of the Bila Tserkva Breeding Station): 104-117.

24. Savitsky, V. F. 1935. A study of variability of the weight of root in beets. Nauchnye Zapiski po Sakharnoi Promyshlennosti VNIS (Proceedings of the All-Union Research Institute for Sugar Industry), 2:3-53.

25. Savitsky, V. F. 1950. A method of selection for earliness of root development in sugarbeets. Proceed. Amer. Sugar Beet Technol. 6:195-197.

26. Savitsky, V. F. 1952. Monogerm sugarbeets in the United States. Proceed. Amer. Sugar Beet Technol., 7:156-159.

27. Savitsky, V. F. 1952. A genetic study of monogerm and multigerm character in beets. *Proceed. Amer. Soc. Sugar Beet Technol.* 7:131-238.
28. Savitsky, V. E. 1954. Inheritance of the number of flowers in flower clusters of *Beta vulgaris* L. *Proceed. Amer. Soc. Sugar Beet Technol.* 8 (2):3-15.
29. Savitsky, V. F. 1954. Relation between weight of fruit and weight of germ in mono- and multigerm beets. *Proceed. Amer. Soc. Sugar Beet Technol.* 8 (2):16-22.
30. Savitsky, V. F., G. K. Rush, and C. P. Parish. 1954. Inter-relation between weight of seed and fruit and utilitarian characters in inbred lines and hybrids of monogerm sugarbeets. *Proceed. Amer. Soc. Sugar Beet Technol.* 8 (2):399-403.
31. Savitsky, V. F. 1958. Difference in interrelation cytoplas-genes in different male-sterile races of *Beta vulgaris* L. X Intern. Congress of Genetics, Montreal, Canada. *Proceed.* 2: 251.
32. Savitsky, V. F. 1952. Methods and results of breeding work with monogerm beets. *Proceed. Amer. Soc. Sugar Beet Technol.* 7:331-338.
33. Savitsky, V. F. 1958. Genetische Studien und Züchtungsmethoden bei monogermen Rüben. *Zeitschr. Für Pflanzenzüchtung.* 4:1-36.
34. Murphy, A. M. and V. F. Savitsky. 1952. Breeding for resistance to curly top in hybrids with monogerm beets. *Proceed. Amer. Soc. Sugar Beet Technol.* 7:387-389.
35. Savitsky, V. F. and A. M. Murphy. 1954. Study of inheritance to curly top resistance in hybrids between mono- and multigerm beets. *Proceed. Amer. Soc. Sugar Beet Technol.* 8 (2) 34-44.
36. Ryser, K. G. and V. F. Savitsky. 1952. Sugar percent in progenies derived from hybrids to monogerm sugarbeets. *Proceed. Amer. Soc. Sugar Beet Technol.* 7:354-359.
37. Savitsky, V. F. and G. K. Ryser. Sugar content in mono- and multigerm sugarbeet hybrids, carrying the gene *m* isolated from Michigan Hybrid-18 and the gene *m* from variety US 22/3. *Proceed. Amer. Soc. Sugar Beet Technol.* 8 (2):23-28.
38. Savitsky, V. F. 1963. Tetraploid inheritance of monogerm character and male-sterility in *Beta vulgaris* L. XI Internat. Congress of Genetics. *Proceed.* 1:215, The Hague, Netherlands.
39. Savitsky, V. F. and H. Savitsky. Tetraploid inheritance of monogerm character and male-sterility in *Beta vulgaris* L. (in press).
40. Savitsky, V. F. and H. Savitsky. 1965. Weight of fruits in self-fertile, male-sterile, and self-sterile diploid and tetraploid monogerm *Beta vulgaris* L. *Journ. Amer. Soc. Sugar Beet Technol.* 13 (7): 621-644.
41. Savitsky, V. F. 1962. Sucrose and weight of root in tetraploid monogerm and multigerm sugarbeet populations under different mating systems. *Journ. Amer. Soc. Sugar Beet Technol.* 11 (8): 676-711.

Psalterium Winnipegense Cyrillicum

A Note on a Hitherto Unknown Manuscript in Canada

JAROSLAV B. RUDNYC'KYJ
University of Manitoba

The Slavic Collection at the University of Manitoba Library, founded in 1949, has some valuable rare books along with other library materials in Ukrainian, Russian, Polish, and other Slavic languages. The finest and the oldest relic is the *Hodoryshche Pomianykyk* of 1484. It is the most ancient dated Cyrillic manuscript on the American continent, and has a great importance for the history of the Ukrainian language and onomastics. Other items include a fragment from the handwritten *Īevanheliĭe vid Matzia knyha rodstva Isusa* (The Holy Gospel of Jesus Christ according to Matthew) from the 15th century; a fragment from the Gospel *Prychta pro bludnoho syna* (Parable of the Prodigal Son), an ancient print from the 17th century (1616) with fine illustrations; a copy of the Map of the Ukraine by Beauplan from the 18th century; *Annales Poloniae* by W. Kochowski, edited in Cracow in 1683 (456 pages); *Roczne dzieje kościelne* (Annual Records of the Church) from 1198 to 1698 by I. Dwiatkewicz, edited in Kalisz in 1695 (413 pages); *Kleynoty stołecznego miasta Krakowa, albo kościoły* (Treasures of the Capital City of Cracow, or Churches) by P. H. Pryszcz, edited in Cracow in 1745 (226 pages).

A most recent acquisition to this Collection is an unknown hitherto Cyrillic manuscript of a Psalm book which was purchased in 1965 from an antiquarian in Montreal, Canada. It was described in the Catalogue as follows:

“Russian (West Russian) Psaltyr of the XV-XVI c. Slavonic ms. of occidental Russian style, probably from the Pskov region. Contains 114 psalms (from the 17th to the 130th). First few pages, as well as few last ones browned. Bound in wood boards covered with leather but front cover broken and lost.

Dating following Sobolevskii's *Manual of Paleography* . . . Exceptional rarity.”

A preliminary examination of the text revealed that in principle the chronology of it was assumed properly, although it is not excluded that the age of this manuscript might be ascribed to a later period, namely, to the seventeenth century.

As far as the localization of its origin, the manuscript reveals some dialectal features which would restrict its provenance to southern Byelorussia or northern Ukraine (Pollissya region as indicated by a weak trend to *akanye*, strong softening of the hush-sibilants, and others).

The way of writing indicates variety of styles which is explainable either by an assumption that it was written by more than one person (perhaps by a group of monks in a monastery) or by the same individual in different times and at various occasions. Yet the first assumption is more probable.

In every respect it is an enigmatic manuscript deserving a closer study, the more so that its sixteen initial leaves, and the final ones are missing. A thorough analysis of its paleographic, linguistic, and other features is now being made by Omelian Kalicinsky of the University of Manitoba, and his findings will be made available to Slavists in due time (perhaps in 1969).

Provisionally, the manuscript has been named *Psalterium Winnipegense Cyrillicum* and is preserved in the Elizabeth Dafoe Library, Rare Books Division in Winnipeg.

In the following two leaves of this manuscript: 35b and 36a are reproduced.

Some Aspects of the "Sonata Pathetique"

by Mykola Kulish

LUBA M. DYKY
(Harvard University)

I

The drama *Sonata Pathetique* (Patetychna Sonata) by Mykola Kulish is the third and last of a trilogy of plays by that playwright with a national Ukrainian background¹. It was written as a rebuttal to the Russian play *The Days of the Turbins* (Dni Turbinykh) by V. Bulgakov, as well as to Stalin's declared preference for this play because of its decidedly anti-Ukrainian elements.² The play was written in 1930 and submitted that same year to be produced on the stage in leading Ukrainian theatres, but permission for this was denied by the Chief Repertory Committee. Kulish, insulted and extremely hurt, asked the well-known translator of Ukrainian works into Russian, P. Zinkevych, to translate the drama for him. Zinkevych not only translated the play into Russian but did all in his power to have it produced in the best Russian theatres. Soon the play reached the well-known Russian regisseur and director of the Kamernyi Theatre in Moscow, A. V. Tairov (1885-1950), who was so impressed by the originality and unusual artistic power of the drama, that he telegraphed Kulish immediately for permission to produce it. Kulish agreed to have the play staged, but doubted that Tairov could obtain permission from the censor to produce the play. In spite of his doubts, however, the Repertory Committee of the R.S.F.S.R. readily gave its permission.

It is believed that all this occurred in July and August of 1931, since in the September 8, 1931 issue of *Pravda*, the Russian drama critic O. Litovskii, in an article titled, "K nachalu teatral'nogo sezona," includes Kulish's *Sonata* in the repertory for the coming sea-

¹ "Komentar do 'Patetychnoyi Sonaty'" in M. Kulish, *Tvory* (New York: Viln'a Akademiya Nauk u S.Sh.A., 1959), pp. 453-458.

² Jurii Lavrynenko, *Rozstrilyane Vidrodzhennya* (München: Instytut Literacki, 1959), p. 650.

son. It should be noted that until then the works of Ukrainian authors had rarely been produced on the stages of Moscow and Leningrad.

The premiere performance of the *Sonata Pathetique* of Kulish took place at the Kamernyi Theatre on December 19, 1931 with the talented and acclaimed actress and outstanding star of the Kamernyi Theatre, Alisa Koonen, in the leading role of Maryna. (The drama was simultaneously staged in the Pushkin Theatre in Leningrad, as well as in other Russian theatres.) From its first performance, the play was warmly received by the Moscow public, and for two months almost every performance was sold out. Obviously afraid to speak out on a play dealing with such an "unsafe" subject, and with characters profoundly drawn and convincingly portrayed but intrinsically opposed to Soviet plans, the critics kept a patient silence. Then on February 9, 1932, the silence was broken, only not by regular drama and art critics, but by a team of official publicists from *Pravda*. Accordingly, the February 9, 1932 issue of *Pravda* carried its first critical editorial about the play under the title "Neudavshayasya patetika." The article was signed by five of the best known publicists of the Moscow Press, B. Reznikov, G. Vasil'kovskii, I. Erukhimovich, Il. Bogovoi and A. Nazarov. The very appearance of the review created a sensation in itself.

Despite its negative title, and despite the statement at the beginning of the article that "the musical pathos of the proletarian revolution did not succeed (ne vyshla) in the drama," the review was, on the whole, free of Soviet propaganda.

The critics objected to too great a role going to "I"-Il'ko, whose importance in the drama was, in their opinion, unmerited. They maintained that "his passions and petty bourgeoisie experiences are overrated." They also raised their voices against a "strange and undeservedly sympathetic portrayal of Stupay-Stupanenko," which touches upon the totality of the solution of the national problem in the play, yet in the same article the critics also wrote that the "author set forth the problem of national liberation correctly."

In general the central character, Maryna, was given a good review, although there were a few allusions likening her to a "blue and yellow" Phaedra, or "a Ukrainian Marina Mnishek." "Maryna is—in the theatre and it seems in literature—a completely new type of class enemy... Maryna knows no sentimentality. She has a tremendous

will and knows firmly what she wants . . . She commands and they become subject uncompromisingly and this does not seem unnatural. In the portrayal of Maryna there are no false notes." Summing up their evaluation of the play, the five official publicists agreed that the drama was one of the finest of the season.

The review, official as it was, "legalized the right" of regular drama critics to speak out about Kulish's *Sonata Pathetique*. Many professional as well as political journals now dared to carry a number of reviews and comments on the play. Of these the most noteworthy was that of the well-known Russian playwright Vsevolod Vishnevskii (1900-1951).

Then unexpectedly, on March 4, 1932, there appeared another review in *Pravda*, "O Pateticheskoi sonate Kulisha," signed simply "a Ukrainian" (Ukrainets). It was obvious that the author knew the Ukrainian question very well, just as it was clear that he presented official Party-line propaganda in the article. Not only did he attack the drama in the most bitter terms as a fascist and nationalistic work, but also, in an exceedingly angry tone, scolded all those who had voiced favorable opinions of the play, and rapped the five official critics for their joint review in *Pravda*. In his conclusion he added such a general and generalizing note:

"On the whole, basically and chiefly, this play is not ours . . . this play reflects the 'philosophy,' foreign to the proletariat and the Soviet government, of the Ukrainian national movement."

Accordingly, the editors of *Pravda* added their own note to the review: "In printing this article, the editors fully agree with the evaluation which the author of the article gives the *Sonata Pathetique* of Kulish."

The article by "a Ukrainian" was the death knell of the *Sonata Pathetique*. The play, which ran for three months to packed audiences, was soon thereafter forbidden to be performed on the Russian stage, although it was still performed six times that March after "a Ukrainian's" review had already appeared in *Pravda*. On March 24, 1932 the *Sonata Pathetique* was presented for the last time in both Moscow and Leningrad.

The review by "a Ukrainian" also extinguished any hope of having the play produced in Ukrainian. The Ukrainian Repertory Committee had begun, after the favorable review in *Pravda* by the five pub-

licists, to reconsider its injunction against having the play produced in Ukrainian. In fact, the Committee had recently made it seem that soon the drama could be given in Ukrainian, but it became silent on the issue as soon as the review by "a Ukrainian" appeared.

The identity of "a Ukrainian" remains a mystery to this day. Two suppositions have been made as to his identity. The first and most widespread is that "a Ukrainian" was none other than L. Kaganovich (b. 1893), who, while Party Secretary in Ukraine (1925-1929), led a fierce struggle against such forces representative of Ukrainian national culture and political life as Shumskyism, Khvylovyism, and especially VAPLITE, in which the name of Kulish was always prominent. In the infamous and restricted group of Stalin's right-hand men Kaganovich was considered the best informed on Ukrainian affairs. The second supposition is that the article came from the Central Committee of the Communist Party of Ukraine and that it was conceived and ordered to be written by A. Khvylya (1898-1938) or Ivan Kulyk (1877-1941), both prominent Ukrainian Communist writers and representatives of that faction of the Party which favored centralization and Russification of Ukraine, and which was responsible for forbidding the production of the play in Ukrainian and on the Ukrainian stage. To this day there is no concrete, conclusive evidence for one or the other supposition to be proved true.³

While Kulish's *Sonata Pathetique* was being presented in Moscow 1931-1932 the well-known German playwright and author Friedrich Wolf (1888-1953), saw it a number of times. He was so highly impressed by the drama that he became personally acquainted with the author and obtained from him an authorized copy of the play, which he then proceeded to translate into German under the title: *Die Beethoven-sonate. Ein Stück aus der Ukraine 1917, von Mikola Kulisch. Deutsche Bühnenfassung von Friedrich Wolf.*

Wolf held the *Sonata Pathetique* of Kulish in very high esteem. In the introduction to his translation of the play he wrote: "The form of the *Sonata Pathetique*—of this—the greatest Ukrainian dramatic poetry up to the present time—in world literature can be compared only with the dramatic poems *Faust* and *Peer Gynt*."

It is not known whether Wolf's translation of the play was pub-

³ "Kommentar do Patetychnoyi Sonaty" in M. Kulish, *Tvory, op. cit.*, pp. 453-456.

lished in Germany or not. In 1932, however, the publishing house of S. Fischer in Berlin obtained the right to distribute the play in photostat or typewritten form among the theatrical circles of Germany. In a completely unexplained way such a copy of Wolf's translation of the play found its way to the Library of Congress in Washington, where it was discovered in the early 1950's by Professor George Luc'kyi of Toronto University.⁴

It should be noted, however, that Wolf's translation of the *Sonata Pathetique* is not a literal translation of the authorized copy he was fortunate enough to obtain from Kulish himself, (nor even of that redaction of it, in which it was presented at the Kamernyi Theatre, for it had been "modified" to a certain extent for presentation in the Russian theatre). In Wolf's translation and redaction there are some omissions, particularly of problems concerning some specific Ukrainian questions. There is also an attempt to preserve the propaganda aspects of the play, which are rather few and of secondary importance to the play, although they may not have appeared so at the time to a person so decidedly leftist-oriented as Wolf.⁵

The original Ukrainian text of Kulish's *Sonata Pathetique* was not destroyed after the author's arrest. It was miraculously preserved, together with a number of his other works, which comprise a limited, but priceless archive of Kulish's creativity. The playwright's family escaped to L'viv in the western part of Ukraine in 1943, bringing with them the original manuscripts. In L'viv, the Ukrainian poet and critic Svyatoslav Hordyns'kyi became the first to publish *Sonata Pathetique* in its original Ukrainian, from the text Kulish had given to the Berezil Theatre and not from the text translated into Russian and used by Tairov. Thus *Sonata Pathetique* came out in Ukrainian thirteen years after it had been first written in that language. As L'viv was then under German occupation, Hordyns'kyi had to make minor changes and abbreviations in the *Sonata Pathetique* in order to satisfy the Nazi censors, without whose permission the play could have never been published. The modifications, according to Hordyns'kyi, were made at the expense of the two scenes and dialogues inserted into the Russian version at the insistence of Bolshevik censors. One of the scenes omitted, for instance, was that of a Bolshevik meeting under the leadership of "a friend from Petrograd."

⁴ *Ibid.*, p. 456-457.

⁵ *Ibid.*

Kulish, unfortunately, never saw his greatest drama either produced or published in Ukrainian. Outside of the Soviet Union the drama has been produced in L'viv in 1943 (before Western Ukraine was incorporated into the Soviet Union in 1944), as well as in Western Europe, the United States, and Canada, wherever there were Ukrainian settlements.⁶

Nothing was heard about Kulish in the Ukrainian SSR from 1934 until 1957. His name was never mentioned in the press. In 1957, however, a slow rehabilitation of Kulish began with the publication of the drama *97*. An article on the drama appeared in the journal *Zhovten'*.⁷ The process of rehabilitation has been progressing slowly since.

In 1958 Kulish's letters to his friends and fellow writer, Ivan Dni-provs'kyi, appeared in the journal *Prapor*.⁸

In 1960 M. Ostryk devoted a literary "portrait" to Kulish in *Literaturni portrety*.⁹ That same year a selection of Kulish's plays was published in *P'esy*,¹⁰ but without *Sonata Pathetique*.¹¹ Also in 1962 N. Kuzyakina published a monograph under the title "The Playwright Mykola Kulish."¹² Most recently in *Pys'mennyky Ukrayiny*¹³ three pages have been devoted to Kulish, including a selective list of publications of his works, as well as a longer list of articles on Kulish, and a brief biographical sketch—all again without even mention of the *Sonata Pathetique*.

The most curious fact in the story of Kulish's rehabilitation is that although *Sonata Pathetique* has not been published in Ukrainian or even mentioned in articles on Kulish appearing since 1957, it has been revived on the Ukrainian stage twice, for the first time in 1959 at the Theatre of the October Revolution in Odessa,¹⁴ and most re-

⁶ *Ibid.*

⁷ Stepan Pinchuk, "Zhovten' v ukrains'kii rad'ans'kii dramaturhiyi," *Zhovtien'* (November, 1957), pp. 123-125.

⁸ Mykola Kulish, "Lysty do I. Dni-provs'koho," *Prapor*, 8, (July, 1958), pp. 84-102.

⁹ Mykhajlo Ostryk, *Literaturportrety*, (Kiev: 1960).

¹⁰ Mykola Kulish, *P'esy* (Kiev: Derdhavne Vydavnytstvo Khudozhn'oyi Literatury, 1960).

¹¹ "Kulish, Mykola," *Ukrayins'ka Radyans'ka Entsyklopediya* (Kiev: 1962).

¹² Nataliya Kuzyakina, *Dramaturh Mykola Kulish* (Kiev: Radyans'kyi Pys'mennyk, 1962).

¹³ I. I. Cherkasyn and others, *Ukrains'ki Pys'mennyki*, 5 vols. (Kiev: Vylavnyts'vo Khudozhnoyi Literatury "Dnipro," 1965), vol. 4, pp. 825-827.

¹⁴ Mykhaylo Ostryk, "Shukannya porazky i peremohy," (Kiev:) *Literaturna Ukrayina*, April 5, 1966.

cently in the early spring of 1966 at the Ivan Franko Theatre in Kiev. The Kiev production which, according to the Soviet Ukrainian press, received good reviews,¹⁵ was dedicated to the fiftieth anniversary of the October Communist Congress held in Moscow in March of 1966.¹⁶

The questions raised by the "Sonata Pathetique" have not passed into the archives of history. They are as relevant today as they were during the Ukrainian Revolution in 1917-1920 or in 1930 when the drama was written.

The drama *Sonata Pathetique* (Patetychna Sonata) is probably the greatest and most accomplished work of the Ukrainian playwright, Mykola Kulish, and one of the most important works of Ukrainian dramatic literature in general. The play is structured on various levels: the national Ukrainian, dreaming of independence; the Ukrainian National Communist, striving for the reform of the human being before a social and national revolution can be accomplished, the Bolshevik Ukrainian, working for and waiting for world revolution of the "made in Russia" type; and the pro-Russian camp, whose younger generation longs for a constitutional regime to replace the absolute one, or languishes in its search of physical pleasures and material comfort, and whose older generation longs for a restoration of the old order. Each level represents one of the camps during the Ukrainian War for Independence in 1917-1920. The Ukrainian folk camp (in the sense of *narodnist'*) is represented by the old teacher Stupay-Stupanenko who is satirized as a likeable, sentimental patriot with the naive view that the Red Bolshevik flag is the same as the red banner of the Zaporozhian Cossacks. He is a thoroughly romantic character, a dreamer, not a "doer," impractical, gentle, sensitive and very likeable, a man who believes that to be Ukrainian is to wear the folk costumes and identify oneself with the humble peasant of the present and the proud Cossack of the past. It is his daughter Maryna, who, as a representative of the new generation, is conscious of its national destiny. She believes that when revolution will come, only those will win who are courageous enough

¹⁵ *Ibid.*

Also: Nataliya Kuzyakina, "Chuttya Muzychnoyi Tochnosti" (Kiev): *Robitnycha Hazeta*, March 24, 1966, and M. Tur "Patetychna Sonata," (Kiev): *Molod' Ukrayiny*, March 16, 1966.

¹⁶ Tur, *op. cit.*

to die for their convictions. Yet her generation is tragically lacking in tradition and experience. The Bolshevik camp has Luka, the Bolshevik agitator, Hamar, the professional revolutionary, who believes passionately, if blindly, in world revolution, and later Ovrarn, who above all else seeks vengeance for a personal injury sustained in the First World War, his wife Nast'a and Zin'ka, the prostitute. They are all members of the city proletariat. More than anything, they all want recognition as human beings from the new Ukrainian state, but not being able to get it, they turn against it.

In the pro-Russian camp are General Perotstkii and his two sons, Andre and Zhorzh. To General Perotstkii the very idea of an independent Ukraine is incredibly loathsome. With horror he recalls as one of his most bitter experiences the time when he was forced to share a cell in a Bolshevik prison with a monk who prayed in Ukrainian. His dream is to see the old regime restored. Andre, his older son, pays court to Maryna and outwardly shows fondness for Ukraine, yet covertly schemes for the old regime, but under a constitutional, and not an absolute order.

The action is so staged that the representatives of all three camps live on three different floors of the same building, each floor serving as a level of the play.

The structure of the *Sonata Pathetique* can be traced to the tradition of the Ukrainian *vertep* theatre in which various actions go on simultaneously on different parts of the stage.

The *vertep* was a puppet theatre, which flourished at the end of the 17th and during the 18th centuries, and in certain forms continued to exist, especially among the peasants, until the Second World War. It was associated with Christmas pageants and rituals. The *vertep* itself was a box-like structure two-and-one-half yards high and one-and-seven-eighths yards wide made of thin wooden boards and of cardboard. It consisted of two levels or floors. Only the religious aspects of the pageants were acted out on the upper floor—scenes with angels, the Magi, shepherds, etc. In the middle of the lower level or floor stood Herod's throne. On the side there was a bell, rung by the sexton. The floor was lined with fur, so that one could not see the crevices which were made to expand in all directions in order to allow the puppeteer to bring the puppets out and manipulate them on the stage. The puppets were strung with thin wire, which enabled the puppeteer to manipulate the puppets on stage. He himself was

hidden from view behind the back wall of the theatre. A choir also often took part from behind the stage, singing carols and spiritual songs and chanting prayers. Often, too, violin playing accompanied the singing and dancing of the puppets.¹⁷

It is not possible to determine with certainty where or when the vertep originated, but probably Western Ukraine witnessed the earliest development of the vertep theatre, and from a copy of the "Psalmody" for Christmas for the year 1783 published by Ivan Franko in the twentieth century, we know that the vertep was already very popular at the end of the seventeenth century in Ukraine. In this copy of the "Psalmody" a very long line of people in pairs, upon hearing of the birth of the Messiah, set out bearing gifts to visit Him.¹⁸ Thus we can see that, although originally only religious figures played a role in the vertep, gradually, puppets, representing all social classes and various nationalities, came to have their place in the vertep also.¹⁹ Indeed, eventually the vertep came to be clearly divided into two parts—the religious and the secular. In this division one can see the traces of the once popular academic "spectacles" or presentations, put on by members of the celebrated Kiev Academy. The spectacles consisted of two parts, a serious one and one in a lighter vein, known as the "intermedia."²⁰ So also in the later vertep theatre one part of the presentation, usually on the upper floor, was devoted to the religious spectacle. The Nativity pageant, and all the puppets which played a role in this part of the vertep presentation had a religious function, whether directly related to the Nativity or not. The other division of the vertep, the lower floor, was given over to a secular presentation of a folk and national character. The puppets in this part of the vertep represented various social classes, while the dramatic action was often satirical, with elements of folk dialect in the dialogue.²¹

The structure of the vertep, with the two basic divisions of action, may also be interpreted as a symbolical division of heaven (the up-

¹⁷ Mykhaylo Voznyak, *Istoriya Ukrayins'koyi Literatury*, (L'viv: Prosvita, 1924), vol. 3, part 2, pp. 250-257.

¹⁸ *Ibid.*, p. 256.

¹⁹ *Ibid.*

²⁰ V. Revuts'kyi, "Ukrayins'kyi vertep," *Entsyklopediya Ukrayinoznavstva* (München: Logos: Vydavnytstvo: "Molode Zhyttya," 1955), 1:232.

²¹ *Ibid.*

per level concerned with spiritual matters), and earth (the lower level concerned with earthly affairs).

Following the pattern of the vertep, Kulish so set the action of the *Sonata Pathetique* that it takes place on two different levels, (two floors with a balcony and a basement) of the same building from which the front wall on each floor has been removed to allow the audience to see what is going on. As already mentioned, the main action of the vertep was always concerned with the Christmas vigil. Kulish, as if to show the connection of his play with tradition and the vertep, and at the same time to emphasize the contrast in subject matter and theme, begins his drama during the Easter vigil.

Just as the physical construction of the stage setting for the *Sonata Pathetique* represents different levels of a home under one roof, so the dramatic action of the play is so structured as to represent different levels of action under one roof—of a single home in the physical sense, of Ukraine in a figurative symbolical sense. Each level of action is set on a different floor, or level of the building, each has its separate course of development, and yet all levels are interdependent and united in the whole of the dramatic action of the play.

Such an arrangement of staging was in itself an innovation. It did away with the conventional method of presenting various scenes of a play between pauses during which the scenery from the previous scene was removed, and that for the next act was set up. Kulish substituted for this a scheme according to which various scenes could be presented simultaneously thereby providing a more effective sense of cohesiveness and continuity, as well as speeding up the tempo of the play. The rapid succession of scenes provides a fast moving pace for the play and the shifting of scenery from one to another place of action helps to maintain the interest of the audience throughout. Every scene connects logically with the one before as well as the one after, although the action in the scene may have little directly to do with what went on previously or will go on thereafter.

The particular form of presenting his play that Kulish chose allowed him to keep a parallelism of action. Thus the use of the different levels of one home for various levels of action made it possible for him to keep the action of one scene parallel to that of another instead of changing from one action to another. Parallelism of action served for Kulish as a substitute for unity of action, one of the three basic elements of classical drama.

In addition to keeping action parallel, Kulish also kept time parallel, and (to a certain extent) place. Thus the action of one scene occurs parallel in time and place to that of another, and conversely the time and place in which the action of one scene takes place are presented parallel to the time and place of the action of another scene. Parallelism takes the place of unity of the three traditional elements of classical drama—action, time, and place. This fact links the drama with the traditions of the past and yet by the same token joins it with the present.

In the verstep theatre the action on each level runs a course of its own, but then returns to a basic unifying element—the puppeteer himself, or a puppet unifying the different levels, or the theme itself—usually events connected with the Nativity. Similarly the levels of action in the *Sonata Pathetique* run their own course, but return to the main unifying element—namely Il'ko Yuha and "I" in the same person.

Every action in Kulish's play, whether in monologue or dialogue, takes a course of its own and develops by itself away from all other action, weaving itself into the stream of the whole action, falling into the whole network of the play much as the divergent movements of a mighty sonata or the different levels of a verstep spectacle come together into one overwhelming unified whole.

The drama *Sonata Pathetique* as a whole has "monologue" frame. The narration is in the first person singular, a point which gives the play a strongly lyrical character. The lyricism is supported by the fact that the narrator, who has a dual role, is referred to by the first singular pronoun "I" throughout the play, and is called by name only by his best friend, Luka. The narrator is at the same time the most important character in the play. The narrator's duality of roles enables him to unite the divergent themes and actions and different characters in the play to "hold the play together," similarly as the verstep puppeteer manipulates the puppets and holds the verstep spectacle, at its different levels with the diverse variations in theme and variety of characters, together as a whole. Thus in the *Sonata Pathetique* "I," the narrator, tells of the events in which "Il'ko Yuha," the primary character of the play, takes an active part (yet both are the same person).

The narration, from the first person singular, is a form found often in prose, but rarely in drama. It serves to unite two roles in the same

person, one narrates, describing events and actions, and another, who takes part in the actions and events he describes, who experiences what he narrates.

Furthermore, the lyrical monologue form of narration befits the poet that Il'ko is. A truly beautiful lyrical quality of the language, in both the narration and the dialogue, gives the language of the play a style of poetic prose (a delicate point always lost in translation).

Beethoven's music is woven into the dramatic action first through the (monologue) narration of "I." At the same time the words of "I" become the action of "I." It is "I" who first of all points out the unity between the play and the music. It is "I," who, at the very beginning, shows in his monologue that the *Pathétique* of Beethoven and the *Pathétique* of Kulish are one here, organically linked to one another, and then proves this (by being the same person as Il'ko) that the two are one.

The duality of person, mentioned already before, is evident from the very beginning. As early as scene 4 of Act I we can see that "I" is not only the narrator standing outside of the action of the play, as it were, but that he is really *in* the play, that he is a part of the action of the play. In scene 4 "I" carries on an important dialogue with the prostitute Zinka, in which the identity of both of them becomes clearer and more firmly established. In scene 6 of the same Act "I" is identified as "Il'ko" by his friend Luka. The identification of "I" by name serves to integrate him better into play. Although the audience already knows that "I" is the narrator as well as a character in the play, the reference to him by name establishes him openly as one of the members of the cast, while at the same time the audience is aware that he still remains the narrator. Thus "I," the narrator of the play, becomes a character in the play, and yet the two are one and the same but have dual roles. By means of this relation between narration and action the structure of the play is unified and made stronger.

III

The drama *Sonata Pathétique* of Kulish is named after and built upon Beethoven's celebrated and beautiful work. The use of Beethoven's Sonata in Kulish's drama did not come by accident. Kulish was passionately fond of the composition; indeed he even did his writing to the accompaniment of the Sonata played on the piano

by his daughter. So that even the action in the play of the father listening while the daughter plays, could very well have been based on reality, taken from the playwright's own life. In Kulish's own words, he intended: "music to be an organic part of my work, to fill in the unspoken words."²²

Kulish uses Beethoven's work not only to orchestrate the play in its various actions and moods, but to integrate the different movements of Beethoven's Sonata into the changing actions and moods of his own work. Throughout the drama the various movements of Beethoven's Sonata appear as symbols of various movements and actions within the play and at the same time serve as integral components of the dramatic action within the play. The actual playing of each movement of the Sonata on the piano by Maryna not only symbolizes the action of that moment, but also *is* the action of that moment as presented in the music, and at the same time serves as a foreshadowing of what is to come, so that musical movement and dramatic moment are integrally one and artistically inseparable. Thus when the action of the play begins, we hear, as if to set the mood, the majestic, solemn, and sad Grave. The Grave in Beethoven's Sonata, with its C minor introduction and chromatic shifting chords, is full of anguish—a preface to the development.²³ Kulish succeeds in setting just such a mood in his work by the use of this movement from the "Pathetique" of Beethoven. Immediately the narrator, "I"—Il'ko, tells us that when he heard the music for the first time he knew neither the name of the piece nor the composer. Such a statement by "I"—Il'ko makes the Grave all the more symbolic and prophetic.

The Grave soon gives way to a brighter Allegro molto e con brio just before "I"—Il'ko speaks of his romantic belief in eternal love. In Beethoven's Sonata the Allegro movement is frenetic, one in which a Herculean struggle seems to take place.²⁴ Kulish introduces a struggle of just such proportion in his drama with this movement from Beethoven's work. Again the movement of the musical work and the action of the drama are one and artistically inseparable (i.e. inseparable in form).

When Maryna's father first comes on the scene, music is again

²² Mykola Kulish, *Tvory, op. cit.*, p. 411.

²³ David Ewen, *The Complete Book of Classical Music* (Englewood Clig, New Jersey: Prentice Hall Inc., 1965), p. 296.

²⁴ *Ibid.*

heard on the stage. Though it is not stated which movement she is playing, the author describes the music in this instance as "a wave of brilliant pathos," a description he continues to use repeatedly.

Maryna makes her entrance in the night scene of the First Act to her own accompaniment of the bright and colorful Allegro molto.

The whole scene, full of symbolism, is one of the artistic highlights of the play. "I"—Il'ko, who is in love with Maryna, approaches the door of the apartment where Maryna lives with her father. He stands listening to the music, which he describes as "the bright reflection of a rebellious spirit, the eternal song of love." Then he says: "Suddenly it (the playing) stops." The music sets here a light mood, and the words of "I"—Il'ko give the briefest resume of the character and feelings of Maryna (bright reflection of a rebellious spirit) and the feelings of "I"—Il'ko (eternal song of love). Thereafter, in the light mood set by the music, follows a brief, triumphant review of the Ukrainian Revolution and struggle for independence. Before the scene closes, Maryna plays again, "I"—Il'ko describes the effect as "a wave of pathos rising up from the rebellious depths of starry space." He continues, "behind the wave of music it seems the whole room and all that is in it flows under the taut sail of the curtain." "We sail over life on the ship Argo to the eternally beautiful lands, each after his own golden fleece." All this comes upon "I"—Il'ko not just under the influence of Beethoven's Sonata, but in interaction with that great musical work, showing again how the music and the action of the drama interact and support one another.

In like manner scene eleven of Act I begins with Maryna at the piano as "I"—Il'ko describes her playing in the most romantic terms: "It seems to me, that one more moment, one more touch of the hands, and the wave of brilliant pathos will reach heaven, will ring out around the stars, and the heavens—the starry piano, the moon—the silver horn will play an eternal symphony pathétique over the earth." "I"—Il'ko also mentions that he sees the "music of the stars." With this highly romantic descriptions, the narrator introduces an important episode between Maryna and Andre.

Scene twelve of the First Act is based entirely on Beethoven's "Pathétique". Again the Grave comes into Beethoven's Sonata after the Allegro like "lugubrious opening voices" to torment.²⁵ (As in Bee-

thoven's Sonata, the Grave becomes the mood pivot of the movement and comes in again after the introduction to bring in the development,²⁶ so it does in Kulish's *Sonata*.) Kulish uses the Grave in precisely the same order as it appears in Beethoven's work (after the Allegro), in the same way as did Beethoven—as "lugubrious voices" to torment. The Grave sets the background of bitter struggle and heart-rending conflict. Suddenly the Grave is accompanied by the peal of Easter bells and choral singing of the traditional "Christ is risen!" (*Khrystos Voskres.*) It is a glorious Easter Sunday in very somber and sad times. Rockets rise like comets—red, blue, green. Everyone dances. Bells ring, choirs sing, fireworks explode, people dance, and in the background—the Grave (anguish). The narrator describes the scene as a "concert pathétique."

In the next scene of the same Act the first words of Stupay-Stupanenko are: "Play, Maryna, the "Pathétique"-Ukraine has resurrected."

Act Two begins again with Maryna playing, but as "I"—Il'ko says, not "the brilliant Grave," nor "the bright Allegro," but "the sunny, flower-bedecked Cantabile." This slow, sad movement has almost a religious solemnity in Beethoven's "Pathétique."²⁷ Kulish makes this movement a part of the scene, which in its dialogue and symbols may be described as almost religiously solemn. Once more "I"—Il'ko is imagining under the influence of the music: "an endless steppe, over it 'she' floats in the ship 'Argo. She raises her left eyebrow a little, blue-eyes, on the ear of grain (there are) flowers and dew." So does "I"—Il'ko set the mood for the Act which proves so tragic for him, and indirectly also for Maryna.

Almost the whole of scene three of the Second Act is permeated with music. The scene begins just as Maryna finishes playing and Andre begs her to play more. She arouses Andre's jealousy by asking him the very meaningful and deeply symbolical question: "You don't mean that you like it (the music) also?" (By "also" she means besides her father.) She reveals that during that very night her father had awakened her and asked her to play, as, for some reason, he was unable to sleep. The music, she says, makes her gentle, romantic father dream of "Zaporozhian Cossacks," "steppes," "Ukraine." Maryna then wonderingly asks Andre what the music makes him think of.

²⁶ John N. Burke, *The Life and Works of Beethoven* (New York: The Modern Library, Random House Publishing Company, 1943), p. 420.

²⁷ Ewen, *op. cit.*, p. 296.

He answers, quite deceitfully: "Ukrainian stars, bells, and sunrises. I walk. Suddenly a meeting. I kiss someone's shadow. The shadow of beauty. A masterpiece. I want to take her in my arms and carry her, carry her . . ." To which Marya replies with the interrogative: "You mean you greet the revolution? Why?" Andre replies: "We need a tricornered hat more now than the Cap of Monomakh." Maryna then tells Andre what the music makes her think of in the following dialogue with him:

"Something beautiful and incomprehensible. A vision, a dream, reality—all together. The country is dark and wild, as it were, and so disconsolate that it has forgotten even about its yesterday and doesn't know what will happen to it tomorrow. A dream. Two rusty locks hang, sealed with eagles—white, two-headed. Closed is the past, closed the future. In that land a girl all alone. Dreams and waits. And do you know for whom?"

Andre: "Whom?"

Maryna: "A knight who loves the Ukrainian stars."

Andre: "Really?"

Maryna: "Day after day, night after night, that he would break down, these locks and open the door. . . ."

Andre: "For the girl?"

Maryna: "For the girl and the country."

Thereupon she "picked a few chords off the piano and raised them in the palms of her hands, as if (they were) flowers."

In Act III, scene four, a chord of Beethoven's Sonata is heard at the end of the moving, but romantic assertion by Maryna's father that it is time for "us" to become free and independent of others. "We must mount horses and speed over our Cossack steppes together with the eagles and the wind!" The chord is from the recapitulation in the Sonata by Beethoven and occurs when the syncopated minims are screwed up from C to D flat.²⁸ Again Kulish integrated Beethoven's composition into his own.

The word "pathetic" is used to describe the tone of Andre's hypocritical speech about the sufferings of Ukraine under the old regime for whose restoration he covertly intends to work. After the speech follows silence, which the narrator calls "a pause full of pathos."

Fragments of the Rondo from Beethoven's masterwork make up the

²⁸ Alec Herman and Wilfrid Mellers, *Man and His Music*, (New York: New York University Press, 1962), p. 636.

entire scene five of Act IV. In the Sonata of Beethoven the Rondo tries to banish the sorrow of the preceding movements with its rhythmic impetuosity.²⁹ In the *Sonata* of Kulish the Rondo plays the same part. Again the integral relationship between the work of Beethoven and that of Kulish. "I"—Il'ko, the idealist in love with Maryna, is on guard duty near a secret Red revolutionary outpost. As an enemy patrol passes by, he hides behind a wall, and from time to time he hears music. At first he doesn't know from where the music is coming, then he realizes that he is standing beneath Maryna's window. She is restless, her father has left on a dangerous mission. In the air a deaf stillness prevails, interrupted only by the muffled fire of cannon. Maryna is disquieted, listens, then tries to play fragments of the Rondo. This is another instance of the interaction between the musical work and the drama. In Beethoven's Sonata silence plays as important a role as sound; so in Kulish's *Sonata* silence is as important as speech. Beethoven exploited silence in his Sonata as never before.³⁰ He made silence part of his musical argument³¹ as Kulish made it part of his literary-dramatic argument. Especially dramatic in the Sonata of Beethoven is the silence that precedes the Grave as it reappears in different keys at crucial points of development,³² (although in the above instance silence precedes parts of the Rondo to indicate an attempt to banish the tension and sadness of the moment but the Grave soon returns in the next scene). There is no other action, no other sound in scene 5. The music and the silence say all. In the symbolical wording of much of the play the narrator only adds: "Yes. She is playing. Let her ship sail, full of music, in this troubled, wind-swept, wind-tossed, black night."

Scene 5 of the Fourth Act is made up almost entirely of music and the following scene—6, begins with music. Indeed music is woven as much into this scene as it is into the preceding one. The narrator introduces scene 6 thus:

I feel wonderful. I am on guard duty and around me there is music. Somewhere a light blinked with a yellowish streak. (Maryna pulls back the edge of the Persian rug hung over the window), a light blue flash passes. It is extinguished by the wind and the music of the Pathetique.

²⁹ Ewen, *op. cit.*, p. 296.

³⁰ Herman and Mellers, *op. cit.*, p. 636.

³¹ *Ibid.*

³² *Ibid.*

Here Maryna plays the Grave again (after the dramatic silence). The Grave occurs in this part of Beethoven's Sonata also (after the Rondo) where it is a moment of reflection³³ as it is in Kulish's drama. It brings in the final cadence in Beethoven's Sonata³⁴ as it does in that of Kulish. The narrator describes the scene in the following words:

"Beyond the bass chord there is a disturbing stamping—the galloping of hoofs. Someone strikes a fire. A horse runs, over the dark steppe. Oh, it is I speeding on horseback into the land of eternal love. Beyond the black horizon beside the light blue window she waits. There, there she glimpses out. (Maryna again pulls back the Persian rug from the window.) She looks. She goes down the stairs. She comes out to meet me. She has extended her hands to me—she raises her left eyebrow a little, her eyes smile. (Maryna looks at me; and I am overcome by sleep.) The music from the Rondo surrounds us. The melody—like a silver serpentine. Together with this I hear the wind, I see the night. (The sun does not love the earth as much as I love you.) I want to say it to Maryna, and I can't. It is as if she goes away, floats away. The serpentine breaks off and, extinguished, flies after the wind. She is as if on a ship. I see the mast, the sail plays, the roses and bulkhead are taut like strings instead of the Rondo again I hear the Grave."

The giving way of the Rondo (as in Beethoven's Sonata—an attempt to brush away the sorrow of the previous movements³⁵) to the Grave (the anguish, the torment of the sad opening voices in Beethoven³⁶) sets the mood and foreshadows the most moving and most violent part of the play.

In scene 21 of Act IV, as "I"—Il'ko suddenly and unexpectedly meets Maryna, he says that "in his blood music bursts forth from the Pathetique," just as in the conclusion of Beethoven's Sonata there are outbursts of uncontrolled rebellion.³⁸ What follows is a dialogue between "I"—Il'ko and Maryna in which Maryna, in very symbolical terms, reveals her romantic views on the future of Ukraine. "I"—Il'ko, seeing the impracticality and futility of her views, stands silently by, saying almost nothing. In the following scene of the same

³³ Ewen, *op. cit.*, p. 296.

³⁴ Burke, *op. cit.*, p. 420.

³⁵ Ewen, *op. cit.*, p. 296.

³⁶ *Ibid.*

³⁷ *Ibid.*

³⁸ Burke, *op. cit.*, p. 420.

Act, when Maryna tells "I"—Il'ko that she always has believed and still does in the poet who believed in eternal love (who is "I"—Il'ko, of course). "I"—Il'ko once more hears musical chords (soaring) up to the heavens and stars, and light-blue dawn."

So much is the author under the influence of the Sonata that at the end of scene 27 of Act IV, when a cock crows thrice in the symbolical gesture of betrayal from the New Testament, the narrator describes the crowing as "an exact triple legato."

A very tense and dramatic moment in the play occurs in Act V, scene 2, when Maryna and her father see a man light a pipe beneath their window—a sign that the Ukrainian revolution is to begin that very day. In her excitement Maryna "stormily plays a few fragments of the Allegro con brio from the Pathetique." The Allegro con brio in Beethoven's Sonata is the movement of an imaginary Herculaean struggle. Once more the interaction of the Sonata and the drama may be noted. (When Maryna triumphantly states that now "the wind from the north can no longer extinguish the embers, but perhaps scatter them farther away, she punctuates the end of her statement with a loud pounding on the keyboard.)

One of the most moving scenes in the play occurs in the eighth scene of Act V. Maryna's father stumbles and falls, dying. As he gradually lapses into unconsciousness, it seems to him that he hears music from the Allegro molto (the Herculaean struggle) of the Pathetique. As his life slips away the music becomes barely audible to him. (Indeed the whole scene of his death is an extremely moving one, and like the other moving and tragic parts of the play, it is written in hauntingly beautiful, romantic language, which can be described as almost poetry in prose):

"Stupaj hears the 'stop,' wants to repeat it and can't. He musters the rest of his strength and only raises an arm. His vision is overcome by a mist. The mist becomes thicker—is that the sky or the steppe? Over Stupaj Red Army guards are jumping as they flee, but it seems to him that they are all Zaporozhians on horseback. Hop-click-hop-click. It seems that he hears music (from the Allegro molto). Beautiful! Only that—over there the sun is burning him very strongly in the chest.) Finally it sets. It is getting easier for him, but it is getting dark, very dark, and the music is barely heard."

As Stupaj is dying, in the very final moments of his life, he seems to hear the Allegro—the movement of the Herculaean struggle. This

is all that the author needs to communicate to the audience. Anything else would be superfluous.

In the very last scene of the final Act, when it is evident that all is lost and Maryna is living in a basement, deprived of her piano, "I"—Il'ko comes to see her. Maryna asks "I"—Il'ko, why she has lost all, especially her piano." "I"—Il'ko answers: "With that" (meaning 'with music') "they'll begin." Maryna says then: "Yes?" (with sadness). "Oh, how would I play that? The Sonata about the young man, who speeds over the steppes on his horse, asking the wind to show him the way. Do you remember?"

Before the Red Guards seize her and take her away, "I"—Il'ko hears the Rondo (the movement of the Herculean struggle) and wonders: "What is this? Derangement? Hallucination? Hypnosis? It's time to finish! The time has come."

Just as the play begins with music, so it ends with music. Every important, symbolical, moving, or tragic moment in the play is so presented that it is part of the music and the music is an integral part of it. Beethoven's musical *Sonata* and Kulish's literary and dramatic *Sonata* become one.

Beethoven's *Sonata Pathetique* was in itself a rebellion for Beethoven. In a certain sense it is a breakthrough in the form of the sonata. Mozart, the great composer in the sonata form before Beethoven, was fiery but disciplined and controlled by the classical forms prevalent in his age. Beethoven rebelled against these set forms passionately. Indeed his passion reached such heights that it can almost be called melodrama. The piano for Beethoven, unlike his classical predecessors, was a dynamic rather than a melodic instrument. In composing the "Pathetique" Beethoven realized that it demanded a new technique of performance. Kulish, in "composing," in a manner of speaking, his drama, named after and related to Beethoven's great work, realized the same thing.

(To be continued)

Critical Reception of Franz Kafka in the Soviet Union

ROMAN S. STRUC
(University of Washington)

One of the most controversial and enigmatic phenomena of the European literary scene, Franz Kafka, had remained unacknowledged by Soviet literary scholars until approximately eight or nine years ago. The change which has since taken place must be attributed in all likelihood to that momentous upheaval in Soviet cultural life, "The Thaw," named after I. Erenburg's novel of 1954. Even though in 1961 a comprehensive bibliography of secondary literature on Franz Kafka consisting of nearly 5,000 items listed only three contributions by a single Soviet scholar,¹ now the list has grown considerably and includes not only a sizeable number of comprehensive articles on Kafka and book-length study on the author, but also a number of translations of Kafka's works in Ukrainian and Russian as well.

One can only speculate on the specific reasons which brought about such an indicative change. Among them one has to list the general liberalization which has taken place in the Soviet Union after Stalin's death and which presumably has resulted in pressure from below on the official institutions to a degree which can neither be ascertained nor accurately measured. The same must be assumed for the editorial boards of the more liberal Soviet publications which, sensing the change of cultural climate, began to deal openly with a literary figure hitherto given the silent treatment. Another factor which doubtless must have contributed to the new development was the criticism of the official Soviet attitude by such "enlightened" Marxists as Sartre and Robbe-Grillet of France, Ernst Fischer of Austria, and many others.

The intent of the following survey is to record the fortunes of

¹ Harry Järv, *Die Kafka-Literatur: Eine Bibliographie* (Malmö-Lund, 1961), p. 338.

Franz Kafka in the Soviet Union with an evaluation of this generally positive trend.

The year 1963 represents in the chronology of this development a major turning point. First translations of Kafka's short stories have been published in the Soviet Union, an event which followed two major literary occurrences behind the Iron Curtain, the Kafka Conference in Liblice near Prague in May, and in August of the same year the International Writers' Congress in Leningrad. Yet even before 1963 D. Zatons'kyi emerges with three contributions which establish him as one of the first critics to deal extensively with Kafka and, in view of his subsequent writings, as the Soviet scholarly authority on this German writer. The first of these, "Under the Influence of Revisionism," appeared in the organ of Ukrainian Writers, *Vsesvit* (The Universe), and offers little of interest.² It castigates young Soviet writers for their undue interest in Kafka whose work is unqualifiedly presented as decadent, reactionary, and harmful. The implication of the article is that Kafka's influence must have found its way into the countries of the Soviet Union. The article exorcises the influence over the generations from which the works of this author have been carefully withheld.

In a book written in cooperation with Z. Libman under the tell-tale title, *The Poisoned Weapons: Reactionary Literature and Arts in their Struggle against Reason, Humanity, and Progress*,³ the same author discusses Kafka far more extensively, comprehensively, and in a wider context. The aim of Zatons'kyi's first article was to warn the deviating young writers; in the present study Kafka is seen within the cultural process of Western modernism, not limited to literature but encompassing the visual arts, cinema, philosophy, and even American cartoons. Nor do the authors limit themselves geographically: France, Germany, and England, the Scandinavian countries and the United States are the province of the authors' scrutiny. Kafka is seen within the general trend of "irrationalism" in all realms of cultural life whose progenitors according to the authors are among others Bergson and Freud. Not so much Kafka himself becomes the target of the author's perorations; but rather those men of letters and phi-

² D. Zatons'kyi, "Pid vplyvom revizionizmu," *Vsesvit* (1958:1), pp. 105-107.

³ *Otruyena zbroja: Reaktsiyni literatura ta mystetstvo u borot'bi proty rozumu, lyudyanosti, prohresu* (Kiev, 1959).

losophers who claim for Kafka not merely literary greatness, which Zaton's'kyi grudgingly acknowledges, but who also consider him a penetrating seer of the human condition and a prophet of the future. The values on which Zaton's'kyi bases his attack are progress, "scientific humanism," and man's value as a social being; therefore he must naturally condemn a writer and thinker who sees man and his condition without regarding such relative and historical values for which Zaton's'kyi claims absolute validity. Moreover, he sees in the recent preoccupation with Kafka in the West a clever plan of the forces of reactionary capitalism to use the author as a weapon against the world of reason and progress by implying that the social order of the capitalist West is an immutable condition of the world. "Kafka thought the capitalist order to be a terrifying and yet the only possible form of societal existence. He not only did not see any help but precluded all attempts to change the existing status quo."⁴ This chapter of the book has to be read with a grain of salt for a variety of reasons, for that book's aim was to discredit in a popular polemical form those Western cultural phenomena which hitherto had been tacitly overlooked and then were no longer capable of being disregarded.

Zaton's'kyi's subsequent article, "The Death and Birth of Franz Kafka," does not essentially differ in its conclusions from the book chapter described above. But there are significant differences to be noted: it was written in Russian, whereas the previous two were in Ukrainian, and published in the influential *Inostrannaya Literatura*,⁵ most likely to assure it more extensive circulation and weight. It is a journal which not only reaches the indigenous public but also audiences abroad. Noteworthy is the fact that the vitriolic and blatantly propagandistic tone of Zaton's'kyi's previous writings is absent; instead there is a tenor of inquiry and a visible attempt not merely to dismiss Kafka but also to adduce more plausible reasons for doing it. In this article the author discusses Kafka together with James Joyce and Marcel Proust as the representative figures of the decline of bourgeois literature. "But as these authors themselves were part and parcel of that [bourgeois] culture and as they had all the vices

⁴ *Ibid.*, p. 65.

⁵ "Smert' i rozhdenie Frantsa Kafki," *Inostrannaya Literatura* (1959:2), pp. 202-213.

and errors of their vanishing class which gave them birth, they were not able to draw the necessary consequences. Each of them tried to comprehend current events. Each of them to some extent succeeded in expressing some measure of truth about the inhuman character of the capitalist conditions; and that small part of the truth was so bitter that even dressed up in symbolically abstract form it horrified the bourgeoisie which also appropriated to itself many other literary movements. And when in the forties and fifties Joyce and Kafka were solemnly galvanized it was accompanied by the most blatant falsifications: they were called 'precursors' and were promoted to 'avant-gardists.' At the same time reactionary criticism tried to smooth over all the 'sharp corners' of their works and to make them conform to the fashionable philosophical and esthetic patterns. For this reason the legacy of Kafka and—in general—of the bourgeois *decadence* of the Twenties is not only a subject for literary history, but also a burning issue of the contemporary ideological and esthetic struggle."⁶ This conclusion notwithstanding, there are parts of Zatons'kyi's essay which deal with Kafka intelligently.

An interesting exception in the routine examination of the author is the article of Yu. Mann, "Artistic Convention and Time."⁷ First of all, the critic seems to be well-read in Western European authors and in the secondary literature on them. The article itself is devoted to the important literary problem, namely the relationship of esthetic categories and historically determined literary conventions. His article shows the historical relativity of literary conventions and is thus implicitly questioning the very premises of "Socialist Realism" as the final and absolutely valid literary mode of expression. In a brief passage in which he speaks of Kafka, he makes for him the same claim of validity in expressing "reality" as for Brecht and other writers who had found favorable reception in the East. "The assertion that the world is a playfield of blind, dark, and contradictory forces is no less a generalization than the idea of historical unity and progress; only that the latter subjects large areas of the unknown to investigation, whereas the former simply raises before us an impregnable wall. In Kafka's phantasmagorical visions saturated by pain and despair there

⁶ *Ibid.*, p. 204.

⁷ "Khudozhestvennaya uslovnost' i vremya," *Novyi Mir*, XXXIX (1963:1), pp. 218-33.

is in a certain sense no less grotesque generalization than in the dramas of Brecht appealing to reason and the idea of social progress. Authors generalize; those who believe in the humanistic principles of mankind and those disenchanted by them; both pessimists and optimists generalize—each in his own way.”⁸

The whole essay and the quoted passage in particular seem to be an attempt to reclaim modern Western Europe literature under the general heading of “realism” which the author chooses to understand and apply in the broadest sense of the word, meaning that all literature, literary conventions notwithstanding, reflects reality; *ergo* it is “realistic.” This, needless to say, is not the official interpretation of the term realism, nor is it acceptable by the standards of objective scholarship. According to such a view all literature of all ages is realistic and only the form is subject to historically determined changes. The aim of the essay is quite clear; it is to lend these controversial authors an air of respectability by classifying them as “realists” and thus to make them palatable to the rigid official attitude. At the same time it manifests a serious and sophisticated attempt to get away from the oversimplification and opacity of the term “Socialist Realism.”

Until December 1963 Kafka remained a legend, although a center of controversy and a target of polemical writers, whose works had not been published in the Soviet Union. In the December issue of *Vsesvit*, Zaton'skyi again published an article on Kafka (“Kafka As He Really Was”),⁹ consisting of a brief biographical sketch and a rationalization for the publication of translated excerpts from Kafka's short stories. Zaton'skyi is well aware of the importance of the event, yet he does everything to minimize it. “The works of Kafka are unknown in the Soviet Union; thus far, not a single line of his works has been printed either in Russian, Ukrainian, or any other language of our nations (with the exception of the very brief quotations in articles about the writer). This is not some kind of “Kremlin prohibition” of Kafka, according to some foreign critics (both Proust and Joyce, no less ‘pernicious’ authors than Kafka, had been translated in our country at one time). Because Kafka's manner of writing is

⁸ *Ibid.*, p. 222.

⁹ “Frants Kafka, yakym vin був u diysnosti,” *Vsesvit* (1963:12), pp. 65–68; followed by excerpts from Kafka's stories pp. 69–87.

as remote to us as it is strange to the realistic tradition of our literature, we did not 'notice him' even after the 'Kafka Boom' was on (we did not even have the weak ties of the kind which bound Kafka to the traditions of German and Czech literature)."¹⁰ The present writer has no intention of being malicious, but is it not obvious why Kafka was not 'noticed' and Proust and Joyce were? Proust and Joyce were well established literary figures at the time when the Soviet Union enjoyed some degree of freedom in matters of literature and therefore these authors could be published there at that time.

The direct reasons for the publication of Kafka's stories in Ukrainian are the above-mentioned literary events: first, the Kafka Conference of May 1963 which took place near Kafka's native Prague in Liblice and was attended by many distinguished Kafka scholars of the East and West. The roster of the participants is truly impressive; the proceedings of the Conference were recently published in German under the auspices of the Czech Academy of Science and the UNESCO Committee as *Franz Kafka aus Prager Sicht* (Prague 1965). The second event widely commented on in the Soviet publications was the International Writers' Congress in Leningrad in August 1963. This meeting was devoted primarily to the problems of the modern novel and was attended by such men as Sartre, Robbe-Grillet, Nathalie Sarraute, Angus Wilson, William Golding, and Hans Enzensberger, to name only a few. The spectrum of literary interests and political convictions was also liberally represented. The conspicuous feature, in our context, was that all speakers—with the exception of those representing the host country—spoke uniformly of Joyce, Proust, and Kafka as progenitors of the contemporary novel, a view commonplace in the West. The reaction of the Soviet representatives was a negative one. Konstantin Fedin off-handedly rejected such views of the Western writers and critics, whereupon Robbe-Grillet was offended by the reactionary attitude of the Soviets comparing it to the attitude of the most reactionary circles (i.e. "rightist") of France. Erenburg, the senior and perhaps most knowledgeable and conciliatory among the Soviets tried to mediate by pointing out the historical importance of those controversial writers.¹¹ One can assume therefore that the unprecedented publication of a num-

¹⁰ *Ibid.*, p. 67.

¹¹ A report on the Leningrad meeting appeared in *Inostrannaya Literatura* (1963:11), pp. 204-26.

ber of Kafka's stories in Ukrainian goes back to those two meetings wholly or in part devoted to the *œuvre* of Franz Kafka. The same is true of the much more extensive selection of Kafka's stories that appeared just one month later in the prestigious Russian journal *Inostrannaya Literatura* (January 1964, pp. 134-181), also accompanied by an explicatory article by E. Knipovich (*ibid.*, 195-203). Both articles, Zaton's'kyi's and Knipovich's, find themselves in a paradoxical situation: on the one hand under the pressure of international opinion they are compelled to present a sampling of the condemned author, which psychologically requires a degree of sympathy and empathy; on the other, they are required to write an exposé of a writer they are supposed to present to the reading public.

An additional difficulty was caused by the Leftist and Marxists critics at Liblice by their attempts to rehabilitate Kafka as a kind of phantastic realist comparable to Rabelais, Swift, Gogol, Shchedrin, and Mayakovskii. But, maintains Miss Knipovich, "the grotesque of their kind did not encode and deform reality, just as a magnifying glass or a microscope do not deform the investigated object. . . . The important thing is that Rabelais, Swift, Gogol, Shchedrin, and Mayakovskii unmasked the social absurdity of the particular phases in the existence of the class society."¹² In other words, the rehabilitation taking place in Kafka's native country did not meet with the approval of official literary Moscow although some concessions had to be made in view of the overwhelming interest in Czechoslovakia and the other "People's Democracies," and as a result of the pressures exerted at the international meeting taking place in the Soviet Union. This aspect of the problem is well exposed by Heinz Politzer and by Gustaw Herling-Grudziński.¹³ The two most irksome aspects of what Zaton's'kyi disparagingly calls the "Kafka Boom" were, first, the assertions of all Western Europeans of various ideological convictions that along with Proust and Joyce, Kafka is the fountain-head of the modern European novel; and second, the attempts of their Eastern European colleagues to lend Kafka respectability by insisting on Kafka's "realism." And the latter, as Herling-Grudziński correctly points out, is indeed not an invention of the participants

¹² E. Knipovich, "Frants Kafka," *Inostrannaya Literatura* (1964:2), p. 196.

¹³ Heinz Politzer, *Franz Kafka: Parable and Paradox* (Ithaca, N.Y., 1966), esp. 358-376; Gustaw Herling-Grudziński, "Kafka w Rosji," *Kultura* (Paris, December 1965), pp. 8-13.

of the Liblice Conference, but a view often assumed by those Western critics who see in Kafka his prophetic quality, who read his works as visions of the twentieth century totalitarian systems.

Concurrently with the appearance of Kafka's stories in Ukrainian, T. Motyleva in *Novyi Mir* wrote a long essay on the already mentioned Leningrad meeting. Again the primary target of the critique are the "misinterpretations" of the significance of Proust, Joyce, and Kafka, three names that begin to assume the ring of the "Unholy Trinity." Describing Kafka, Motyleva is not as programmatically negative as Knipovich. In Kafka she acknowledges his unique talent, his unusual ability to mingle the phantastic with the most sordid elements of everyday reality; but she attacks those Western critics who see in Kafka's lost and helpless protagonists symbolic and valid representations of the human condition regardless of historic configurations. At the end of the chapter on Kafka she somewhat incongruously sums up: "In the collective document accepted by the Leningrad meeting the common striving of the writers of all countries was expressed: to help 'bring about life worthy of man' by means of literary creations. The philosophy of loneliness and despair, of capitulations of man before hostile powers—all this in the end hampers the realization of humanistic tasks which the participants of the Conference acknowledged to be their common goal. Just for this reason Soviet men of letters will not accept the creative principles of Proust, Joyce, and Kafka though paying due respect to the great talents of each of them and recognizing in full measure their significance in literary history."¹⁴

It would be an exaggeration to claim that the publication of some works of Kafka in Ukrainian and Russian heralds a new chapter in Soviet literary politics. The attitude of Soviet criticism seems to remain if no longer hostile, at least very cautious. This is witnessed by the tone and quality of the essays on Kafka. The reading public now has some first-hand experience with Kafka's works and therefore all statements involving this author cannot simply be wholesale condemnations and meaningless generalizations but must be interpretations based in part at least on the text.

In a very extensive essay by Zatons'kyi, "Kafka without Retouch-

¹⁴ T. Motyleva, "V sporakh o romane," *Novyi Mir*, XXXIX (1963:11), p. 212.

ing,"¹⁵ the author finds himself in a uniquely ironic situation having to defend Kafka against the attacks of the Albanians. "The Albanian weekly *Drita*," writes Zaton's'kyi, "gave expression to indignation over the fact that in one of the scholarly conferences in Moscow one of the participants 'dared' to analyze works of the decadent writers, in particular Kafka's. Such a backward parochialism can only provoke an ironic smile on faces of men of sound mind. In order to comprehend literature, in order to create literature it is necessary to understand its history and all of its aspects, the near and the remote, the healthy and sickly. Kafka hated this dead and dehumanized world in which he lived, he hated it deeply and passionately. He expressed the incessant horror of human existence in the 'penal colony' of bourgeois civilization; he suffered for man and felt his responsibility for him. And this cannot leave unmoved our compassion for his search and his suffering. At the same time our compassion should not obscure all that which Kafka had not been able to achieve, and first of all those contradictions that broke him. He had no faith in the world, he did not believe in man, he did not even believe in a theoretical possibility of happiness and harmony."¹⁶ In this essay Zaton's'kyi for the first time deals in detail with Kafka scholarship, citing many West European and Czech scholars, condemning the former for not reading Kafka in his native context, i.e. in the context of the literature of the turn of the century or of Czech literature; and the latter he reproaches for the now familiar attempts to present Kafka as a realist. For Kafka, continues Zaton's'kyi, in his novel *America* is "not interested in the world but in the man who is juxtaposed to it."¹⁷ The critic recognizes accurately that the "realistic" layer of Kafka's world is of a different order than the "realia" of the Realists, yet he decides that the layer represents merely a meaningless accessory whose meaning is inaccessible or perhaps totally absent. He also correctly points out that Kafka's symbolism is not of the classical variety—i.e. pointing beyond itself toward referents in the recognizable reality—and that Kafka's symbols, he asserts, obscure, confuse, and veil, instead of exposing and elucidating. Zaton's'kyi tries to apply Marxist categories of *Entfremdung* of man and his environment

¹⁵ "Kafka bez retushi," *Voprosy literatury*, VIII (1964:5), pp. 65–109.

¹⁶ *Ibid.*, p. 96.

¹⁷ *Ibid.*, p. 73.

in capitalist society in his attempt to explain reasons for Kafka's confusing symbolism; his contention is that the alienation has proceeded so far that man and the world oppose each other as entirely alien entities. It does not occur to Zaton's'kyi to consider "objective" reality in Kafka's works, i.e. the layer of the "realia," in the same ontological terms as the phantastic in *The Metamorphosis*—with which Zaton's'kyi does not seem to have any interpretative difficulty—and thus to construe it as projections of the protagonists' psychic mechanism. Zaton's'kyi, steeped in Realistic tradition and committed to it as the only and ultimate literary mode, is not willing to consider this possibility, although this mode is anticipated and carried out to some extent by Gogol and Dostoevskii. Therefore placing Kafka into the historical, political, and sociological context forces this critic to see Kafka entirely as a historical phenomenon and to disregard the aspect of uniqueness thus pushing an unusual growth into the Procrustean bed of prejudiced constructs. Procedures such as Zaton's'kyi's do not permit a complete assessment of an author and his complexity, namely both as recognition of his historicity and uniqueness which is subject to other categories than purely historical.

The comprehensive study by B. Suchkov, "Kafka—His Destiny and Works,"¹⁸ represents an attempt to come to terms with Kafka without the usual condemnations familiar from the early essays by Zaton's'kyi and Knipovich. The relationship between literature and historical processes is expressed here in a more sophisticated form as a reciprocal relationship, one influencing the other, one illuminating the other. The term "decadence" previously used in its popular meaning as decay and dissolution is used by Suchkov to describe the complex European literary situation at the turn of the century. The same holds true for his use of the term "alienation" which for Suchkov has not only the original socio-economic connotations imposed on it by Marx, but transfers it justifiably into the sphere of individual consciousness and interhuman relationships.¹⁹ "Among the writers of our time who had abandoned the realistic representation of the world, he [Kafka] rightly holds one of the first places."²⁰ Nor is Suchkov afraid to draw parallels to Dostoevskii while at the same time

¹⁸ "Kafka, ego sud'ba i ego tvorchestvo," *Znamya*, XXXIV (1964:10), pp. 212-28; and 1964:11, pp. 230-46).

¹⁹ *Ibid.*, part one, p. 219.

²⁰ *Ibid.*, part one, p. 213.

correctly stressing essential differences.²¹ The essay intelligently discusses *The Metamorphosis*, *The Judgment*, and *In the Penal Colony*, in addition to lesser known stories by Kafka, with frequent references to Kafka's diaries and notebooks, showing Suchkov's impressive familiarity with the Kafka canon. The major portion of the second part of the essay Suchkov devotes to the novels of Kafka. *America* is not seen as an attempt to assess realistically the social problems of the world; but the America of the novel is correctly seen as the universal domicile of man whose geography and all the other realistic paraphernalia are incidental and serve only as symbolic objects.²² This view of the novel is quite significant, for many critics like to speak of *America* as a realistic novel in the tradition of "Critical Realism" à la Dreiser, and of the subsequent novels of Kafka as an increasing departure from this traditions. Suchkov realizes implicitly that Kafka in *America* is searching for a new form whose initial phase is still under the spell of realistic fiction but not more than that.

Well presented are Suchkov's views on the problem of religion and guilt in Kafka. "There are no reasons to assume that the presentation of man's constant guilt reflects Kafka's religious and theological views and that it is based on the idea of the original sin, of the idea of atonement for the committed sins and of salvation. Kafka's religiosity on which Max Brod, Kafka's biographer, insists is rather problematic since Kafka is essentially a nonreligious man, keeping his neutrality in religious and other societal matters. His concept of the guilt and culpability of man is nothing else but a distorted, perverted, deformed, and unrealistic representation of the essential social phenomenon—social alienation—whose nature he was not able to realize and comprehend; therefore he mystified it by turning it into abstraction which he could not support by, or base on, concrete, existentially demonstrable facts."²³ One can argue with the validity of this view; one must, however, recognize the defensibility of Suchkov's position. About *The Trial*, which often has been interpreted in religious terms, he goes to say: "the image of the court in Kafka is nothing else but a personification of unknown powers of evil overflowing and hostile to man. Because the image is so mystifying, its impression on human consciousness of the capitalistic system yet unable to recognize its

²¹ *Ibid.*, part one, p.p. 225–26.

²² *Ibid.*, part two, pp. 231–32.

sources against which, according to Kafka, it is impossible to struggle."²⁴ The basic Marxist approach comes through when Suchkov says, "Kafka did not want to, indeed could not, investigate the causal relationship of social phenomena determining the tragic conclusion of the conflict of his hero with life; therefore the conflict represented by Kafka assumed features of timelessness, infinity, and inescapability."²⁵

The conspicuous quality of this extensive article is a thoughtful attempt to recognize Kafka by means of Marxist literary methodology, to determine his place in literary history, even though by Marxist standards he does not fulfill the social function assigned by them to literature. In retrospect this approach seems to be more honest and tenable than the attempts of some scholars at the Prague Conference to rehabilitate Kafka by declaring him a realist. If Kafka is a realist then only in the sense that the Romantics or Symbolists are, i.e., in their search for ultimate reality behind the world of empirical phenomena.

Two major events terminate our brief review; first, the publication of a book-length study, *Franz Kafka and the Problems of Modernism*²⁶ by D. Zatons'kyi, and second, the appearance of *The Trial* in Russian translation,²⁷ in the latter half of 1965.

Concerning the first we might say that its importance lies not primarily in its content, for the author said all these things before in the articles we discussed above, but that there was need to fill a serious gap in Soviet literary scholarship by devoting a book to an author who is less than congenial to the official views on the function of literature. Seen in this context, the publication bears witness to the changes which have occurred in some areas of culture in the Soviet Union. One of the merits of the book is that it places Kafka within the context of modern European literature, no longer with venom and sarcasm that characterized Zaton'skyi's *Poisoned Weapons*, but with a degree of objectivity which—considering the circumstances—is most commendable. The author's conclusions differ little

²³ *Ibid.*, part two, p. 232.

²⁴ *Ibid.*, part two, p. 236.

²⁵ *Ibid.*, part two, p. 4240.

²⁶ *Franz Kafka i problemy modernizma* (Moscow 1965).

²⁷ *Franz Kafka, Protsest: roman; Novelly i pritchi*, arranged and prefaced by B. Suchkov (Moscow 1965).

from those propounded earlier: the rejection is clear, only that now it is based on a closer reading of the texts and is more than an arbitrary condemnation of the author. In spite of the polemics with many Western and Eastern European critics and the polemics with Kafka himself, one detects sympathy or, more accurately, fascination with this puzzling writer.

The entire edition of *The Trial* in Russian was sold out in a matter of hours after its appearance, according to the information provided by Herling-Grudziński.²⁸ One may conclude that the interest of the reading public speaks louder than the sophisms of the critics who feel compelled to pass negative judgment on an author who has become one of the classics of European literature.

Our account must stop here since after the publication of these two books, to the best of our knowledge there have not been any major contributions on the present subject. In conclusion we have to say that Soviet criticism of Kafka has made considerable progress.

It developed from blatantly propagandistic writings into a number of serious critical studies such as some of those discussed above. There are some features which all the writings on Kafka share: biography of the writer is considered to be the key to the author's *œuvre*. As much as such an approach has its own justification, in the case of Kafka it must fail. The causal relationship between life and work is no longer a failsafe guarantee of success. First of all, such relationships are never direct, on the contrary, they are oblique and opaque and causal only in the broadest sense. Second, the relationship works not only one way, that is, not only life determines literature, but also vice versa. Sokel has shown²⁹ that Kafka's life often models itself on his work, that his life to a considerable extent was a stylization based on his own works. Here one can quote the famous "Letter to his Father" and the short story *The Judgment*, the latter written at the time when Kafka became engaged (1912), but the story anticipates the breaking off of his engagement even though it did not occur until a year later. Examples could be multiplied.

The second common feature of Soviet criticism is the socio-economic approach. Especially for Kafka it is a doubtful procedure. Ele-

²⁸ See n. 13, p. 13.

²⁹ Walter H. Sokel, *Franz Kafka: Tragik und Ironie* (Munich-Vienna 1964), esp. p. 15.

ments of recognizable reality are doubtless present in Kafka's works, but their function is of an entirely different nature than in the fiction of classical Realism. This reality in Kafka is more a mirror of the characters' psychic reality than objective or even distorted assessments of socio-economic conditions. Whereas in the West, as a result of Anglo-American "New Criticism" and of German "immanente Werkinterpretation," literary criticism all too often disregards the sociological approach, Soviet scholarship quite naturally overemphasizes it, and especially in the case of Kafka fails to a large extent. At best it reminds us that the sociological approach used along with other interpretative techniques could yield a more complete insight into the nature of the literary work of art, but employed alone fails to account for the complexity of literature.

Coming to Grips with the Kazanskaya Istoriya*: Some Observations on Old Answers and New Questions

EDWARD L. KEENAN, JR. (*Harvard University*)

«Сия книга глаголемая казанское взятъе... несть никому до ней дела разве кому почет на умиление души и на утешение.»

Historians of Muscovy's relations with the Khanate of Kazan' have not, in the main, devoted appropriate attention to the analysis of the limited sources. The richest and most reliable of these, the Muscovite diplomatic records (*posol'skie dela*) have yielded only a fraction of the information which they contain, because modern readers have been deterred by the "broken Russian" of these remarkably precise renderings of the Turkic diplomatic jargon used throughout the Western regions of the Mongol Empire. By contrast, the Muscovite chronicles have been relied upon more heavily than is justified by our present knowledge of their historiographic system and their relationship to their documentary sources. The Oriental sources, finally, which provide important aids to the understanding of the Muscovite sources, have generally been ignored, presumably because they contain little explicit information about Muscovite diplomacy.¹

* This title of the work also known as *Skazanie o Kazanskom tsarstve, Kazanskii letopisets* etc. is here adopted as most appropriate (=K.I.) The best edition is that prepared by G. Z. Kuntsevich (*Polnoe sobranie russkikh letopisei*, Vol. XIX, Part I, Spb., 1903 = PSRL XIX). A new edition was recently prepared by G. N. Moiseeva (*Kazanskaya istoriya*, Moscow 1965 = KI/M). Some of the deficiencies of this edition have been noted by reviewers; see reviews by V. N. Avtokratov (*Istoricheskii arkhiv*, No. 6, 1955, pp. 219-222), M. G. Safargaliev (*Voprosy istorii*, No. 7, 1955, pp. 148-151) and S. I. Kokorina, ("K voprosu o sostave i plane avtorskogo teksta 'Kazanskoi istorii.'" *Trudy Otdela drevnei russkoi literatury* = TODRL, Vol. XII, 1956, pp. 576-855. The epigraph is from a manuscript described by Kuntsevich (see fn. 2 below), p. 33.

¹ I discuss these sources in "The Yarlyk of Axmed-xan to Ivan III: A New Reading," forthcoming in the *International Journal of Slavic Linguistics and Poetics* and in the "Discussion" of Moscow-Kazan' relations in the December 1967 issue of *The Slavic Review*. (Vol. XXVI, No. 4, pp. 548-558.)

Since the extant sources have been so superficially studied, they have seemed inadequate and/or contradictory, and historians have sought additional information in more accessible, narrative sources, such as the accounts of Western travellers and early histories. Scholars have been particularly tempted to turn to the so-called *Kazanskaya istoriya*, which offers a cogent and rather detailed narrative of the history of Kazan'. The temptation remains strong, in spite of the reservations voiced by historians since Karamzin about the reliability of this source.

Indeed, since the monumental study by K.G. Kuntsevich,² it has appeared to many that these doubts might be set aside in the light of his conclusions with regard to the history of the text, its probable sources, and the accuracy of its information. Quite naturally, the study of the K.I. since the appearance of Kuntsevich's *magnum opus* has consisted of minor corrections and addenda to his work. Who would undertake to challenge the life's work of such an energetic and scrupulous scholar? Who would take on the labor of re-examining the hundreds of manuscript copies of the text, of comparing it again with the dozens of presumed sources, of checking as meticulously as he did every detail of its contents?

No one has done so, and with the passage of six decades this milestone has become a stumbling block. For however valuable the material which he amassed, Kuntsevich's conclusions lead one only into a *cul-de-sac* of intolerable contradictions.

The apparent reason for this has little to do with the man's skills or integrity, which were remarkable, but lies rather in the fact that as an "enlightened," "modern" scholar, Kuntsevich apparently looked down upon the pre-Petrine "dark ages" with bemused, if benevolent, condensation. One feels this throughout: Kuntsevich is "checking" and evaluating the K.I. by the standards of modern historical knowledge and literary taste, and making no effort to operate within the author's system of values, the expressions of which he condescendingly dismisses as "the author's debt to the spirit of his time." As a consequence of this sense of superiority he treats the puzzles of the K.I. as the conundrums of a child, which may be adequately solved by the simplistic interpretation of obvious clues within any superficially logical frame.

² *Istoriya o Kazanskom tsarstve ili Kazanskii letopisets. Opyt istoriko-literaturnogo izsledovaniya*, SPb., 1905. Hereafter = Kuntsevich 1905.

Having assembled every scrap of remotely relevant information, Kuntsevich failed to give satisfactory answers to the basic questions which historians pose about any source: what was the nature of the protograph? When did it appear? Who wrote it? What was his purpose? What formal and aesthetic principles did he observe? Moreover, having answered one major question, that of the author's probable sources, Kuntsevich failed to appreciate the significance of his findings: *how* did the author use his sources? What does the use of this or that source mean?

The present article proposes to point out the contradictions inherent in Kuntsevich's views and to indicate some of the questions which must be posed if we are to proceed toward a more acceptable appreciation of the history and significance of the K.I. It provides no definitive answers—such can be arrived at only after a thorough study of the major manuscripts. It does, however, attempt to demonstrate the need for a reevaluation of this text, and to indicate some lines of inquiry which seem, on the basis of the study of the few published versions, most promising.

II

Kuntsevich's conclusions underlie all currently accepted views concerning the K.I. These may be summarized in the following way:³

A. *The History of the Text*

The author's text has not survived. The extant 231 (194^{3a}) copies may be grouped in 8 (9) versions which form two main groups:

—*Group a*, consisting of 7 (3) copies, representing one (2) version which consists of a unitary narrative of approximately 100 chapters, and:

—*Group b*, (the remaining copies) represented by versions which are essentially identical with group "a" in the first half (c. 49 chapters) but contain a "second part," which consists of loosely-linked "chapters" and fragments which are thematically, but not formally, related to the narrative of the "first part." The second part of copies of group "b" varies considerably from copy to copy: Kuntsevich distinguished six versions.

³ In the following, "version" = Rus. "*redaktsiya*"; "copy" = "*spisok*." The figures given are those of KI/M.; Kuntsevich's are given in parentheses. On the various manuscripts see Kuntsevich 1905, pp. 12–192; KI/M., pp. 20–39.

^{3a} Moiseeva misread Kuntsevich on this point; cf KI/M., p. 20 and Kuntsevich 1905, p. 12.

Kuntsevich was convinced that the text found in copies of group "a" was closest to the presumed protograph, for the following reasons:

- a) these texts present a narrative and stylistic unity; those of group "b" do not;
- b) the best of these texts known to him do not contain the "missing chapters" (2-6: see below) which he wrongly considered later interpolations.⁴
- c) all copies of group "a" contain one passage, apparently a part of the protograph, which is absent in all copies of group "b."⁵

He further supposed that the history of the texts of group "b" could be traced as follows:

—A copy of the first version (group "a") fell into the hands of a "*knizhnik*" who, troubled by the fact that the second half of the text, which contained the description of the final campaign against Kazan', was "at variance" with what was found in the official chronicles, cut the text roughly in half, and, added a new second half, in which he "naturally" attempted to "bring the 'new' closer to the 'old' and authoritative versions" of the *Stepennaya kniga* etc. This second half consisted in the main of excerpts from chronicles, saints' *vitae* and the like.

—This new text, consisting of the first 49 chapters of the truncated original plus the jottings of the "*knizhnik*," then grew through the accretion of random selections from various sources dealing with Kazan'. All copies of group "b," stem from one or another stage of this degeneration. Although, Kuntsevich reasoned, the "weld" (*spaika*) at the point of truncation of the group "a" text was "obvious," this was no matter: "*Nuzhdy net . . . Istoriya teper' stanovilas' dostovernei: ona svyazyvalas' s izvestnymi uzhe materialami.*"⁶

B. Date

Kuntsevich concluded, on the basis of internal evidence, that the first version of the K.I. was composed in the period 1564-1566. He adduced the following evidence:

—the text speaks of Semen Mikulinskii (d. 1562?) as having suf-

⁴ Kuntsevich 1905, p. 176; Cf. KI/M., pp. 26-28 and Kokorina, *op. cit.*

⁵ Kuntsevich 1905, pp. 170-173.

⁶ Kuntsevich 1905, p. 180.

ferred a "mortal" wound, and of Makarii (d. 1564) as the "former" metropolitan;

—Shigalei (d. 1567) and Utyamish-Girei (Aleksandr) (d. 1566) are spoken of in the present tense.⁷

While this evidence clearly permits us to set the appearance of our text after the deaths of Mikulinskii and Makarii, the use of the present tense with reference to Shigalei and Aleksandr is not sufficient evidence for the establishment of a *terminus ad quem*, particularly in view of the stylistic uses of tense in later Muscovite literature.⁸

Moiseeva accepted this hypothetical date and added some "supporting" evidence:

- the K.I. makes use of Groznyi's first "Epistle" to Kurbskii;
- the "razryady" in the K.I., correspond to those of the Livonian campaigns, before 1566;
- Mikhail Ivanovich Vorotynskii, who was out of favor from 1562–1566, but was important in the Kazan' campaigns, is "not mentioned even once" in the text.⁹

These "confirming" observations offer nothing of substance. The Groznyi-Kurbskii *Correspondence* is not firmly dated, and even if it were, the fact of its use by the author of the K.I. would indicate only that the *Correspondence* appeared first. Vorotynskii is mentioned in the text.¹⁰

As to the K.I.'s use of the *razryady*, a number of comments should be made. Most important is the fact, discussed below, that the author of the K.I. did not copy his sources blindly, but altered them to suit his belletristic, and not publicistic, purpose. In addition, comparison of the various copies shows (see below, examples X & XII) that the copies of group "a" were in general less careful in the presentation of the fragments from the *razryady* than the copies of group "b". Finally, the general similarity of some of the *razryady* in the K.I. to

⁷ Kuntsevich 1905, pp. 176 ff. Here and henceforth Muslim names will be cited in transliteration from the Cyrillic forms in which they appear in the K.I., rather than in the more precise transliteration from Turkic or Arabic. Thus Shigalei, not Shah 'Ali, etc.

⁸ Ivan IV is referred to in the aorist in the better copies of group "a." (KI/M., p. 175). On the use of the present narrative tense, see D.S. Likhachev, *Poetiĭka drevnerusskoi literatury*, Moscow-Leningrad, 1967, pp. 291–295.

⁹ KI/M., p. 21.

¹⁰ See Kokorina, *op. cit.* and KI/M., p. 123; PSRL XIX, 113.

those of the Livonian wars proves, once again, only that the latter appeared before the K.I.

Moiseeva attempts to buttress her discussion of the *razryady* by arguing that in general the editorial "slant" of the K.I. in dealing with historical personages reflects the political situation of 1564–65, after the introduction of the "*oprichnina*".¹¹

Even if we disregard the difficulties in determining the provenance and reliability of the *razryady*,¹² this argument is tenuous at best. The K.I. reveals no such editorial consistency. Friend and foe, *oprichnik* and his victim, Tatar and Slav are portrayed without apparent regard for the prejudices of the "official" historiography of the 1560's.

Vladimir Andreevich Staritskii, for example, the main dynastic thorn in Ivan's side, disgraced and then pardoned in 1563¹³ "a mediocrity, to say the least,"¹⁴ is throughout portrayed in a most positive light, as a member (along with the half-witted Jurii Vasil'evich) of Ivan's "*zolotaya brat'ya*."¹⁵ Another "courageous commander,"¹⁶ Aleksandr Ivanovich Vorotynskii, brother of Mikhail (see above) was disgraced along with his brother in 1562, entered a monastery under duress, was twice forceably sworn to fealty, and even after death was the object of Ivan's special ire.¹⁷

Semen Ivanovich Mikulinskii, who probably supported the candidacy of Staritskii in the dynastic crisis of 1553,¹⁸ and is accused by the interpolations in the *Tsarstvennaya kniga* of complicity in the treasonous attempt of Prince Semen Lobanov-Rostovskii to flee to Lithuania, is one of the chief heroes of the K.I. and the subject of two extended eulogies.¹⁹

Even the arch-traitor Kurbskii has a place of some honor in the K.I. His campaign against the Cheremis is described in detail, although his name is *not* mentioned in the official chronicle versions of this expedition.²⁰ It seems quite incredible that one as "*ideinyi*" as Moi-

¹¹ KI/M., p. 21–22.

¹² D.N. Al'shits, "*Razyadnye knigi moskovskikh gosudarei XVI v.*," *Problemy istochnikoveneniya*, VI, Moscow, 1958, pp. 130–151.

¹³ Veselovskii, *Isledovaniya po istorii oprichniny*, Moscow, 1963, p. 104.

¹⁴ *Ibid.*, p. 309.

¹⁵ KI/M., pp. 113, 116, 167.

¹⁶ KI/M., pp. 146, 123.

¹⁷ Veselovskii, *op. cit.*, pp. 311, 331.

¹⁸ A.A. Zimin, *Reformy Ivana Groznogo*, Moscow, 1960, p. 412.

¹⁹ KI/M., pp. 83–4, 138–9.

²⁰ Kuntsevich 1905, p. 441; KI/M., 132.

seeva makes the author of the K.I., writing at the time it is supposed to have appeared, would take pains to include the haughty defector.

Numerous additional examples might be cited to show that there is no significant correlation between the names which appear in the K.I. and their political fortunes in the years 1564–66. As we shall suggest below, the system of values reflected in the K.I. has more to do with poetics than with politics. Indeed, would an author whose positions were determined by “the socio-political struggle of the mid-sixteenth century”²¹ place the following prayer in Ivan’s mouth?

Много согреших без числа и не преста от злоб своих. Доколе господи, прогневаешия на раб своих? Мене бо еси поставил пастыря избранному своему стаду, и аз согреших — и погуби прежде мене, а не овца моя. Да за что си погибают? Токмо грех моих ради и небрежения, ни попечения о сих! Ныне, господи, прости вся грехи моя и не помяни первых беззаконии моих, во юности сотворенных... (КИ/М., 77)

Having questioned the bases of Kuntsevich’s dating of the work, we may now consider some elementary facts which his predispositions led him to disregard: the chronology of the known manuscript copies and the “convoy” in which the K.I. is usually found:

1) there exist at least 231 copies of this text in both versions, a number large enough to permit us to consider some statistical logic. 142 of these are quite firmly dated in the XVIIth century, another 85 later than that. Kuntsevich, quite cautious on such matters, placed only *three* copies (N.B. all belonging to group “b”) at the “end of the XVIth century.”²² Moiseeva adds one to this group, but offers only vague justification for this conclusion.²³

2) Important doubts concerning chronology are raised by the “convoy” in which many copies of the K.I. (particularly group “a”) are found. From the incomplete information available in print, it appears that the K.I. has a tendency to appear with suspect frequency in the company of works which were written, or were particularly popular,

²¹ KI/M., 12.

²² Kuntsevich 1905, 163.

²³ KI/M., p. 25. This is unfortunate: the archaism of the XVIIth century makes dating of Slavonic manuscripts in this period particularly difficult. Even such experienced specialists as A. A. Shakhmatov and A. E. Priselkov could miscalculate by as much as a century on the basis of handwriting alone. (PSRL XXVII, p. 4.)

in the first half of the XVIIth century.²⁴ Thus of the two copies of group "a" which have been described in print, one (Sreznevskii) is found together with the so-called "*Inoe skazanie*"²⁵ while the other (Buslaev) has the following "convoy":

- 1) *Povest', sirech istoriya o velikom i khrabrom Aleksandre, tsare makedonskom . . .*
- 2) *Skazanie o prishestvii skvernago i bezbozhnago tsarya Batyya*
- 3) *Skazanie o prikhode bezbozhnago tsarya Mamaya*
- 4) *Skazaanie, sirech' istoriya ob azovskom sidenii*
- 5) *Skazanie divno i slavno o prichtakh semi mudretsov*²⁶

C. Authorship

Equally tenuous are others of Kuntsevich's conclusions, reaffirmed by Moiseeva, concerning the origins of our text: they take the author's word that he had been an eyewitness of many of the events described; that he had been in captivity in Kazan' for some 20 years; that he knew Tatar and the "ways" of the Tatars.²⁷ Such asseverations are among the oldest devices of narrative literature; they appear, notably, in the text to which the K.I. owes much in matter of style, the *Tale of the Fall of Constantinople*.²⁸

So far as can be ascertained from the text, its author had little knowledge of Tatar culture or politics, and no knowledge of the Tatar language, as is shown by major blunders which belie any real knowledge of things "Tatar":

—the attribution of human and animal sacrifice to the Kazanis, a practice as abhorrent in Muslim as in Christian culture; (KI/M., p. 149; PSRL XIX, 151)

²⁴ E.g., *Povest' ob azovskom sidenii*, the *Chronographs* of Popov's 2nd and 3rd recensions, the fabricated *stateinye spiski* and diplomatic correspondence, the works of Peresvetov and Kurbskii etc. Cf. Kuntsevich 1905, pp. 12-163.

²⁵ *Opisanie rukopisnogo otdela Biblioteki Akademii nauk*, Vol. 3, Part 1, p. 374. Although this manuscript apparently bears a 1642 watermark, Moiseeva (KI/M., p. 28) for some reason moves it back to "the first quarter of the XVII century."

²⁶ I.A. Bychov, *Opisanie rukopisei F.I. Buslaeva*, SPb., 1916, p. 272. Here too, Moiseeva moves to the "middle of the XVIIth century" a manuscript which Bychov considers to be of the "second half or end of the XVIIth century" (KI/M., p. 29)

²⁷ Kuntsevich 1905, pp. 557-62; KI/M., pp. 12-13.

²⁸ A.S. Orlov, *Geroicheskie temy drevnerusskoi literatury*, Moscow-Leningrad, 1945, pp. 113-114.

—the attribution to Kazanis of such speeches as “let us not cast aside our good Saracen faith” (KI/M., 146) The term “Saracen,” although ultimately oriental in origin, would not be used by Kazani Tatars of their faith, nor indeed by one who was “sympathetic” to it, since it is a part of the lexicon of pejoratives inherited by Muscovites from the works of Western anti-Muslim propagandists;

—the assertion that Safa-Girei spared Shigalei’s life because the latter was “of the house of Tokhtamysh.” (KI/M., p. 65) In fact, Shigalei and his brother Dzhanalei were sworn enemies of the Gireid dynasty precisely because the Crimeans, who claimed the rights of descendents of Tokhtamysh, considered them usurpers in Kazan’.

Finally, Kuntsevich’s assertion that the author of the K.I. used Tatar sources, written and oral, is not substantiated.²⁹

All in all, then, Kuntsevich’s conclusions concerning the origin of the K.I. are utterly unconvincing, even when “buttressed” by recent additions. This is in large measure due, apparently, to his insufficient consideration of the text’s formal and stylistic properties, and his gross underestimation of the culture, talents, and purposes of the author. As a result, he was insensitive to the *way* in which the author controlled his sources, and prone to rather preposterous hypotheses concerning the history of the text. In particular, as we shall now see, his proposed *stemma*, the “one truncated copy” hypothesis, can be accepted only on the supposition that the “*drevne-russkii knizhnik*”, when presented with two texts, one containing a smooth and complete narrative, the other only half of that narrative, together with various accretions amounting to so many miles of broken pavement, would consistently prefer the latter, both as the protograph of additional copies and as the model for major textual corrections. But such primitiveness is in the eye of the beholder.

III

Kuntsevich’s conclusions not only fail adequately to answer the questions which he posed; they show that he left numerous crucial questions altogether unposed. Some of these unposed questions arise

²⁹ Kuntsevich 1905, p. 509.

out of simple logic; others concern fundamental features of our text. It is time to face these questions, and with them the prospect of redoing much of Kuntsevich's great labor.

The "one truncated copy" hypothesis of the origin of the copies of group "b" must, to begin, be confronted with the contradictions presented by the texts. If, as Kuntsevich maintained, all 224 copies of group "b" (his versions III-IX) are descendents of a single truncated copy of the first 49 chapters of the text, logic requires that:

- a) to the extent that the groups share a common protograph (i.e. Chapters 1-49) the best readings of group "a" should, where there are variants, be consistently less corrupt than those of group "b."
- b) major *defects* may be shared by: i) all copies of both groups; ii) some copies of "a" and all copies of "b", but *not* by: i) all of "a" and only some of "b"; ii) some of "a" and some of "b."
- c) the "seam" at the end of the hypothetical truncated copy can have occurred at only one place, i.e. it should occur at the same place in all complete copies of "b."³⁰

In fact, however, preliminary study of only those few copies which are accessible in print indicates that these logical conditions are not satisfied. Thus, for example, we find innumerable passages which are clearly corrupt in all printed copies of group "a", and more satisfactory in group "b." To cite a few of the more obvious:³¹

³⁰ Conditions "b" and "c" assume that a copyist having access to copies of both groups would choose to copy version "a."

³¹ There are hundreds: compare, for example, the lament for the land of Rus' on KI/M., 67-77 and PSRL XIX 275-278. The examples given represent together with passages cited elsewhere, an even sampling of the text shared by groups "a" and "b." Spelling is simplified as in KI/M. When only one page reference is given, it is understood that texts of the same group are similar in the essential features. The following abbreviations will be used throughout. Sol.=the Solovetskii copy, used by Kuntsevich as the basis for his text of group "a" in PSRL XIX; Sr.=the Sreznevskii copy; and Bus.=the Buslaev copy, both used in PSRL XIX for variant readings; F VI=manuscript F IV 578 of the Leningrad Public Library.; used for parts of KI/M.; U.=the Undol'skii copy, the basic text of group "b" in PSRL XIX; M., Khr., P., D., V., and A = the copies of the Moscow Seminary, No. 30 (88), Pogodin Collection (Len. Pub. Lib.) No. 1444, Leningrad Public Library F IV 134, Ministry of Foreign Affairs No. 95/125, Leningrad Public Library No. Q IV 170, and the Acad. of Sciences, 34.6.64 respectively.

по спискам группы а

I. а нас, яко терние острое, подобно ноземи босыми ходящему по нему; и мал камень разбивает великия корабля. (КИ/М., 110; в Сол "...подобает нозе босым ходящим...", ПСРЛ XIX, 94)

II. Яко да прочетше братия наша, воины, от скорби своя применяются, а простые же возвеселяются... (КИ/М., 43; ПСРЛ XIX, 2)

III. Еще же и верою християне и подобием первым работы вернаго своего князя християнска быти не восхотеша, но держащаго латинскую веру, короля литовскаго держателя себе восхотеша имети. (КИ/М., 54-5; в Бус, ПСРЛ XIX, 6 "...и подвигом первым...")

IV. ...яко да повелит ему невозбранно на пределе своя земля мало время починути от труда своего, и собратися з градными своими многими вои... (КИ/М., 49; ПСРЛ XIX, 14-15)

V. И беша у того князя Едегея 70 сынов от тридцати жен... (КИ/М., 50)

по спискам группы б

I. ...а нас, яко терние ногама попираемо, остави. И не весть ли, яко терние остро есть и прободает нозе босым ходящим по нему; мал камень разбивает великия корабля. (ПСРЛ XIX, 370 /списки М., В., А; в У. "подобает" вместо "прободает"/)

II. ...да прочетше братия наша, и воины и стратиги, от скорби своя на радость пременяются, простые же люди да возвеселяются... (ПСРЛ XIX 190, по списку М.)

III. Еще же верою они быша они (так) християне, и под игом первым работы вернаго своего великаго князя християнскаго не восхотеша, но одержимаго Латынскаго верою краля, Литовскаго держателя, восхотеша иметь... (ПСРЛ XIX, 198)

IV. ...яко да повелит ему невозбранно, на пределех земля своя мало время от труда опочити и собратися по малу с разгнанными своими со многими вои... (ПСРЛ XIX, 213)

V. Бяше бо у того князя Едегея: (М., В., А.) 30 сынов от 9-и жен; (Д., П.) 9 сынов от 30-и жен; (Хр.) 19 сынов от 30-и жен (ПСРЛ XIX, 213)

- VI. ...друголюбие с ним велие сотвори, яко сын ко отцу, и брат или раб к господину своему... (КИ/М., 50; ПСРЛ XIX, 15; в Бус: "и брат" нет.)
- VI. ...дружелюбие с ним велие сотвори, яко сын ко отцу, или брат брату или раб господину своему... (ПСРЛ XIX, 213, "или брат брату" нет в П; "брату" нет в Хр./)
- VII. (Василий II) и словесем и вере его (Улу-Магмета) обещанию, яко поган (так!) не ят истинне быти, мнев веселяся глаголюща ему и лжуща... (КИ/М., 51, ПСРЛ; XIX, 17; Бус: "все лесь")
- VII. (Василий II) и словесем и вере его, яко погана, не ят истинне быти, мяя его все лесь глаголюща ему и лжуща... (ПСРЛ XIX 216)
- VIII. И посади на Казани служащего своего царя Махметеминя И берегимовича, и приехавших (так) ис Казани к Москве ... (КИ/М., 58, по Сол; ПСРЛ XIX, 22: ...своего царя Махметеминя И берегимовича,, и приехавших... и т.д.)
- VIII. И посади на Казани князь великий Иван Васильевич служилого своего царя Махметемина Ибрегимовича, приехавшего ис Казани к Москве... (ПСРЛ XIX, 227)
- IX. Руским же воем всем спящем, от труда путнаго опочивающе, и храбрых человек сердца без помощи божия восколыбашася, мяхчая женских сердец слабейша... (КИ/М., 62)
- IX. (Русским) всем пьяным спящим; и храбрых человек сердца без помощи Божия воскабыша мягчее и женских сердец слабейше. (ПСРЛ XIX, 235-6, по М.)
- X. Воевод же великих 5 убиша: трех князей Ярославских, князя Андрея Пенка да князя Михаила Курбскаго да Карамыша с братом его, с Родоманом, да с Федором с Киселевым, а Дмитрея же взяша жива на бою, и замучи его царь казанский
- X. Воевод же тогда пять убиша великих: трех князей Ярославских, князя Александра Пенькова, князя Михаила Курбскаго Карамыша з братом его с Романом, да Федора Киселева, Дмитрея же яша жива на бою Шеина и замучи его царь в

- злогоркими муками. (КИ/М., 62)
- Казани злогоркими муками. ПСРЛ XIX, 236
- XI. И мало погодив, прииде к (Ивану IV) вестъ, сказующа бо Шигалея жива, добраго слугу его и вернаго, блиско идуща в поле чисте, нага, яко роженна, (КИ/М., 66)
- XI. И мало логодив прииде и вестъ к нему, сказующая жива царя Шихаллея и добраго слугу его вернаго, и блиско идуща в поле (“чстно” сверху) Нагаи проеоженьна... (ПСРЛ XIX 244)
- XII. Воеводам же началныи в конной рати, полем... (КМ/М., 67; в Сол., ПСРЛ XIX, 34: “Воеводам же начальным в конной рати, полем...”)
- XII. Воспомяну же воеводом началным имена. В конной рати полем... (ПСРЛ XIX, 248. В Хр., Д., П нет “воспомяну”.)
- XIII. Боящеся его всяк человек русин. И воевода князь Иван не смеяше против его ехати и с ним битися... (КИ/М., 70. В Сол., ПСРЛ XIX, 39: “Боящеся”; нет “князь”)
- XIII. И бояся его всяк человек русин, воевода и воин, против его выехать и с ним братися не сме... (ПСРЛ XIX, 256)
- XIV. Иван Васильевич.. (нача быти)... весел сердцем, и сладок речью, и окорадостен и в скорбех и в бедах, множае во всем искусен бывает... (КИ/М., 74)
- XIV. Иван Васильевич... (нача быти)... весел сердцем, и сладок речью, и окорадостен от зрения очей своих, а въстовая (так) весел всем, и печальная бледость не бе на лице его. Всяк бо человек, возрастыи во скорбех и в бедах, много же во всем искушен бывает... (ПСРЛ XIX, 267)
- XV. И бысть ему жен пять и всех любимее первых жен. (КИ/М., 78)
- XV. И бысть ему то пятая жена, и возлюби ю зело, паче первых своих большеиц. (ПСРЛ XIX, 282)

- XVI. Они же проспашася, все в чепех и в оковах, ведомыя на пути, они же плакахуся совета своего и домыслия. (КИ/М., 81)
- XVI. ...и проспашася в чепех и во оковах ведомыя на пути, и плакахуся злосоветия своего и недомыслия (ПСРЛ XIX, 290)
- XVII. Сказоваху же бо и се царю и воеводам нашим старейшины и сотники горния черемиса, живущи неподалече от Свияжска града, тужаше и жалящася, иже добре гора сия святящася “и до поставления града”, рекоша... (КИ/М., 88)
- XVII. Сказываху же се царю и воеводам нашим старейшины сотники горния Черемисы, живущих неподалече от Свияжскаго града, — тужаше и жалашася, иже добре и гораздо сведяще — “до поставления бо града”, рекоша... (ПСРЛ XIX, 310)
- XVIII. ...и рекоша сами к себе: Что сотворихом? почто не убрегохомся? как уснухом? как оболсти нас Русь лукавая, аки во сне? (КИ/М., 92)
- XVIII. ...и рекоша сами к себе: Что сотворихом и что не убрегохомся? како уснухом и како не устрего/хо/мся? и како оболсти нас Русь, лукавая Москва, аки во сне? (ПСРЛ XIX, 321. А., М., Хр., П.: нет “како... устрего/хо/мся?”)

Notes to Russian examples:

I. In addition to the clear omission caused by the two uses of “*terne*”, NB a seeming progression: M.V.A. > U > Sol. > KI/M.

V. The most logical progression here is important: it must be: 30 sons of 9 wives > 9 sons of 30 wives (metathesis) > 19, or 70 sons of 30 wives (logical correction of “9 of 30”, in one case by the addition of “az”, in the other by assuming that “on”=70 was meant in place of “fita”=9. Thus we are left with M-V-A > D.P. > Khr and, differently, D.P. > KI/M, Sol and Bus.

VI & VII. confirm the connection, observed in many cases, between P. and Bus., across the line separating group “a” from group “b.” (see below)

XII. That the phrase used in full in group “b” is original is confirmed by the use of the same phrase in all copies on KI/M., 68 and PSRL XIX, 252.

XIII. *i voin* > *Ivan* > *kniaz' Ivan*

XIV. Here, as in I., an omission caused by the similarity of the words in boldface.

XV-XVII. These make such jibberish in group "a," and are so clear in "b," that no comment seems necessary.

XVIII. A particularly interesting passage: a rhyming quatrain in best copies of group "b," variously mutilated in all copies of group "a," and in many of group "b."

There are numerous features, in addition to those cited above, (V, VI, VII, XVIII) which are *shared by some copies of group "a" and some copies of group "b."* These cases speak against Kuntsevich's thesis about the history of the text, unless we assume that copyists would correct a copy of group "b" from one of group "a" *without* sensing the superiority of group "a" as a whole. This requires us to accept a view of the esthetic level of seventeenth century *litterateurs* which is altogether absurd.

The first major "shared" feature has been much discussed. It concerns the so-called "missing chapters," i.e. Chapters 2, 3, 4, 5, and 6 (as numbered by Kuntsevich). Some copies of both groups contain all of these, which were a part of the original text.³² Other copies have 3, 4, and 5 displaced, and found in chronological order, after Chapter 11. Finally, some (all belonging to group "a") lack Chapters 2-6. This may be represented as follows: (- : missing; + : present; = : displaced)

Ch.	Group "A"					Group "B"						
	KI/M	Sol	Sr.	Bus	FIV	U.	M.	Khr.	P.	D.	V.	A.
2	-	-	-	+	+	+	+	+	+	+	+	+
3	-	-	-	+	+	+	=	+	+	=	=	=
4	-	-	-	+	+	+	=	+	+	=	=	=
5	-	-	-	+	+	+	=	+	+	=	=	=
6	-	-	-	+	+	+	+	+	+	+	+	+

Thus we have three types of text, one represented by copies of both groups, each of the others by one; i.e.:

- all chapters, in order (both groups: Bus, FIV, U., Khr., P.)
- all chapters, 3, 4, 5, displaced (only group "b": M., D., V., A)
- chapters 2-6 missing (only group "a": KI/M., Sol., Sr.)

³² Kokorina, *op. cit.*, KI/M., p. 27.

Here we might assume either that: a) both the original protograph and the protograph of group "b" (the "truncated copy") contained all chapters, in right order, and that the metathesis in group "b," and the omission of 2-6 in group "a" occurred independently, or; b) that the first version was like the full copies of group "b", and that the protograph of the copies of group "a" which lack the 5 chapters was made by an editor who had at his disposal both metathesized and unmetathesized versions of group "b", saw that the 3 metathesized chapters were not vital *and* that chapters 2 and 6 contained "ragged edges", and decided to leave them all out. In this case we would further assume that the copies of group "a" which contain all of these chapters represent a different recension, in which it was decided to include all of the chapters.

The first of these assumptions challenges the laws of probability; the second seems somewhat artificial, and is, of course, in direct contradiction of accepted views. The first is excluded, however, and the second supported, by another observation: while copies containing all chapters in right order (Bus., probably F IV, Xr., and P.)³³ have at the end of Chapter I the passage

XIX. "Мне же от царя Казаньскаго зело чтиму, и попремногу мене любяше; велможы его мудрейшии и чеснейшии беседоваху со мною и паче меры брежаху мя..."

those (NB all of group "b") which have the chapters in changed order (M., V., D., A.) have at the same place

XIX. "Мне же еще живушу в Казани, часто и прилежно от царя в веселии бываюшу и пытаюшу ми беседующих со мною премудрейших и честнейших казанцев — бе бо царь по премногу зная мене и любя, и велможы его паче меры..."

³³ U. has a missing folio at this point, cf. below. Although it is clear from Moiseeva's edition that F IV contains the missing chapters, it is not possible to determine definitely whether it has this passage.—KI/M. has minor variants here.

as do all copies which lack chapters 2–6. Thus a logical progression is indicated:

stage 1: all chapters, right order, “Мне же... zelo чтиму...”

stage 2: all chapters, 3–5 in *wrong* order, “Мне же еще живушу...”

stage 3: 2–6 omitted, “Мне же еще живушу...”

This hypothesis is further supported by the fact that *only* copies with Chapters 2–6 missing contain the odd reference to Prince Andrei Iur'evich in the first chapter or introduction (PSRL XIX 1; altered without explanation by Moiseeva, p. 43) which makes sense only *after* the elimination of Chapters 2–6 leaves Chapter 7, “*O pervom nachale Kazanskom*” relating the deeds of Andrei Iur'evich, immediately following. Additional evidence of the conscious excision is the fact that this 7th chapter is numbered “Chapter 1.”

Another feature, clearly a corruption, shared by *all* copies of group “a” and *only some* (like Khr. and P.) of group “b”, is a lacuna, the equivalent of one folio, in Chapter 1. Compare:

XX. ...до Батыя царя.* Бысть же Черемиса зовомая Отыки — тоеже глаголют Ростовскую чернь — забежавших тамо от крещения русскаго, и вселившимся им в Болгарских жилищах. Тамо бо бе преже Болгарец мал, за Камою рекою, промеж великия реки Волги и Белья Воложки, до великия орды Ногайския. Болшие же Болгары на Дунаю. Тут же был на Каме град старый Бряхов Болгарский, ныне же градище пусто, егоже первое взят князь великий Андрей Юрьевич Владимерский, рекомый Боголюбский и в конечное запустение предаде, и Болгар тех под себе покори.* О первом же начале... (ПСРЛ XIX, 191, по

XX. ...от Батыя царя. А о первом начале... (ПСРЛ XIX, 3; КИ/М., 44)

списку М. Текста между звездочками нет в списках Хр., П.

Since the borders of this gap coincide with sentence boundaries, one might in this case as well question whether this represents an omission or an interpolation. This question is eliminated by comparison with another passage in the same texts:

XXI. ...самоедем. И наполни такими людьми землю ту, и приложи царь Саин к Казани Болгарские грады, яко да царем Казанским обладаютя. И бысть Казань стольный град, вместо Бряхова, града Болгарского, и вскоре новая орда и земля благодородная и семенитая и всяко рещи медом и млеком кипящая. Дасть царь Саин во обдержанье и в наследие поганым. И от сего царя Саина прежде зачась Казань и словяше юрт Саинов, и любяше и царь, и часто сам, от стольного своего града Сарая приходя, живяше в нем, и остави по себе на новом юрте своем царя от колена своего и князя своя с ним. По том же царе Саин мнози царие кровопицы русские земли губители прменяющесе царствоваше в Казани лета многа...
(ПСРЛ XIX, 210 по списку М.)

XXI. ...самоедом. Наполни такими людьми землю ту еже ина черемиса, зовемая отяки, тое же глаголют ростовскую чернь, забежавши та от крещения рускаго в болгарских жилищах, и приложи х Казани царь болгарские грады, обладаютя царем казанским. То бо бе прежде земля болгарець малых за Камою, промеж великия реки Волги и Белья Волжки до великия Орды Нагайския. А большия болгары на Дунае. Ту же был на Каме старый град, именем Брягов болгарский, ныне же градище пусто, его же первое взя князь великий Андрей Юевичь Владимерский и в конечнее запустение преда, а болгар тех под себе покори. /А балыматы от болгар тех яко 20 поприщ. И дале тот же князь великий повоева./И бысть Казань стольный град, вместо Брягова. И вскоре и семенита, и именита, и медом кипяща, и млеком и дашася во одержанье и власть и в наследие поганым. И от сего нова орда и земля благодородная, царя Саина прежде зачась Ка-

заны, и словяше юрт Саинов.
И любяше царь... (КИ/М., р.
48. Текст в /.../ только в
КИ/М., Сол., Ср.^{33а})

Clearly the left hand text, as found in copies which contain the text cited above, (example XX) is original, while the version in the right hand column, found only in texts which have the previous omission, represents a "patchwork" contrived to reintegrate the lost information. *But two copies of group "b" (P. and Khr.) do not have this collage. Why?*

Most probably because, while in copies like P. and Khr. the omission of the passage in Chapter 1 was caused by the loss of one folio, copies like KI/M. (NB all of group "a") descend from a copy which had both defective and complete versions of Chapters I as sources, and whose editor discovered the omission after copying Chapter 1, and compensated for it in Chapter 7.

The following sequence is suggested:

stage 1: complete text (as left hand texts above) (Copies like M.)³⁴

stage 2: accidental loss of folio in Chapter 1, no compensation
(Khr., P.)

stage 3: mechanical reproduction of lacuna, corrected from complete text (all copies of group "a.")

As we shall see, this sequence is confirmed by interesting evidence of precisely such editorial work found in one of the most important copies, that of the Undol'skiy collection.

Particularly damaging to the "one defective copy" hypothesis is one feature which has been adduced as an argument for it: the "seam" at the end of the first 49 chapters. Chapter 49 consists in all copies of group "a" of "The Council of the Tsar and Grand Prince with his Boyars," and it is followed by a separate chapter entitled

^{33а} The correlation of the "balymaty" passage and the "rostovskaya chern'" with a *Chronograph* composed after 1645, which originally contained a copy of the K.I., now removed, should be examined. The manuscript is Pogodin 1576. (Kuntsevich 1905, 197) and contains the following (listing of peoples along the Volga) "kozary i balymy i bolgary izhe i ushletsy yazyka slovenskago, zemli Rostovskiya."

³⁴ U. has a missing folio at this point also. See below. Kuntsevich considered this information "bolee umestno" in Chapter I, but drew no conclusions. Kuntsevich 1905, p. 197.

"The Answer" of the Tsar's retainers. The corresponding chapter in the best copies of group "b" consists of the first part of the chapter "The Council . . .", followed by an "Answer" which is radically different in tone and text from the "Answer found in group "a". The former closely resembles a similar episode in the "*Letopisets nachala tsarstva . . .*" while the latter is original and more appropriate to the following narrative.

Now, although the "Answer" is not found in all copies of group "b," we must assume, if we are to accept the primacy of group "a," that the copyist-author of the first copy of group "b" had a text of the "Answer" at his disposal, but that he chose to rewrite it. Moiseeva, stressing the putative publicistic purposes of the author, has pointed out that the "Answer" as found in group "b" is much less critical of the boyars than that of group "a," which fact she attributes to the "changed political situation after (Groznyi's) death" (K.I./M., 12). This explanation is not convincing; there are numerous passages in group "b" which are much more explicitly *anti-boyar* than the corresponding passages of "group "a," for example:³⁵

XXII. И всем тогда князем и велможам их и судиям градским самовластием объятим и в безстраши Божии живущим, и не право судящим, но по мзде, и насильствующим людям и никого не блюдущемся, понеже бе великий князь юн, и ни страха Божия имущим, и не брегущим от супостат, и не пекущимся Рускою землею: тамо бо ингде языцы погани христиан воеваху, zde же, среди земля, сами мздами, и налоги, великими бедами, и продажи христиан губаху. Да яко же велможа творяху, тако и обычныя то же и раби их творяху, на господни своих зряще... (ПСРЛ XIX. 265)

XXII. Всем тогда князем и бояром, и велможам, и судьям градским самовластием живущим, не по правде судящим, по мзде, и насильствуя людям, никогоже блюдущимся — бе бо князь великий юн — ни страха божия имущим, и не брегущим от супостат своих Руския земли: везде погании крестьян воеваху и губяху, и велможи крестьян губяху продажею великою. И тако раби их глядяху господин своих, тако же творяху неправды. (КИ/М., 72-73)

³⁵ Note that the grammar is improved in some copies of "a."

Conversely, as the passage cited above (p. 149) shows, the author of "a" was hardly uncritical of Groznyi.

Thus the "political" explanation is found wanting, as is the "one defective copy" explanation, when confronted with the evidence obtained from close scrutiny of the "seam" in various copies. For here we find something unexpected: while the end of the "Council . . ." is essentially identical in all copies of group "a," it shows considerable variation in copies of group "b." Copies like Khr. and P. end in the middle of the "Council," (*ne smert' bo no zhiivot . . .*) while those like U. end just before the beginning of the boyars' response, which in copies of group "b" is not made a separate chapter. Now, since copies like M., V., and A. contain the *complete* "Answer," we may explain the "ragged edges" in the other copies of "b" by assuming the loss of some folios. The matter does not end there, however.

In U. the end of the text is clearly a ragged grammatical edge; compare:

XXIII. И преста глаголя и мало мольчаниу бывшу. (ПСРЛ XIX, 385, список У.)	XXIII. И преста глаголя... (Иван) и малу молчанию бывшу и от- веща ему благоверный князь Владимир... (там же, список М.)
--	--

In group "a," however, this loose end is the end of the chapter, and is followed by the heading of the "Answer," (in the group "a" version):

И преста глаголя и малу молчанию бывшу.
 ОТВЕТ КО ЦАРЮ И ВЕЛИКОМУ КНЯЗЮ ОТ БРАТИИ...

How can we explain this paradoxical seeming dependence of group "a" at this point on a defective copy of group "b"?

The answer is to be found in a closer study of U. This is one of the oldest copies (the oldest known to Kuntsevich) and was taken by Kuntsevich as the basis of his edition, in spite of some *lacunae*, because of the general superiority of its text in passages where numerous variants were encountered. But U. is noteworthy not only for its textual purity: if one reads between the folios, so to speak, it becomes apparent that *Kuntsevich was not the first to use this superior text for editorial purposes*. For the missing folios in the first 49 chapters of U. can in all cases be explained in terms of correlation to passages which

are defective in numerous copies of group "b," and corrected or improved in some way in *all* copies of group "a." Thus, if we consider those *lacunae* in U. which result from the loss of a folios in *that* text, we observe the following correspondences:

- i) two or three folios missing at beginning: these may have been lost through accident, but it is noteworthy that one of them, contained the better text of the first passage on "*Bolgary*" (see example XX above)
- ii) between folios now numbered 7 and 8: the second of the passages on "*Bolgary*," used to "patch" the text, as in group a. (See above, example XXI)
- iii) folio 9,: the passage containing the confusion of Edigei's sons and wives, and other errors, (See examples IV, V, VI, VII above)
- iv) between folios now numbered 10 and 11: contains numerous variant readings in such copies as D.³⁷
- v) between folios now numbered 12 and 13: in copies like M., the "missing chapters" come at this point, followed by some additional material designed to strengthen the chronological sequence. In D., the chapters are found here, *without* the additions. In group "a," the additions are absent in all copies, the chapters absent in KI/M., Sol. and Sr., and present in Bus. and FIV.

Thus it appears that 1) the missing folios in U. were removed in order to facilitate the comparison of versions such as M. and D.; 2) that they exhibit a strong correlation to the way these divergences were resolved in copies of group "a." These are the *only* absent folios in the first 49 chapters of U. (One is missing in the second part, but it apparently shows no correlation to divergences among copies, which is not unexpected, since the *comparison* of versions presumably ended at Chapter 49.) The importance of U. to our understanding of the history of the text is confirmed by other observations which follow a pattern entirely consonant with that of the missing folios. U. contains some 40 passages which are marked "zri" in the margins. Analysis of these passages yields the following observations:

³⁷ See fn. 16, page 23 of the first edition of K.I. (*Istoriya o Kazanskom tsarstve neizvestnago schinitelya XIV stoletiya po dvum starinnyim spiskam.* SPb, 1791) containing variants from "copy No. 74 of the Moscow Kollegiya inostrannykh del" (=D.)

i) just as the missing folios occur, with one explicable exception, in the first 49 chapters, the “zri” passages occur, with but one readily explicable exception (see below) in the latter part of the text.

ii) it is possible, without difficulty, to show that almost all passages so marked in U. correspond to passages in the “full text,” i.e. copies of group “a.” It is not necessary here to cite all of these passages; the following are representative:

Marked “zri” in U. (PSRL XIX) Corresponding passage in KI/M

1) 327, note g; 328, e; 326, d: marked “zri *diva*.” The text contains a second “*Tsarevino proritanie . . .* and four short “miracles.”

1) This is the *only* passage in the first 49 chapters marked “zri,” and the reason is clear: it is repetitious and breaks the narrative. As we shall see, the “zri” here indicates an omission in the protograph of group “a.”

О послании грамот к Москве...: (Иван Макарию) “Ныне же молю тя: не деи мене, но вдай ми свою молитву и благослови мя, яко Самоил Давида на Голияда... (ПСРЛ XIX, 403, г.; 405)

О благословении митрополитом...: И (Макарий) отпускает его, яко анггел божи Гедеона на царей Мадиямских, и яко Самоил кроткаго Давида на силнаго исполина Голияда... (КИ/М., 121)

Розряд воеводам в полцех: ...передовой полк: князь Иван Иванович Туронтай Пронский ...правая рука — князь Петр Михайлович Щенятов... (ПСРЛ XIX, 408, л.)

И отпускает противу царя крымскаго великих воевод своих, князя Петра Щенятева, да князя Ивана Турантая Пронскаго... (КИ/М., 122)

Тогда некто... слуга Ивана... Голована, и се уязвлен на брани и велми болезнуя лежаще... виде... яко верховныя апостоли Петр и Павел... с ними же... Николай (и) яко мос-

Некий убо человек от боярских людей, ранен велми, у града лежаще ...болен, язвами изнемогая... и видит... на воздухе дванадесят апостол... И нача святы Николае молити

ковстия люди... вопияху ко святому Николаю "О Николае помози нам на брань..." Николай же обратися ко святым апостолом и ...глагола: 'Отче преблагий Бог благоволи зде православию быти... (Воин же) очутися от видения ...И сие поведе господину своему... (ПСРЛ XIX, 422-423)

...некто воин... в куши своеи хотя опочинути, и слыша не от коего повелевающего ему востати... и видит святого Николу, глаголюща ему: "иди и рцы царю... да повелит воинство свое честным крестом и священною водою окропити, се бо дает Бог град сей Казань в руке его." Он же скоро тече и поведает сие царю... (ПСРЛ XIX, 423-424)

святых апостол: ...благослови-те место сие ...да вселятся в нем православнии людие... Воин же той болный... возбнув от видения и повеле к себе отца духовнаго призвати, и поведает ему се... (КИ/М., 142)

...ин же воин, ...виде во сне святого Николу, вшедша к нему в шатер его и возбужающа его от сна, глагола: "Востани, человек, и шед рцы царю своему... да приступает дерзновенно ко граду...: бог бо предаст ему град сей..." Он же востав и тек, поведает самому самодержцу. (КИ/М., 142)

Other correspondences are as follows:

<i>U. (PSRL XIX)</i>	<i>KI/M</i>
416, k	128
423, v	135
424, e	141
426, b	148-149
426, e; 427, b	120-121
436, d	119
441, e	147-148
450, zh	116, 148
455, b	139-140
462, a	157
464, a	158
467, v	160
469, v	161-162

471, d	165
475, g	166-168, especially 477=168
478, zh; 480, e; 481, g	171 ff.
481, e & zh	162
483, b	161

There are three passages (473, b; 483, g; 385, e) which seem not to find reflection in the text of group "a": all have to do with Ivan's family (the birth of Dmitrii Ivanovich etc.).

There thus remain but three passages (488, zh; 412, g; 414 zh) whose "zri" notation is not readily explained by examining the relationship of the text of group "a" to that of group "b" as represented by U.

Let us summarize our observations on the Undol'skii manuscript and pose some questions. Despite some missing folios, U. is one of the oldest and least corrupt texts of group "b". Together with others of group "b," it consistently yields better readings of variant passages than any text of group "a." Moreover, all missing folios in U. up to Chapter 49, the end of the shared text (only one is missing thereafter) correspond to passages containing discrepancies in various copies of group "b" which are resolved in group "a." Can we not assume that U. was used as a kind of standard for the comparison and improvement of the first part of the text during the preparation of a new recension?

The passages marked "zri" fall with one exception in the latter, disconnected portion of U. With few exceptions, they indicate passages which correspond to parts of the group "a" text. (Three of these exceptions are explained.) The single case of a "zri" notation in the first 49 chapters indicates the opposite: the marked passage is omitted in group a. Can we not see here a second stage in the work on U. and the creation of the protograph of group "a"? Must we not assume that the author of the protograph of group "a" first revised the completed portion of the tale, comparing a number of versions of group "b" (for which he removed folios of U.) and then composed the second half, on the basis of the sources indicated by his marginal notes in U. and presumably other manuscripts? Do we not have before us evidence of the process of creation of the so-called "first version"?

Affirmative answers to these questions would provide a satisfactory solution to the puzzles of the "seam" at the middle (or end) of Chapter 49: the author of the version now known as the first (group

"a") had at his disposal texts with variant endings to Chapter 49. Having compared them, he decided (as he had in the case of the misplaced chapters) not to choose one variant, but to improve the text by altering it somewhat. The chapter was divided, at the point suggested by the fortuitous interruption in U., and a new "Answer," more in keeping with the rest of the text as he envisioned it, was composed.

Thus the preliminary study of the copies of the K.I. available in print, leads to the following observations:

1. the hypotheses which have hitherto been accepted concerning the data, authorship, evolution and nature of the K.I. rest on a solid basis of preconception and cannot withstand even superficial examination. In particular, the "single truncated copy" hypothesis is untenable.

2. none of the 231 copies of the text in either version can be firmly placed within the XVIth century. Moreover, the copies of group "a" are clearly (with the possible exception of the Perets copy=KI/M) later in origin than many copies of group "b" (e.g., U.)

3. the "convoy" in which the K.I. is found indicates a high correlation with well-known XVIIth-century works.

4. there is considerable evidence that the texts of group "a" represent *later* stages in the evolution of the text of the first 49 chapters than those of group "b."

5. in U., we possess traces of editorial work which are closely linked to the relationships among copies of group "b" and between groups "a" and "b."

These observations seem to raise major questions concerning *every* aspect of this work. Scholars must undertake to re-examine all present views in the light of the simple facts. First, a new history of the text must be elaborated. The following highly tentative version is offered by way of a working hypothesis:

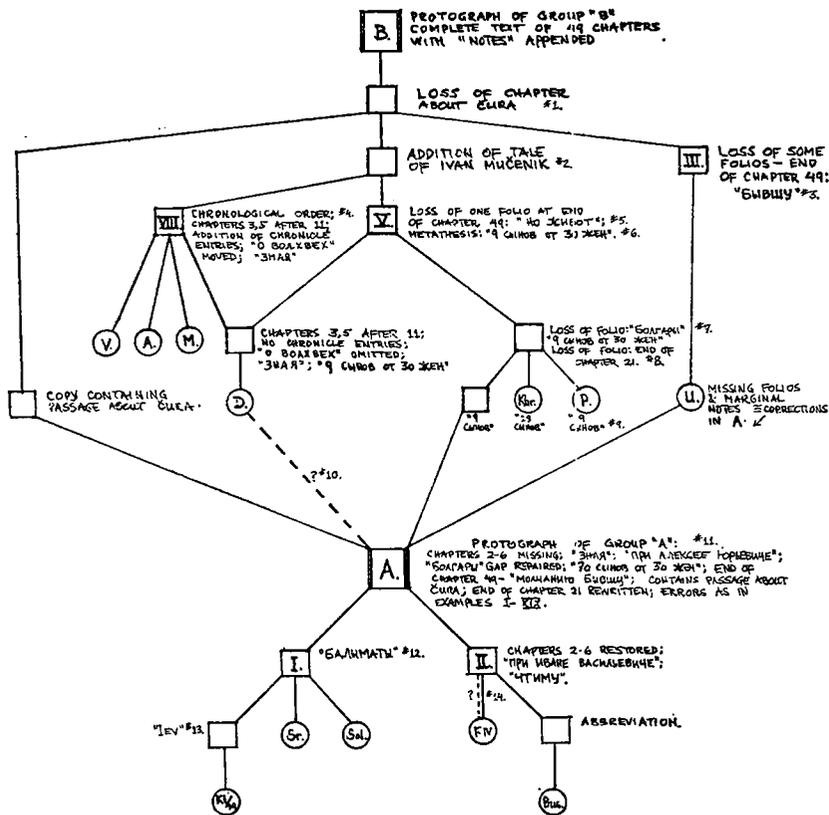
The *Kazanskaya istoriya* was created in at least two distinct stages:

i) the first stage included the collection and copying of excerpts from chronicles and documentary sources and the writing of the first half (i.e. to the end of Chapter 49 as found in copies like M.) Work was for some reason interrupted, and this finished portion of the text, together with the miscellaneous "writer's notebook," (which became the second half of copies of group "b") preserved (perhaps bound) as a unit, served as the protograph of all copies of group "b";

ii) at some later time, the work was completed. This stage com-

prised: a) the editing of the first 49 chapters, on the basis of copy U., and copies like Kh., D., and M., and; b) the completion of the narrative, from the "Answer" of the Boyars, in the style of the first part, on the basis of the materials contained in the "writer's notebook" (i.e. the second part of group "b" texts).

This hypothesis may be represented by the following tentative stemma:



NOTES TO STEMMA

□ = hypothetical copies

○ = extant copies

(Note: the hypothetical nature of the following is stressed: it takes into account only the major features of the first (shared) half of the two groups as represented by printed copies. The Roman numbers represent Kuntsevich's "redaktsii," which were found after the com-

pletion of this *stemma* to coincide in the indicated places with the findings of the investigation of entirely different features.)

1. This passage is discussed by Kuntsevich (1905, pp. 171–173). It appears that it was a part of the original text—it is the *only* major feature in which all copies of group “a” are superior to all copies of group “b.” Since Moiseeva did not publish variant readings, it is not easy to determine whether this information should be considered re-integrated as a part of the process of creation of “a,” or in the “Baly-maty” versions only (Bus. has an abbreviation at this point).

2. Kuntsevich 1905, p. 165.

3. See above, p. 163.

4. The changes in copies like M. are quite consistent, having in common the apparent purpose of improving the chronological order of the narrative. They may be seen quite clearly from Kuntsevich’s tables (Kuntsevich 1905, Appendix II.; see also pp. 191–2). Roughly ½ of the copies of group “b” share these features. M. itself is one of the oldest and most careful copies (Kuntsevich 1905, p. 136.) For the variation “*znaya*”/“*chtimu*” see above, p. 159.

5. See above, p. 163

6. See above, example V.

7. See above, pp. 160–161.

8. Compare PSRL XIX 265; KI/M., p. 73.

9. The particularly close connection of P. to Bus. is incidentally shown by numerous features.

10. That D. was used in the composition of A. is indicated by the correlation of a corruption apparently found only in D. with a missing folio in U. See above, p. 22.

11. The creation of the various copies of group “a” has not here been considered as closely as their relation as a group to copies of group “b.” It is possible, for example, that Bus. and F IV, clearly different from the other three shown, stand in some different relationship to them. The features indicated do, however, separate them as shown.

12. “*Balymaty*” refers to a phrase (see above, p. 160) found in the “patched Bolgary passage” only in KI/M., Sr., and Sol. It is probably of very late origin. Cf. KI/M., p. 48.

13. Only in the KI/M copy is the Bishop of Krutitsa mistakenly called Iov. KI/M., p. 166.

14. This relationship is almost impossible to determine in view of the lack of information given in KI/M about the text.

IV

It seems unlikely that much of significance will be added to the list of possible sources of the various versions of the K.I. compiled by Kuntsevich. There is still room for reflection, however, concerning

the significance of the use of one or another source, the criteria observed by the author in selection from a given source, and his methods of adaptation. In this connection two observations must be made:

a) the author had at his disposal the archive of the *Posol'skii prikaz*. As we shall suggest below, the use of these documents is but one of many features of the K.I. which connect its author with the so-called "*prikaz circles*"—the educated upper-level bureaucrats of the seventeenth century.

b) the author, unlike most chroniclers and historians before him, makes no significant use of verbatim citation from his sources—the information is thoroughly assimilated in a smooth and stylistically consistent narrative. This is but one of many stylistic features which sets the K.I. apart from sixteenth-century works.

Let us consider these points in greater detail.

a) There should be little question that the author of the K.I. had access to the archive of the *Posol'skii prikaz*. Numerous passages might be added to those cited by Kuntsevich,³⁸ as dependent on the Nogai and Crimean correspondence and no other source. Characteristically, however, Kuntsevich was interested solely in the "*veroyatnost*" of the information of the K.I.—and failed to ponder the significance of his findings.

The numerous features of the text which link it with this closely-guarded archive are of crucial importance in determining its origin. It is highly unlikely that one whose interests were primarily literary would have been allowed to browse in these documents in the security-conscious 1560's. And browse he did: his sources are letters scattered over a 50-year correspondence. Moreover, unlike the chroniclers, our author took therefrom not only factual information but also episodic kernels, which he developed in his own way, and bits of local and period color with which he adorned his narrative.

Let us consider but one case of each:

In one of the early historical chapters (5 in Kuntsevich's numbering) which set the scene for the central drama of the taking of Kazan', we encounter one Oblyaz, "*ulan of the Khan of Kasimov*," sent in 1480 to capture "the Golden Horde" (i.e. Sarai?) in a flanking action while Ahmed is engaged on the Ugra. The raid begins successfully, but as the Muscovite force is on the verge of destroying Sarai, Bblyaz

³⁸ Kuntsevich 1905, pp. 330-333.

addresses the following treasonable speech to his Khan, the leader of the expedition:

...“что твориши, о царю, яко нелепо есть тебе Болшаго сего царства до конца разорити, от него же и сам ты родися и мы все, и наша земля то есть и отчество. И се повеленная пославшаго ны понемногу исполнимом, и довольно есть нам и отоидем, егда како бог не попустит нам”. ПСРЛ XIX 202-3.

The raid is apparently interrupted, giving time for messengers to reach Ahmed, and he withdraws from the Ugra to defend his rear.

This episode is curious not only for the fact of its novel interpretation of Ahmed's withdrawal from the Ugra. Since all of the personages of the K.I. represent historical persons, we are prompted to ask, Who is this Obylaz? Kuntsevich was stumped, and obliged to limit himself to adducing random information about other Obylazes.³⁹ The Nogai diplomatic records, in this case, provide an interesting answer. One Obylaz (Ablez) was engaged for a number of years (1489–1503) as the chief Muscovite *bakhshei*, and apparently had control of the correspondence with the Tatar states.⁴⁰ Moreover, it is clear that this Obylaz engaged in *sub rosa* activities which appear from the extant letters to have been of a treasonable nature. (They involved secret dealings with certain Nogai princes, which might have been commercial as well as political, but certainly did entail the disclosure of confidential information.)

This Obylaz appears in no other source known to me; it is reasonable to assume that our author found him in the Nogai correspondence, and elaborated the above episode on the basis of the evidence of his shady dealings. We shall consider later a possible reason for his choice of this otherwise forgotten functionary.

An interesting case of the author's use of bits of information culled from the diplomatic correspondence to provide a more colorful setting is seen from the following comparison:

³⁹ Kuntsevich 1905, p. 221.

⁴⁰ *Russkaya istoricheskaya biblioteka*, Vol. 41 (*Pamyatniki diplomaticheskikh snosheniy Moskovskago gosudarstva s Krymskoyu i Nogaiskoyu ordami i s Turtsiyei*. Tom 1) SPb. 1884, Index. The *bakhshei* (Turkic *baxši*) was the Golden Horde equivalent of the Old Russian *d'yak*, and was translated as such. As we shall see, it is significant that the author of the K.I. calls Ablaaz not "*d'yak*" but "*ulan*."

Прилучишася тогда на Москве и послы некия, ...вавилонского царя посол, сеит царства его, муж зело премудр, и взят бысть с Казанскаго царства за 25 лет, удал... КИ/М., 167

...Да еще Ивану князю ведомоб было... Из Гиляни пришел лет з десять Сеид делал, и ты еси его изымал, и тыб его ныне мне дал спору и затейки бы не чиня... (письмо Шейдяка, 1537 ПДРВ VIII 27)

Thus the author of the K.I., in using this information, has retained the proper date of the capture of the *seid* (Shedyak's letter is dated 1537, from which it follows that he was taken in 1527, i.e., 25 years before the events described in the passage from the K.I.) and has substituted the biblical Babylon for Gilan.

It is to be noted that the use of official and semi-official documents, including those of the personal archive of the Tsar and the *prikazy*, as sources of both factual and stylistic material (especially for "archaizing") was common in the literature of the first half of the seventeenth century.⁴¹ In the so-called "Forged Embassy Documents," for example, we find that the narrative, written around 1614 with a primarily publicistic intent, is based on diplomatic records of the *Posol'skii prikaz*, including the same Crimean files which were apparently used by the author of the K.I.⁴² The Crimean materials were used by the author of this later work, as in the K.I., both as sources of factual material and for stylistic reasons, to add a touch of bogus authenticity.⁴³

As we have seen, the "convoys" of the K.I. in its many copies often include these and similar works.⁴⁴

⁴¹ Cf. *The Tale of the Siege of Azov*, which employs both the forms and the factual materials of the *Posol'skii prikaz*. (N.K. Gudziĭ, *Khrestomatiya po drevnei russkoi literature*, 5-oe izd., M., 1952, pp. 362ff.

⁴² M.D. Kagan, "Povest' o dvukh posol'stvakh," TODRL, XI, pp. 218-254.

⁴³ *Ibid.*, p. 225. The document cited from the Crimean files has nothing to do with the narrative of the "Povest'," but the expression "*prednie nashi o kosti i o lodyzhnom mozgu iurta delya sovoego rasbranilisya . . .*" caught the attention of the author of the "Povest'" and he incorporated it in his fabrication. Cf. RIO 41, p. 69. Another similar work, the so-called "Correspondence" of Ivan IV with the Ottoman Sultan, finds a direct parallel in the correspondence of the Nogai princes with the sultan. (KI/M., p. 103)

⁴⁴ E.g., the manuscript of the State Historical Museum, No. 1388 of the *Muzeinoe sobranie*, which contains the K.I. and the "correspondence" of Ivan and The Sultan. (M.D. Kagan, "Legendarnaya perepiska Ivana IV s turetskim sultanom kak literaturnyi pamyatnik I-oi chetverti XVII v.," TODRL XII, 266.)

It thus appears that it would be profitable to consider the *prikaz* milieu, a center of avant-garde culture in the early seventeenth century, as a major possible source of answers to the puzzles of the K.I. This source does indeed provide many apparent answers; only a few need be given here.

The first concerns the well-known riddle of the *basma*. This term is apparently found nowhere else in the known corpus of Old Russian Literature, (including chronicles) and its interpretation has engendered an extensive scholarly literature.⁴⁵ No satisfactory interpretation has yet been made, or can be made, on the basis of this single attested use of *basma*, for it is not clear from the text of the K.I. what is meant.

If we turn to the language of the *prikazy*, however, specifically to inventories of the personal treasure (*kazna*) of the tsars, we find that *basma*, along with a number of derivative forms, in the meaning "embossed metal work" (*basemnyi*, *basmiyannyi*) are common, but in a period slightly later than the supposed composition of the K.I.⁴⁶

Another interesting observation can be made of this passage in the various texts of the K.I. *Basma* appears twice in the same chapter of the K.I.; Ahmed sends Ivan III his ambassadors with a *basma*, which Ivan tramples and spits upon as a gesture of defiance. In the first case we read "*s basmoyu*" and in the second, "*priim basmu litsa ego*," which apparently indicates that an embossed portrait is what the author has in mind. In one manuscript, (F IV) which Moiseeva takes as the source of the "missing chapters" in her edition, this is made more explicit: in the first case we read "*s parsunoyu basmoyu*," and in the second "*priim bazmu (sic) parsunu litsa ego*." *Parsuna*, in the sense of "portrait, likeness" is not attested in Kochin or in Sreznevskii for the 16th century. It is first recorded in Great Russian in 1617.⁴⁷

⁴⁵ Its popularity among scholars, and a major cause of the confusion concerning its meaning, can be traced to the fact that Karamzin picked it up from the K.I., providing it with an incorrect interpretation, which has persisted to the present. (*Akademiya nauk SSSR. Slovar' Russkogo literaturnogo yazyka*, s.v.) That it appears only in this text seems clear from the scholarly literature cited and summarized by A.N. Samoilovich, "O 'PAIZA'-'BAISA' v Dzhuchievom uluse" *Izv. A.N. SSSR*, 6-ya seriya, 1926 [20], p. 1119 [sic].

⁴⁶ "Sholom cerkasskii, *basma medyana . . .*" (P. Savvaitov, "Opisanie starinnykh tsarskikh utvarei, odezhd . . ." etc., *Zap. Imp. Arkh. Ob.*, vol. 12, 1865, p. 306/1589/) "*Stol . . . oblozhen basmannym serebrem*." (A. Viktorov, *Opisanie zapisnykh knig i bumag starinnykh dvortsovykh prikazov 1584-1727*, p. 33/1642/); see also Vasmer, E.W., s.v.; D.K. Dmitriev, *Stroi tyiurkskikh yazykov*, M., 1962, p. 562.

⁴⁷ Vasmer, E.W., s.v. "*persona*" n.b.

It was, however, the standard term for portrait in the language of the *prikaz* inventories.⁴⁸ Moreover, this term was in most frequent use in the *Kazennyi prikaz*, where a well-known school of portraiture arose in the 17th century—and where portraiture was indeed called “*par-sunnoe pis'mo*.”⁴⁹ “*Parsuna*,” like *basma* draws our attention again to the *prikazy*, and specifically to the *Kazennyi prikaz*, where the inventories mentioned were compiled. In the same archive there is preserved one such inventory⁵⁰ which sheds some light on another passage of the K.I.

This part of the text,⁵¹ which concerns the death and submission of Mukhammed-Emin, ends with an extended description of some gifts which he sent to Vasilii III. Chief among these rare gifts is a tent of Persian origin, which is described in particular detail. This passage could be considered a flight of hyperbole on the part of the author of the K.I., were it not for the fact that the inventory just mentioned contains a lengthy description of just such a tent, which was a part of the Tsar's personal treasury in 1640. Comparison of these two passages reveals that in spite of the stylistic differences between the terse official jargon of the inventory and the flowery elaborations of the K.I., the description in the K.I. was probably inspired by such an inventory, or by the tent itself.

Our attention is further attracted by the note concerning the authors of the inventory in question. It reads, in part:

In the year 7148 (1640) on the 22nd day of January (Fedor Mikhailovich) . . . ordered an inventory to be made . . . of [his] treasury, which had been in the care of the *d'yak* Gavriilo Oblezov, and, having made an inventory and inspected everything which was there, they [the makers of the inventory—ELK] gave it to Pavel Ivanovich Volynskiy and the *d'yaki* Grigoriy Pankrat'ev and Almaz Ivanov.⁵²

The names of two of the *d'yaki* who were involved in the compilation of this document, Gavriilo Oblezov and Grigoriy Pankrat'ev are of special interest.

We have, of course, encountered an *Obylaz* (Ablez) before, and we

⁴⁸ Viktorov, *op. cit.*, pp. 386, 393 etc.

⁴⁹ Z.E. Kaleshevich, “*Khudozhestvennaya masterskaya posol'skogo prikaza . . .*,” *Russkoe gosudarstvo v XVII veke*, M., 1961, pp. 392–411. Novitskii, . . . “*Parsunnoe pis'mo*,” *Starye gody* 1909, no. 7–9, pp. 77–89.

⁵⁰ Savvaitov, *op. cit.*, pp. 335–336.

⁵¹ K.I./M., p. 61. XIX, pp. 29–30.

⁵² Savvaitov, *op. cit.*, p. 275.

may now pose one of the questions which seem obligatory in further study of the K.I.: do not the connections between our text and the milieu in which Gavriilo Oblezov worked, and indeed Oblezov personally, require us to investigate him and his activities for clues to the provenance of the K.I.?

Pankratiy, too, deserves our attention, for in some texts (D., Khr., P., and all copies of group "a") the campaign of 1489 is described as having ended on July 9th, "the day of the holy martyr Pankratiy"—while in many other copies (including U.) and in the chronicles which were apparently used as sources for the K.I., the information about the saint's day is absent. Now this is not the Russian saint (the Greek Pankratos, martyred in 60 A.D., is meant) and not every copyist would be able to supply this detail. Grigoriy Pankrat'ev might.

V.

Having offered these interrogative comments on the sources, let us turn to some observations about the author's most remarkable achievement—the rendering of such variegated sources into a unitary narrative of stylistically homogeneous and strict form.

In the final analysis, it is the study of the K.I. as literature, based on its stylistic and formal features, which must determine its place in Muscovite cultural history. The study of the history of the text, of the many copies, of its sources can produce only minor verities within a circumstantial conceptual frame; the major problems remain, as they would were we to possess the text in a dated autograph original or in a single typed copy found under a rock in Andorra. Only through a study of the text itself as literature can we provide a context in which the whole of our understanding can be greater than the sum of minor verities.

That the literary qualities of the K.I. set it apart from late sixteenth-century works has long been recognized. A.S. Orlov, one of the first and most astute to consider the K.I. as a work of *belles-lettres*, revolved the dissonance which he noted between the work and its presumed milieu by declaring it "the final stage of the work on style, as it evolved toward the end of the sixteenth century," which represents "the artistic canon of the times, composed of all of the stylistic refinements achieved by (Muscovite) *belles-lettres*."⁵³

⁵³ A.S. Orlov, *Geroicheskie temy drevnei russkoi literatury*, Moscow-Leningrad, 1945, p. 115; Kuntsevich 1905, pp. 510-514.

Dmitrii S. Likhachev has recently made some very thoughtful comments on the style of the K.I., but he, too, since he apparently accepts the traditional dating, is constrained to classify the most noteworthy features as "violations of literary etiquette."⁵⁴ Likhachev goes far beyond the many scholars who have pointed out the "tatarphilia" of the author, and have resolved this paradox by assuming that the author went "soft" on the enemies of Muscovite Orthodoxy during his 20 years in Tatar captivity. Likhachev's analysis is sophisticated, and he provides interesting stylistic evidence which confirms his "paradox": not only in explicit statements, but even in his choice of simile and metaphor, the author of the K.I. "violates" the "etiquette" of sixteenth-century Muscovite literature. Ivan IV's campaigns are described in terms exclusively reserved, within the canon, for the enemies of Rus', while to the Tatar armies are assigned the epithets traditionally associated with the righteous legions of the Orthodox.⁵⁵ Likhachev seems not to have considered in this case, however, the question which he discusses so thoughtfully elsewhere—when does the violation of one canon constitute the observance of another? Or, as Huizinga would have it, when do the violations of the rules of one "game" become so regular that they in fact become the rules of a new "game"?

The stylistic contradictions of the K.I. are in the main resolved when it is seen as a work which observed not the etiquette of the sixteenth century, but a more modern set of norms—if it is thought of as a historical romance of chivalry. The author's "etiquette" is best understood within a chivalric, rather than religious or patriotic system. If we consider the author's treatment of persons and events with this essentially chivalric "etiquette" in mind, the paradoxes seem to disappear.

Thus, the pivotal criteria of his judgments are those of honor, valor, and loyalty: royal station, whether Muscovite or Tatar; fealty, under any conditions; and bravery, by whomsoever displayed, receive the author's (and God's) blessing. Conversely, lack of nobility, treachery, and cowardice are condemned, and find punishment through divine intercession.

The author is quite explicit about these values, both in his inter-

⁵⁴ D.S. Likhachev, *Poetika drevnerusskoi literatury*. Moscow-Leningrad, 1967, p. 104.

⁵⁵ *Ibid.*, 106: Likhachev's comments on the similarity of the K.I. to the Chronograph of 1617 are to be noted.

pretation of the outcome of various incidents and in his moralizing comments, often found at the end of chapters.

The special honor due to, and required of, those of royal blood is stressed throughout. The most striking examples have to do with Shigalei, who was, as a Chingisid, of royal blood. In addition to an extended eulogy, which stresses chivalric qualities:⁵⁶

Он же слушаше аки отца Шигалея царя... Бе бо царь Шигалей а ратном деле зело прехитр и храбр, яко ин никто же таков во всех царех служащих самодержцу, и вернейше везде наших верных князей и воевод... (КИ/М., 138; ПСРЛ XIX, 136)

Shigalei receives an extended apostrophe to his fealty:

И много (Василий III) царю Шигалею за сие воздаяние дасть, что х казанцем не приложися, и не прелстися изменить ему, быв у меча, у самая горкия смерти и поглошен во адове утробе. А род бе с ними един, варварский, и язык един, и вера едина. И за сие велику похвалению достоин есть царь Шигалей, яко воля своя и царьствовати, сам владети собою не зохоте, и рабом слыти не отвержеса, но умрети же не отречеса, любви ради к нему самодержца. Неверный варвар паче верных наших сие сотвори. Достоинно есть нам чудитися крепкоумию его и разуму, и верной службе его. (КИ/М., 66 ПСРЛ XIX, 34)

Moreover, Shigalei's nobility of station and his bravery are endowed by the author with dynamic, causal significance. In one case he is spared by the Crimean Sahib-Girei expressly because of his royal blood:

...и пощади его, царьскаго ради семени и юности ради и благородства... (КИ/М., 65; ПСРЛ XIX, 32)

And on another occasion the author (with the aid of a chivalrically-motivated God) saves his hero from the diabolical poisons concocted by Shigalei's correlative, Siuiun-Bike

...хоте бе она его отравою уморити, яко же преже рех, но бог сохрани его от нея. (КИ/М., 104)

⁵⁶ This characterization is in direct contradiction to the description of Shigalei given by his contemporaries, Muscovite and foreign (Herberstein), who found him cowardly and too corpulent to ride a horse. See the excerpts cited in V. V. Vel'yaminov-Zernov, *Izledovaniya o kasimovskikh tsaryakh i tsarevichakh*, Vol. I., SPb., 1863, pp. 257-8, 377.

The author stresses repeatedly that the respect for noble station is utterly independent of national distinction: the ransom of Vasilii II after his capture in 1445 by Ulug-Muhammad is seen in these terms:

И взял на нем окуп велик от велможь его, множество злата и сребра, и отпусти его к Москве на царство его. Милует бо варварин, видя державнаго зло страждуща. (КИ/М., 54)

And Utyamish-Girei's hastily-devised disguise is ineffective because, in the author's piquant phrase:

не утаится в кале многоценный бисер (КИ/М. 155-6)

It is this same "etiquette" which lies behind the author's explanation of the failure of the Muscovite campaign of 1549. While the chronicles indicate that the objective was not gained because of extremely rainy weather, itself a kind of divine intervention, the K.I. offers God's motive: He had Ivan's honor in mind:

И не преда ему бог Казани тогда, яко царя не бе на царстве и не бы славно было взяти его. (КИ/М., 85)

There seems to be no need to adduce the characterizations of valor (*khrabrost'*) which are applied to Slav and Tatar in the text: these have been noted by many observers, who devised, as we have seen, various explanations for this "paradox." What has not been noted is the fact that the cause-and-effect relationship is exactly the opposite of that anticipated by those who have stressed the publicistic purpose of the K.I. Bravery is causal, not resultant: the author makes his heroes brave not because of any historical or political reality, but rather to satisfy the demands of the internal dynamics of his tale: bravery is made directly responsible for victory; cowardice for defeat. (That the victories and defeats correspond in the main to historical fact does not matter.) This relationship is not absolute or invariable. The brave can be overcome by even greater bravery (what honor in defeating a coward?) and the same individual can be braver in one situation than in others. But the basically causal nature of "*khrabrost'*" is apparent throughout, as is seen in the successes of the three who earn separate eulogies ("*pokhvaly*") for bravery (Ivan IV, Shigalei, Semen Mikulinskiĭ) and from the following examples:

In the campaign of 1508 Vasilii III sends his brother to do battle in his place, in violation of the code of honor, and

...разгневался на ня господь, и побеждени бысть крестьяне от поганых... (КИ/М.,; 61; ПСРЛ XIX, 26)

Success for a time is on the side of the Muscovite forces, but they violate the rules of knightly behavior by setting to revelry and drunkenness, and

И узна царь, яко все руския воя пьяни от мала и до велика, яко и до самых воевод, и помышля же царь подобна искати времени, како бы напасти на русских вои. И разгневался господь на русских вои, отъят от них храбрость и мужество, и дал бог поганому царю храбрость и мужество. (КИ/М., 62; ПСРЛ XIX, 27)

Fealty (*vernost'*), both to one's oath and to one's lord (*gospodin*) operates within the author's system in much the same way as bravery: the faithful prosper, those who are untrue are undone. Shigalei, once again, is the paragon of fidelity, and reaps his reward both in the author's praise and in the narrative. It is moreover stressed that he was true *in spite of* national and religious distinction.

Conversely, even Muscovite Grand Princes are condemned and punished by the chivalric *deus ex machina* for the violation of their oath. Thus is explained the defeat of Vasilii II at Belëv. This episode, which is quite independent of the chronicles, deserves citation *in extenso*:

...и се гоним прибеже... Улухметь... царства своего лишен... и посла моление свое к (Василию II)... не рабом, но господином и любимым сыном и братом себе именуя великаго князя, яко да повелит ему... от труда опочити... "и возвращуся, рече, вскоре на врага своего.... (Василий) прият его с честью, не яко беглеца, но яко царя и господина.... И обещание взяша между собою... на обидети друг друга ничим же. (Улухметь готовился к нападению на врагов, изгнавших его, и Василий) мнев, яко собирает воя царь на него и хочет воевати Рускую землю его — некоим ближним советником его возмутившим, глаголаше бо: "господине княже, яко егда зверь утопает тогда его убити спешат..." Князь же послушав горкаго совета их.

Finding himself unjustly attacked, Ulug-Muhammad appears to the *Russian God*, who is apparently the arbiter of oaths of honor.

"Боже русский, глаголя, слышах о тебе, яко милостив еси и

праведен; не на лица зриши человеком, но и правды сердца их испытуеши. Виджь ныне скорбь и беду мою, и помози ми, и буди нам истинны и судя и суди в правду между мною и великим князем... хошет бо он убити мя неповинно, яко обрете время подобно, и хошет неправедно погубити мя, бывшее слово и обещание наше и клятву с ним соглас и преступив..." И против многим воем Руским напусти с воими с немногими... надеяся на бога и на правду свою, и храбрость... И егда ступився обоя воя — увы мне, что реку — одолеша великого князя, и побил всех Руских вои... Покорение и смирение царя не преступают, аща и понаным сотворяют. О блаженное смиренне, яко не токмо нам християном Бог помогает, но и поганым по правде пособствует... (ПСРЛ XIX, 212-219).

Fidelity to one's lord (*gospodin*) is praised throughout, notably in the case of Chura Narykov, who gives his life to save Shigalei. Note the striking addition to the biblical citation:

И несть болши сея любви ничтоже, аще кто за друга душу свою положит или за господина. (КИ/М., 82; ПСРЛ XIX, 55)

Quite consistently, the worst of fates are reserved for those who break oaths: Mukhammed-Emin, having sworn a peace with Vasili III, breaks it, and is inflicted with a terrible leprosy (*prokaza*) which brings a lingering and terrible death, after which the author remarks:

И сим Бог, преступающим клятву, воздает за измену их великую, злую. (КИ/М., 64; ПСРЛ XIX, 30)

Terrible, too, is the death of the traitor Yurii Bulgakov

...и повеле его по хрепту секерою растесати, и руке его по мышце и нозе его по колени и после главу ему отсеци, яко да и прочии сие видевше лишатся тако творити. И лежа 3 дни непогробен на месте том, всеми зрим. (КИ/М., 159.)

and the author comments:

Сие бо тако случается везде ко иноверным перевесть держащим. (КИ/М., 159; ПСРЛ XIX, 166)

Numerous similar examples might be introduced at this point, but they would be superfluous, for it should appear from the above that the "etiquette" observed in the K.I. is the code of honor, valor, and

fealty, the virtues usually associated with chivalric literature in the rest of Europe. The text contains several other features often found in such literature: the "evil woman" (Tatar heroes are particularly susceptible to this meretricious force); visions, seen on the eve of battle; prophesies, etc. But these features must for the moment remain unexamined. For we may now pose another question: if one is to accept the hypothesis that the analysis outlined above resolves the "paradoxes" or "violations of etiquette" so often observed in the K.I., must not a new effort be made to classify this work, to uncover its esthetic system, to place it in the history of Muscovite literature?

What is the *Kazanskaya istoriya*? Its author called it a "novel and 'pleasaut' tale" ("*novaya i sladkaya povest'*") of the winning of the once-great Kingdom of Sain. And so it is — novel in form and "pleasaut" in content, to paraphrase a once-popular saying. It is "novel" by comparison with the Muscovite chronicles, which told essentially the same story, in that it stresses the knightly trials and personal valor of individual heroes. And it is "pleasaut" in that it contains, in addition to its central narrative, numerous episodes the purpose of which is *to entertain*: the touching lament of Siuun-Bike; the farewells of Ivan and Anastasiya; the treachery and punishment of the blackhearted Bulgakov, the selflessness of the noble Chura, the sound and fury of battle, all manner of secret letters and fatal potions, and, for the observant, a dash of "*lyubov' bludnaya*" and the ravishing of wives and maidens.⁵⁷

These are doubtless the qualities which made the K.I. so popular in the seventeenth century when similar tales, in translation from Polish and Latin, were so much in vogue. How paradoxical that such a tale, based entirely on Muscovite sources, was written in 1565, long before the translations, and the vogue, appeared! But was it?

VI.

The interrogative mood, in which most of the observations detailed above have been phrased, has seemed appropriate, in a study based on the analysis of a few printed copies, as a means of indicating the author's awareness that many errors, oversights, and omissions might have been eliminated had a study of manuscripts and consultation with specialists been possible.⁵⁸

⁵⁷ On the last of these, see KI/M., p. 76.

⁵⁸ I should like to record, as qualification of this statement, my gratitude to the Russian Research Center of Harvard University, whose hospitality and genero-

For the sake of conciseness, these observations might be re-stated, affirmatively, in the following theses:

a) Currently accepted views concerning the date, authorship, evolution and genre of the *Kazanskaya istoriya* are not satisfactorily supported by the evidence of the texts, which contain many features incompatible with these views;

b) Comparison of the printed copies strongly suggests that the so-called "first version" was composed on the basis of a number of texts of the "second version," and that it represents in fact the second stage in the creation of the K.I. as we know it. These stages appear to have been: 1) the writing of the first 49 chapters as they appear in complete copies of group "b" and the collection of the excerpts from sources which now appear as the second half of copies of this group; 2) the slight rewriting and correction of the first 49 chapters (involving collation of a number of copies of group "b") and the composition of the second half of the text as it appears in copies of group "a," on the basis of the raw materials provided in the second half of copies of group "b." The missing folios and marginal notations of the Undol'skii manuscript (U.) reflect these processes;

c) Numerous facts link the work to the *prikaz* milieu and with the literature of the early seventeenth century;

d) The purposes of the author were literary, not publicistic. His form was that of the historical romance, his "etiquette," chivalric.

It seems to me that the questions raised in this article must be faced, and answered, before the history and the significance of the *Kazanskaya istoriya* can be determined. It is difficult to resist the premonition that when these questions are answered, this text will be revealed, and appreciated, as a remarkable creation—the first native historical romance—which, while influenced by translated models, was created entirely from native themes, and formed a logical and important step in the evolution of literary forms.⁵⁹ This was a formidable achievement, for which the unnamed author deserves an honored place, long denied him, in the history of late Muscovite and, indeed, early modern Russian literature.

sity greatly facilitated this study, and to Professor Omeljan Pritsak, without whose guidance and encouragement it would never have been completed.

⁵⁹ On the influence of the K.I. on later literature, see Kuntsevich 1905, pp. 573 ff.

Plebiscite of Carpatho-Ruthenians in the United States Recommending Union of Carpatho-Ruthenia with the Czechoslovak Republic

JOSEPH DANKO (New Haven, Conn.)

When after World War I Carpatho-Ruthenia (at present the Zarkapats'ka Oblast' of the Ukrainian SSR) was united on a federative basis with the Czechoslovak Republic, it was in the post-war international conjuncture the only realistic and practicable solution of that province's fate. Yet it was also a somewhat unusual and even surprising plan. When on Oct. 28, 1918, the independence of Czechoslovak Republic was proclaimed in Prague, "there can have been few people who could have guessed that this territory, situated so far from Prague and hence very little known there, was to become a constituent part of the new State."¹ The reason for this is to be found in the fact that, first, Czechoslovakia herself was a completely new State, and the leadership of the movement leading to her independence was largely centered abroad. And secondly, the Ruthenians inhabiting the small territory south of the Carpathians had neither historically nor ethnically anything in common with the Czechs. In addition, the Carpatho-Ruthenians were smaller and less known than the other national minorities of the Austro-Hungarian Monarchy. Owing to the determined policies of Hungary, under whose direct rule they found themselves for centuries, the Carpatho-Ruthenian counties were never joined in a higher administrative or political entity; in fact, this land did not even have an established, official name. Because of Carpatho-Ruthenia's complete isolation from the outside world, there hardly were any political leaders in the West who expected the Carpatho-Ruthenians to have any national identity, let alone political aspirations. But if at the end of World War I, Carpatho-Ruthenians in Hungary, because of prevailing conditions there, were unable to organize themselves politically and attempt to rid them-

¹ Kamil Krofta: "Ruthenes, Czechs and Slovaks." *The Slavonic and East European Review*. London, January 1935, vol. XIII, no. 38, pp. 363.

selves of Hungarian domination, their brethren, the Carpatho-Ruthenian immigrants in the United States, did not suffer from such restrictions.

Already at the end of World War I, when Carpatho-Ruthenia was still under Hungarian rule, Rev. Konstantyn Hrabar² in his letters sent out secretly from Uzhhorod, petitioned Ruthenian immigrants in the United States to organize a political campaign for the liberation of Carpatho-Ruthenia from Hungarian rule. This call for help aroused sympathy among the leaders of these immigrants, who responded readily by holding meetings and congresses to consider what course their future action should take. (The above account of Hrabar's plea cannot be supported by documents as yet; the information is based on an interview with Rev. Alexander Pop of the Ruthenian Greek-Catholic Parish in New York. He was very active in Ruthenian affairs at that time and on many occasions has served either as a secretary or in some other capacity at the various meetings and conferences.) Thus began an American Ruthenian movement for the liberation of their country of origin.

In the beginning, however, the action of Ruthenians in the U.S.A. was anything but united. Without delving in too much detail, it is necessary to mention that there were at least four schools of thought or factions of this movement. Yet, with the exception of the pro-Hungarian group (Rev. Nicholas Chohey, Michael Yuhasz, Rev. Michael Balogh (Ballog), Rev. Victor Tegza and others), all the factions were united in their rejection of Hungarian domination of Carpatho-Ruthenia. Until October 21, 1918 two of the factions appear to have been the strongest. The first group advocated complete independence for Carpatho-Ruthenia. Prominent among this group were: Rev. Joseph P. Hanulya, Julius G. Gardos, Rev. Valentine Gorzo, Rev. Alexander Pop, Rev. Theophile Zatkovich, Gregory I. Zatkovich and others. The second, on the other hand, opted for the union of their land of origin with the Ukraine. Finally, a much smaller group, which was organized in Amerikanska Ruska Narodna Obrana (American Rusin Council of National Defense) sought incorporation of Carpatho-Ruthenia into Russia. Among the leaders of this group were: Nikolai Pachuta, Petr Hatalak, Pavel Dzwončyk and Rev. Emil A. Kubek. This last group was known for its close

² K. Hrabar (1877-1938) served as mayor of Uzhhorod, 1923-35, and as governor of Subcarpathian Ruthenia, 1935-38.

cooperation with pro-Russian immigrants from Galicia and Bukovina and was supported by the Russians in the United States. Its political program, in addition to Carpatho-Ruthenia, encompassed also Galicia and Bukovina. The first Congress of this group was held in New York City on July 13, 1917, and together with the Carpatho-Ruthenians, many Galicians, Bukovinians and even some Russians, including a Russian Orthodox Metropolitan Yevdokim Meshcherskii, participated in its work.³ The resolutions of the Congress, demanding incorporation of Carpatho-Ruthenia as an autonomous unit into Russia, were immediately presented in the form of a memorandum by Petr Hatalak and Pavel Dzwonczyk (representatives of the Congress) to the Russian Ambassador in Washington D.C., Boris Bakhmeteff. The same memorandum, but in a revised form, (the demand for autonomy was omitted on the advice of the Russians, who claimed that its inclusion might be interpreted as an unwarranted expression of suspicion of the good will of the Russian partner) was later translated into several languages and submitted to the American, British and other Allied governments.⁴ After the Bolshevik revolution in Russia, the same group came up with a new scheme envisioning a union of Carpatho-Ruthenia (together with Galicia and Bukovina) with Czechoslovakia. A memorandum to this effect was presented in April 1918 to the Secretary of State Robert Lansing.⁵ This group with the help of the Slovaks, also sought to contact Prof. Thomas G. Masaryk, when he came to the United States at the beginning of May 1918. Finally, on May 30, 1918 in Pittsburgh, Pennsylvania, Nikolai Pachuta, their representative, submitted to Masaryk a memorandum embodying this proposal.⁶ Although Masaryk himself for some time entertained the idea of a union of Carpatho-Ruthenia with the future Czechoslovak Republic, he chose to virtually ignore Pachuta because in his view the inclusion of Galicia and Bukovina in this plan was clearly impracticable and because he knew well that Pachuta's group, not unlike the pro-Hungarian faction, had no following or support among the broad masses of Carpatho-Ruthenian immigrants.

Working tirelessly for the dismemberment of Austro-Hungary and for the creation of Czechoslovakia, Masaryk also advocated the libera-

³ Hatalak, Petr, Jak vznikla myšlenka připojení Podkarpatskou Rus k Československu. Otisk z "Podkarpatských Hlasů." Užhorod, Státní Tiskárna, 1935, p. 13.

⁴ *Ibid.*, p. 15.

⁵ *Ibid.*, p. 25.

⁶ *Ibid.*

tion of the other small nations and national minorities of East Central Europe. However, in the period from April 1915, when for the first time he clearly defined the political aims of the Czechoslovak movement in a confidential memorandum called "Independent Bohemia" (submitted to the British Foreign Office),⁷ until late February 1917, he had in mind only Bohemia, Moravia, Silesia and Slovakia as constituent parts of the future Czechoslovakia, whose eastern border would run along the Uzh River.⁸ This scheme, to be sure, would have included the western part of Carpatho-Ruthenia, the so called Priashivshchyna, but to him it was a Slovak territory. Thus we can deduce from Masaryk's own writings that the idea of a possible union of Carpatho-Ruthenia with Czechoslovakia occurred to him only during his stay in Russia, May 1917—March 7, 1918. In his memoirs he writes: "As long as Russia was victorious it was a question whether she would not lay claim to Hungarian Ruthenia, especially as Eastern Galicia had been immediately occupied by Russian forces. At that time, however, Russia had no definite ideas on the subject since she thought that the Magyars might turn against Austria . . . The Allies, on the other hand, did not wish the Russians to extend south of the Carpathians. . . . But, after the defeat of Russia, there arose the possibility that sub-Carpathian Ruthenia might wish to join our Republic. At first this was little more than a pious aspiration. In Russia and particularly in the Ukraine I had, however, been obliged to take account of it since the Ukrainian leaders had discussed with me the future of all the Little Russian regions outside Russia, and had raised no objection to the incorporation of sub-Carpathian Ruthenia in our State. In America the Little Russian emigrants from sub-Carpathian Ruthenia are numerous; and, as they were acquainted with the Slovaks and the Czechs, I was soon in touch with them. They joined the Mid-European Union and were represented in it by Dr. Žatkovič, but it was Dr. Pačuta who first approached me on their behalf. He belonged to the pro-Russian school which was, to some extent, Orthodox. Dr. Žatkovič, on the other hand, spoke for the great majority of the Ruthenes who were devout, ecclesiastically-organized Uniates, that is to say, Roman Catholics with an Orthodox rite."⁹

⁷ For the full text of this memorandum see Seton-Watson, R. W., *Masaryk in England*. Cambridge, At the University Press, 1943, pp. [115]–134.

⁸ Masaryk, T. G.: "The Future Status of Bohemia." *The New Europe*. London, Feb. 22, 1917, vol. 2, no. 19, pp. 161–174.

⁹ Masaryk, Thomas Garrigue, *The Making of a State; memories and observations, 1914–1918*. London, C. Allen & Unwin [1927], pp. 238–239.

Masaryk's assesment of the relative strength of Carpatho-Ruthenian groups was correct. But the majority was slow to organize itself and to clearly define its political aims. The Carpatho-Ruthenians emigrated to the United States because they could no longer stand the extreme economic and social hardships under which they were kept by the Hungarian Government. Therefore it is not surprising that they intensely hated Hungary. Beyond this hatred, however, very few of them had any positive political ideas. Thus it was not until July 23, 1918 that the first significant steps were taken towards more coordinated action in the political sphere. On this date, at a joint convention of the Greek Catholic Union of Rusin Brotherhoods of the U.S.A. (Sojedenenje Greko-Katolicheskich Russkich Bratstv v Sojedinennykh Štatach Ameriki) and the United Societies of Greek Catholic Religion of the U.S.A. (Sobranije Greko Katholičeskich Cerkovnykh Bratstv vo Spolučenykh Deržavach Ameriki), held in Homestead, Pennsylvania, the American National Council of Uhro-Rusins (Amerikanska Narodna Rada Uhro-Rusinov) was created. The delegates to this convention passed a resolution embodying the following three alternative desiderata: "1. The people of Subcarpathian Ruthenia should receive complete independence. If this should not be possible, 2. They should be united with their Galician and Bukovinian brethren. If this should also not be possible, 3. They should receive autonomy."¹⁰ This resolution was incorporated in the memorandum prepared by Gregory I. Zatkovich, which was presented to President Woodrow Wilson on Oct. 21, 1918 in Washington, D.C. at a special audience granted to the representatives of the Council. President Wilson pointed out to them that the first two alternative proposals were inpracticable and would not meet with the approval of the Allies.¹¹ As a result of this meeting with the President, a considerable re-grouping and shifting in the political orientation took place among the former factions and their leaders. This fact is clearly reflected in the results of the plebiscite which was held in December, 1918. On Oct. 22, 1918 G. I. Zatkovich, who by now was the actual leader of the Council of Uhro-Rusins, met with T. G. Masaryk in Washington, D.C. for a purpose of discussing with him the problems of Carpatho-Ruthenia. As a result of that meeting, on Oct. 23, 1918 the Carpatho-Ruthenians were accepted as a member of Mid-European Democratic Union of which

¹⁰ Otkrytie-exposè Dr. G. I. Žatkoviča, byvšoho Gubernator Podkarpatskoj Rusi. 2. izd. Homestead, Pa. [n.d.], p. [1].

¹¹ *Ibid.*

T. G. Masaryk was President. From Oct. 24 to 26, 1918, Zatkovich took part in a Conference of that Union in Philadelphia, Pennsylvania, and at the end of the Conference, on Oct. 26, in the ceremonies at Independence Hall. In his capacity as a representative of Carpatho-Ruthenians, he, together with the representatives of eleven other nations, signed the *Declaration of Common Aims of the Independent Mid-European Nations*.¹² During his stay in Philadelphia, especially on Oct. 25 and 26, Zatkovich, together with five other members of the Council of Uhro-Rusins, devoted his efforts to negotiations with T. G. Masaryk concerning the federation of Carpatho-Ruthenia with Czechoslovakia. No formal agreement was signed at the end of the negotiations, but Zatkovich and his party left Philadelphia satisfied with Masaryk's verbal promise and assurance that "If the Ruthenians should decide to join Czechoslovak Republic, Carpatho-Ruthenia would have complete autonomy." Masaryk also promised that "The boundaries will be so established that the Ruthenes will be satisfied."¹³

With these assurances of Masaryk in mind, the American Council of Uhro-Rusins at its meeting on Nov. 12, 1918, in Scranton, Pennsylvania, unanimously recommended a union of Carpatho-Ruthenia with the Czechoslovak Republic on a federative basis. The very next day the resolution was shown to T. G. Masaryk who expressed his satisfaction, but pointed out that the decision would have to be approved by the Peace Conference in Paris. In December 1918 the recommendation of the Council was presented to the Ruthene parishes for approval. The result of this plebiscite as accepted on May 8, 1919 by the Central National Council in Uzhhorod, and approved by the Paris Peace Conference in the Treaty signed in San-Germain-en-Laye on Sept. 10, 1919, determined the life of Carpatho-Ruthenia for the next twenty years.



The fact of the plebiscite, its general results and its significance for Carpatho-Ruthenia is relatively well known in the historical writing. The full details and the procedure of the plebiscite, however, are much less known. Consequently, there are serious disagreements in the literature even concerning the general results of the vote. For

¹² It was this *Declaration* which A. C. Macartury in his book *Hungary and Her Successors: The Treaty of Trianon and its Consequences, 1919-1937*. London, 1937, p. 215, considered to be the so called "Philadelphia Agreement," signed by Zatkovich and Masaryk. Actually, no such agreement was ever signed.

¹³ Zatkovic, op. cit., p. 2.

example, Kamil Krofta, a well known historian and Minister of Foreign Affairs of Czechoslovakia before World War II, writes that only 62 per cent voted for the union with Czechoslovakia, (see his article "Ruthenes, Czechs and Slovaks." in the *Slavonic and East European Review*. London, Apr. 1935, vol. XIII, no. 39, p. 622) while C. A. Macartney gives a more generally accepted figure of 67 per cent. (See his *Hungary and Her Successors*. London, 1937, p. 215)

The documents published here came into the possession of one of the members of the American Commission to Negotiate Peace and President Wilson's personal representative in Paris, Colonel Edward M. House, on February 17, 1919, during his meeting with Gregory I. Zatkovich and Julius G. Gardos, the representatives of the American National Council of Uhro-Rusins. The documents are well preserved and complete as far as the plebiscite is concerned. They probably had been accompanied by a covering letter, which, however, was not found. This could be deduced from the fact that the preserved documents have a number "2" penciled on the first page. The documents are reproduced below in their original and complete form. They are now located in the Col. Edward M. House Collection of the Yale University Archives (Drawer 30, file 119). The author wishes gratefully to acknowledge the kind permission of the Archives to use the Collection and to publish the documents.

APPENDIX

We, the undersigned, Supreme President and Supreme Secretary, respectively, of the American National Council of Uhro-Rusins, do hereby certify that the result of the balloting, both itemized and summarized, by the societies of the Greek Catholic Union of Rusin Brotherhoods of the U.S.A., the societies of the United Societies of the Greek Catholic Religion of the U.S.A. both regular and gymnastic branches and the Uhro-Rusins Greek Catholic Uniate Congregations is impartially truthfully and exactly shown by the forgoing sheets numbered from one to eleven inclusive. Said sheets showing name, number, location of societies and churches and how they voted.

We do further certify that notice was given to all the societies and churches by registered mail, or special delivery. (By oversight fifty five notices were not registered).

By resolution adopted unanimously at Scranton, Pa. on November 12th, 1918 each society having a membership of fifty or less is credited with one vote and for every additional fifty or fraction thereof an additional vote or votes. In the case of congregations each was entitled to one vote for every additional fifty or less, or additional vote or votes for every additional fifty or fraction thereof.

Hereto attached are signed statements showing the membership in the various societies of the Greek Catholic Union of Rusin Brotherhoods of the U.S.A. both regular and gymnastic, of the United Societies of the Greek Catholic Religion of the U.S.A. Said statements are signed by the Supreme Secretaries of the respective organizations. Also hereto attached a statement signed by Rt. Rev. Gabriel Martyak, Administrator of the Uhro-Rusin Greek Catholic Uniate Congregations, showing the number of families in the congregations that voted.

Witness our hands and seals this 24th day of December Anno Domini 1918.

(S)

Geo N. Nomlos

Supreme Secretary of the American National Council of Uhro-Rusins.

Julius G. Guedor

Supreme President of National Council of Uhro-Rusins.

The following societies of the Greek Union of Russin Brotherhoods of the U.S.A., the United Societies of Greek Catholic Religion and Rusin Greek Catholic United Parishes cast their ballots for

Union of Uhro-Rusins with Czecho-Slovak Republic

Societies of the Greek Catholic Union of Rusin Brotherhoods of the U.S.A.

7	Murray City, O.	2	311	Latimer, Pa.	3
16	De Lancey, Pa.	3	313	Arnold City, Pa.	2
20	E. Buffalo, N.Y.	1	330	Peekskill, N.Y.	2
23	Forest City, Pa.	4	337	Florenza, Pa.	1
26	Homestead, Pa.	9	350	Lansing, Ohio	1
29	Whitney, Pa.	1	358	Ambridge, Pa.	1
31	Uniontown, Pa.	3	359	Van Meter, Pa.	1
33	Trenton, N.J.	8	362	Barton, Ohio	2
39	Kelleys Is., Ohio	1	364	Throop, Pa.	2
44	Delancey, Pa.	1	366	Forest City, Pa.	2
45	Pleasant City, O.	3	373	Allegheny, Pa.	1
47	Diamond, Ind.,	2	382	Chicago, Ills.	1
48	Middle Port, Pa.	1	383	Sykesville, Pa.	1
51	Olyphant, Pa.	3	384	Lyndora, Pa.	2
56	Perth Amboy, N.J.	2	386	Holyoke, Mass.	1
63	Binghamton, N.Y.	3	388	Yorkam, Pa.	2
65	Mount Olive, Ills.	2	391	Heilwood, Pa.	1
70	Pittston, Pa.	2	393	Braddock, Pa.	2
77	Oliver, Pa.	2	398	Elizabeth, N.J.	2
81	Braddock, Pa.	9	400	Rockvale, Colo	1
83	S. Bend, Ind.	1	402	Olean, N.Y.	2
84	Danbury, Conn.	1	405	Lisbon Falls, Me.	2
89	Pueblo, Colo.	1	409	Detroit, Michi.	1
95	Youngstown, Ohii	5	410	Witt, Ills.	2
96	Bradenville, Pa.	5	414	Clymer, Pa.	3
108	Braddock, Pa.	7	417	Belle Valley, Ohio	2
111	Homestead, Pa.	5	421	Perth Amboy, N.J.	2
120	Trenton, N.J.	3	427	Coal Center, Pa.	2
125	Haverstraw, N.Y.	1	428	Ralphton, Pa.	2
130	Port Chester, N.Y.	1	432	Pheonixville, Pa.	1
131	Perth Amboy, N.J.	4	433	Cleveland, Ohio	6
133	Broderick, Pa.	3	437	Pittsburgh, Pa.	5
135	Van Meter, Pa.	3	438	Syowers, Pa.	1
142	Charleroi, Pa.	2	447	Wehrun, Pa.	1
152	Mc Adoo, Pa.	3	454	Allequippa, Pa.	2
154	Cleveland, Ohio	3	459	Blacklick, Pa.	1
159	Raritan, N.J.	1	460	Morrisdale Mines, Pa.	1
160	Philadelphia, Pa.	2	461	So. S. Pittsburgh, Pa.	2

164	Sykesville, Pa.	1	462	Plymouth, Pa.	3
168	Rankin, Pa.	4	473	Seymour, Conn.	1
172	Bayone City, N.J.	7	480	Allentown, Pa.	1
174	Elkhorn, W.V.	2	483	Malwah, N.J.	3
189	Stockton, Pa.	2	484	Centralia, Pa.	1
190	Hibernia, N.J.	1	485	Byesville, Ohio	1
195	Lethbridge, Alta, Canada	2	487	Erie, Pa.	2
197	Lorain, Ohio	2	489	Youngstown, Ohio	2
199	Hartshorn, Okla	1	494	Hazeltor, Ohio	5
201	Philadelphia, Pa.	2	496	Brooklyn, N.Y.	2
202	Dawson, Pa.	1	499	Friedens, Pa.	1
205	Ma Adoo, Pa.	3	500	McKeesport, Pa.	3
208	Windburne, Pa.	1	511	Sykesville, Pa.	1
219	Dorothy, Pa.	1	512	Wilpen, Pa.	1
224	Homestead, Pa.	5	519	Roebing, N.J.	2
232	Sharon, Pa.	2	526	Rockspring, Wyo.	1
236	Duquesne, Pa.	4	527	Lyhn, Mass.	1
237	Duquesne, Pa.	6	529	Empire, Ohio	1
238	Fairpoint Harbor, Ohio	1	531	Wharton, N.J.	1
247	Lloydell, Pa.	2	540	Portage, Pa.	2
252	Donora, Pa.	6	542	Allegheny, Pa.	2
255	Pittsburgh, Pa.	5	545	Oswald, W. Va.	1
256	Port Oram, N.J.	1	546	Pueblo, Colo.	1
257	Pleasant City, Ohio	2	550	Clymer, Pa.	1
258	South Charon, Pa.	3	554	So. Sharon, Pa.	2
259	So. West, Pa.	3	555	Branchdale, Pa.	1
262	Whiting, Ind.	2	562	Wolf Run, Ohio	1
268	Mingo Junction, Ohio	3	564	Leechburg, Pa.	1
278	Hawk Run., Pa.	2	565	Williamstown, Pa.	1
280	Orbeston, Ohio	2	566	Strawn, Texas	1
284	E. Chicago, Ind.	2	568	Port Vue, Pa.	2
288	Clareton, Pa.	3	570	Syracuse, N.Y.	1
290	Allegheny, Pa.	3	573	Cleveland, Ohio	1
296	Perth Amboy, N.J.	4	574	Jerome, Pa.	1
297	Allegheny, Pa.	2	581	Everson, W. Va.	1
309	Berwick, Pa.	1			
583	Raiseine, Wisc.	1	730	Beaverdale, Pa.	1
585	Bunoa, Pa.	1	731	Heckscherville, Pa.	1
588	So. River, N.J.	1	736	McKeesport, Pa.	2
593	Bellaire, Ohio	1	742	Masontown, Pa.	1
602	Mellon, Wisc.	1	743	Flint, Mich.	1
606	Erie, Pa.	1	750	Chisholm, Minn.	2
608	Conemaugh, Pa.	3	759	Bradford, Pa.	1
609	Edwards, Ind.	1	761	Olean, N.Y.	1
616	Simpson, Pa.	1	765	Lopaz, Pa.	1
619	Simpson, Pa.	1	768	Fredericktown, Pa.	1
638	St. Michael, Pa.	2	773	Trenton, N.J.	1

640	Peekskill, N.Y.	1	774	Avella, Pa.	1
642	St. Clarie, Pa.	1	785	Rankin, Pa.	1
643	Sagamore, Pa.	2	786	Rocksprings, Wyo.	1
648	St. Claresville, O.	1	791	So. West, Pa.	1
651	Thompson, Pa.	1	799	Newburg, Phio.	1
653	W. Brownsville, Pa.	1	800	Flint, Mich.	1
657	Roebing, N.J.	1	803	Kipling, Ohio	1
658	Witt, Ills.	1	804	E. Akron, Ohio	1
659	Benld, Ills.	1	811	Silvercreek, Pa.	1
661	Bay Way, N.J.	1	814	Sagamore, Pa.	1
662	So. Youngstown, O.	1	816	Mount Carmel, Pa.	1
664	Trescow, Pa.	1	818	Alliquippa, Pa.	1
671	Keiser, Pa.	1	819	Naugatuck, Conn.	1
681	Tyrone, Pa.	1	821	Coatesville, Pa.	1
682	Lopaz, Pa.	1	828	Nanticoke, Pa.	1
683	W. Berwick, Pa.	1	832	So. Burgettstown, Pa.	1
684	Youngstown, Ohio	2	843	Highland Park, Michi.	1
689	Elkhorn, W.Va.	1	853	E; Chicago, Ind.	1
674	Bentleyville, Pa.	1	858	Coatesville, Pa.	1
694	Port Vue, Pa.	1	860	Detroit, Michi.	1
695	Yatesboro, Pa.	1	863	New York, N.Y.	1
698	Caldwell, Ohio	1	865	Midway, Ohio	1
705	Lyndora, Pa.	2	866	Jerome, Pa.	1
710	So. Burgettstown, Pa.	1	870	Belle Valley, Ohio	1
714	Keiser, Pa.	1	871	Portage, Pa.	1
718	Muddy, Ill.	1	877	Lakewood, Ohio	1
719	Elizabeth, N.J.	1	367	Tarentum,	2

Gymnastic Societies of the Greek Catholic Union of Rusin Brotherhoods of the U.S.A.

2	Homestead, Pa.	4	109	Lyndora, Pa.	1
7	Duquesne, Pa.	2	116	Bayone City, N.J.	2
8	Cokeburg, Pa.	1	122	Braddock, Pa.	2
9	Farell, Pa.	1	123	De Lancey, Pa.	1
15	So. Sharon, Pa.	1	124	Braddock, Pa.	2
19	Charleroi, Pa.	1	129	Clairton, Pa.	1
23	Trenton, N.J.	3	133	Allentown, Pa.	1
24	Chicago, Ill.	1	134	Brownsville, Pa.	1
68	Grenton, Pa.	2	135	Witt, Ills.	1
30	Newark, N.J.	1	138	Beaverdale, Pa.	1
34	Lisbon Falls, Me.	1	142	E. Pittsburgh, Pa.	1
36	Rankin, Pa.	3	144	Perth Amboy, N.J.	2
39	Trenton, N.J.	3	150	New York, N.Y.	2
41	Lisbon Falls, Me.	1	151	New York, N.Y.	2
48	Pittsburgh, Pa.	1	155	Ellhorn, W.Va.	1
52	Star Junction, Pa.	1	160	Elizabeth Port, N.J.	1

56	So. West, Pa.	2	165	Alliquippa, Pa.	1
69	Auburn, N. Y.	1	167	Wharton, N.J.	1
74	Lorain, Ohio	1	168	Patton, Pa.	1
75	Chicago, Ill.	1	170	Wilpen, Pa.	1
83	Mingo Junction, Ohio	1	175	Roebing, N.J.	1
93	Conemaugh, Pa.	2	177	Auburn, N.Y.	1
105	Williamstown, Pa.	1			

Societies of the United Societies of Greek Catholic Religion of the U.S.A.

1.	McKeesport, Pa.	3	71	Joliet, Ill.	1
3	Mc. Keesport, Pa.	3	76	Listie, Pa.	1
4	Pittsburgh, Pa.	1	77	Smithson, Pa.	1
5	McKeesport, Pa.	3	83	Port Vue, Pa.	1
6	W. Neuton, Pa.	1	94	Clymer, Pa.	1
7	Versailles, Pa.	1	98	Youngstown, Ohio	2
8	McKeesport, Pa.	4	99	Youngstown, Ohio	2
16	Barnesboro, Pa.	1	101	Youngstown, Ohio	1
17	Fords, Pa.	2	1	McKeesport, Pa.	2
19	Blythedale, Pa.	1	4	Pittsburgh, Pa.	1
23	N. S. Pittsburgh, Pa.	1	5	Pittsburgh, Pa.	1
24	McKeesport, Pa.	1	9	W. Neuton, Pa.	1
27	Pittsburgh, Pa.	1	14	Homestead, Pa.	1
54	Pittsburgh, Pa.	1	23	Clymer, Pa.	1
61	Homestead, Pa.	2			

Uhro-Rusin Greek Catholic United Congregations

St. Michael's	Farrell Pa.	Rev. Danilovich,	300- 6
St. Mary's	Brade Ville, Pa.	Rev. E. Burik,	600-12
Sts. Peter & Paul	Braddock, Pa.	Rev. Zapotoczky	600-12
Blessed Trinty	Sykesville, Pa.	Rev. Shakaley	290- 6
St. Nicholas	Barton, O.		150- 3
St. Michael	Chicago, Ill.		150- 3
B. V. M.	Elkhorn, W. Va.	Rev. Gracon	400- 8
B. V. M.	Trenton, N.J.	Rev. Homocko	500-10
B. V. M.	Youngstown, O.	Rev. Affendick	300- 6
St. Michaels	Allentown, Pa.	Rev. Andrejkovich	350- 7
Holy Ghost	N. S. Pgh., Pa.	Rev. M.. Volkay	280- 6
St. John	Witt, Ill.		90- 2
St. John	Hazleton, Pa.	Rev. N. Martyak	400- 8
St. Michael	Rankin, Pa.	Rev. Roskovic	300- 6
Sts. Peter & Paul	Duquesne, Pa.	Rev. J. Sabov	300- 6
B. V. M.	New York, N.Y.	Rev. I. Janitzky	400- 8
St. Nicholas	Lorain, O.		200- 4
St. Michael	Ma Adoo, Pa.	Rev. O. Janitzky	375- 8

St. Nicholas	McKeesport, Pa.	Rev. Gorzo	500-10
Holy Ghost	Cleveland, O.	Rev. Honulya	700-14
St. P. & Paul	Erie, Pa.	Rev. Zatkovich	225-5
St. John	Homestead, Pa.	Rev. Holesnyay	600-12
St. Michael	Pleasant City, O.	Rev. Lewitchky	350-8
St. Michael	Sheffield, Pa.	Rev. Duda	225-5
Sts. P. & Paul	Elizabeth Port, N.J.	Rev. Varhol	300-6
St. Michael	Clymer, Pa.	Rev. Avroroff	400-8
St. John	Pittsburgh, Pa.	Rev. Volensky	225-5
B. V. M.	Charlesi,		225-5
St. Michael	Akron O.	Rev. Malingak	300-6
St. Paul	Sarentum		175-4

Le nombre de familles arrivées est celui comme il est indiqué.
Gavriil Martěkiv m.p.

The following voted for

Union of Uhro-Rusins with Ukrainian Republic

Societies of the Greek Catholic of Rusin Brotherhoods of the U.S.A.

4	Mahonoy City, Pa.	2	242	St. Clair, Pa.	3
6	Donmore, Pa.	3	267	Hannastown, Pa.	2
17	Rendham, Pa.	2	292	Wilkes-Barre, Pa.	2
19	Lansing, Pa.	3	295	Wilkes-Barre, Pa.	3
24	Eckley, Pa.	3	298	Baggaley, PPa.	1
28	Glenlien, Pa.	2	324	New Salem, Pa.	6
32	Sheppton, Pa.	2	379	Kester, Pa.	2
50	Mahonoy Plane, Pa.	2	390	McKees Rocks, Pa.	5
52	Passaic, N.J.	5	397	Dunmore, Pa.	1
66	St. Lotis, Miss.	1	422	Tyre, Pa.	1
79	Punxsutawney, Pa.	2	424	Akron, Ohio	1
110	Nesquehoning, Pa.	3	426	Sugar Creek, Missouri	1
112	Snow Shoe, Pa.	2	440	Westville, Ills.	1
115	Hazleton, Pa.	3	441	New Britain, Conn.	2
186	Phillipsburgh, N.J.	3	443	Georgetown, Pa.	3
212	Taylor, Pa.	3	448	Taylor, Pa.	2
218	Vanderbilt, Pa.	2	451	St. Clair, Pa.	2
225	Olyphant, Pa.	2	472	McKees Rocks, Pa.	3
490	Dunmore, Pa.	2	712	Jersey City, N.J.	1
491	Plymouth, Pa.	3	717	Miners Mills, Pa.	1
506	Conemaugh, Pa.	1	735	Sugar Creek, Mo.	1
518	Dixon City, Pa.	1	737	Snow Township, Pa.	1
522	Brisgeport, Conn.	3	755	George Town, Pa.	1
536	Emerald, Pa.	1	758	Beavermeadow, Pa.	2
560	Brownsville, Pa.	4	762	Landsford, Pa.	2
586	Graceton, Pa.	2	770	Red Star, W. Va.	1

592	Vandergrift, Pa.	1	775	Georgetown, Pa.	1
596	Scranton, Pa.	1	781	Gelenlien, Pa.	1
600	Rankin, Pa.	1	797	Madison, Ills.	1
611	Scranton, Pa.	1	806	Port Palmer, Pa.	1
621	Taylor 1/2, Pa.	1	829	Graceton, Pa.	1
631	Phillipsburgh, N.J.	1	849	Lakawanna, N.Y.	1
637	E. Chicago, Ind.	2	855	Torrington, Kenn.	1
678	Port Griffith, Pa.	1	875	Mishawaka, Ind.	1

Gymnastics Societies of the Greek Catholic Union of Rusin
Brotherhoods of the U.S.A.

3	Bridgeport, Conn.	5	90	St. Clair, Pa.	1
11	Bridgeport, Conn.	3	100	Wilpen, Pa.	1
13	McKees Rocks, Pa.	2	108	Joliet, Ills.	1
31	Scranton, Pa.	1	113	Pheonixville, Pa.	1
44	Hazleton, Pa.	2	146	McKees Rocks, Pa.	1
47	Binghamton, N.Y.	2	152	Dunraore, Pa.	2
53	Wilkes-Barre, Pa.	1	154	E. Akron, Ohio	1
54	Wilkes-Barre, Pa.	1	156	Dunmore, Pa.	2
55	Gelenlein, Pa.	1	172	S. S. Pittsburgh, Pa.	1
82	St. Clair, Pa.	2	183	Mahcnoy City, Pa.	1
87	Bingamton, N.Y.	1			

United Societies of the Greek Catholic Religion of the U.S.A.

30	El Ramer, Pa.	1	57	Whitting, Ind.	1
36	Whitting, Ind.	2	85	Landford, Pa.	4
40	Edwardsville, Pa.	1	90	St. Clair, Pa.	1
43	New Salem, Pa.	1	92	Edwardsville, Pa.	1
50	Bridgeport, Conn.	1	95	Binghampton, N.Y.	2
55	Hazleton, Pa.	1	97	Wilkes-Barres, Pa.	1
56	Whitting, Ind.	2	100	Wilkes-Barres, Pa.	1

Gymnastics Societies of the Greek Catholic Religion United Societies
of the U.S.A.

7	New Salem, Pa.	2
---	----------------	---

Uhro-Rusins Greek Catholic United Congregations.

St. Johns	Scranton, Pa.	Rev. Stavrosky	400- 8
St. Johns	Bridgeport, Conn.	Rev. Chornock	500- 10
B. V. M.	New Salem, Pa.	Rev. Mhlay	400- 8
Blessed Trinity	New Britain, Conn.	Rev. Pelehcvich	200- 4
B. V. M.	Freeland, Pa.	Rev. Brinsky	500- 10
B. V. M.	Whitting, Ind.	Rev. Choarboch	400- 8

St. Michael	Binghamton, N.Y.	Rev. Thegze	350-7
B. V. M.	Taylor, Pa.	Rev. Petrasovich	300-6
Holy Ghost	McKees Rocks, Pa.	Rev. A. Suba	300-6
St. Michael	St. Clair, Pa.	Rev. Ribovsky	600-12
B. V. M.	Wilkes-Barre, Pa.	Rev. N. Chopey	600-12
St. Stephen	Leisenring, Pa.	Rev. Zubritzky	400-8
St. John	Lansford, Pa.	Rev. Martyak	350-7
St. Michael	Munt Clait, Pa.	Rev. Hritz	350-7
B. V. M.	Nesquehoning, Pa.	Rev. N. Burik	350-7
St. Michael	Hazleton, Pa.	Rev. Fekula	250-5

Le nombre de fammilles indiqu  plus haut est juste
Gavriil Mart kiv. m.p.
adstor

The following voted for

Total Independence of Uhro-Rusins.
Societies of the Greek C. Union.

11	Scranton, Pa.	3	470	Eynon, Pa.	2
128	Jessup, Pa.	4	744	Eynon, Pa.	1
185	Scranton, Pa.	2	154	Scranton, Pa.	1

Gymnastic Branches.

61	Scranton, Pa.	1	67	Mahonoy City, Pa.	1
----	---------------	---	----	-------------------	---

United Societies of Greek C. Religion

58	Kingston, Pa.	1	60	Edwardsville, Pa.	2
----	---------------	---	----	-------------------	---

Uhro-Rusin Congregations

B. V. M.	Scranton, Pa.	Rev. Kossey	200-4
Holy Ghost	Jessup, Pa.	Rev. Ivan	250-5

Le nombre est juste

Gavriil Mart kiv. m.p.

The Following voted for

Union of Uhro-Rusins with Carpatho-Russians
Greek Catholic Union.

425	New Britain, Conn.	1	813	Brockton, Pa.	1
469	Gary, Ind.	3			

Uhro-Rusin Congregation

Ind.	Gary	Rev. Biszalia	400 - 8
------	------	---------------	---------

The Following voted for

Union with Russia
Greek Catholic Union.

530	Olyphant, Pa.	1
-----	---------------	---

Gymnastic Branch

121	Jerome, Pa.	1
-----	-------------	---

Uhro-Rusin Congregations

B. V. M.	Mahonoy City, Pa.	Rev. E. Kutek	400 - 8
----------	-------------------	---------------	---------

The Following voted for

Union of Uhro-Rusins with Magyar Land
Greek Catholic Union.

30	Cleveland, Ohio	2	161	Cleveland, Ohio	1
----	-----------------	---	-----	-----------------	---

Uhro-Rusin Congregations.

St. John's	Cleveland, Ohio	Rev. Ballog	300 - 6
			Gavriil Martěkiv. m.p.

The Following voted for

Union of Uhro-Rusins with Galicia
Greek Catholic Union.

844	Langecloth, Pa.	1
-----	-----------------	---

S U M M A R Y

For Union of Uhro-Rusins with Czecho-Slovak Republic	732
For Union of Uhro-Rusins with Ukrainian Republic	310
For total Independence of Uhro-Rusins	27
For Union of Uhro-Rusins with Carpatho Russians' ¹	13
For Union of Uhro-Rusins with Russia	10
For Union of Uhro-Rusins with Magyar Land	9
For Union of Uhro-Rusins with Galicia	1
Total Vote Cast	<hr/> 1102

"EXHIBIT B"

BRIEF HISTORY OF THE AMERICAN UHRO-RUSINS AND
THE PLEBISCITE RECOMMENDING UNION OF THE
UHRO-RUSINS OF FORMER HUNGARY AS AN AUTONOMOUS
STATE WITH THE CZECHOSLOVAK REPUBLIC

The immigration of the Uhro-Rusins, Rusins or Ruthenians inhabiting the eight northern counties of former Hungary, viz., Spiš, Sariš, Abauj, Zemplin, Ung, Bereg, Ugoča and Maramaroš, began about thirty years ago, and today in the United States they number between 400,000 and 500,000 souls. They are found in large numbers in Pennsylvania, Ohio, New York, New Jersey, Connecticut, Illinois and Indiana. They are by religious conviction all Greek Catholic Uniates, having one hundred and fifteen religious edifices.

They are very closely organized and lean strongly toward membership in beneficial organizations, of which there are two, the GREEK CATHOLIC UNION OF RUSIN BROTHERHOODS OF THE U.S.A. founded in 1892, having a membership of 58,000 adult members and 32,000 minor members, and the UNITED SOCIETIES OF GREEK CATHOLIC RELIGION OF THE U.S.A., founded in 1911, having a membership of 9,000. These two organizations are purely Rusin.

On June, 20th., 1918² the aforesaid two organizations by action duly

¹ The designation "Carpatho-Russians" is meant to include Galicians, Bukovinians and Carpatho-Ruthenians, i.e. people inhabiting the regions on both sides of the Carpathian Mountains.

² This is an apparent error. The joint convention of the two societies could not have been held and the American National Council of Uhro-Rusins could not have been constituted on June 20, 1918 because on that day the 15th Con-

taken and the representatives of the Greek Catholic Clergy appointed a Committee of twenty three foremost Uhro-Rusins in America who constituted the AMERICAN NATIONAL COUNCIL OF UHRO-RUSINS, the object and purpose of which was the freedom and liberation of the Uhro-Rusins inhabiting Hungary. On October, 21, 1918 said National Council presented a printed memorandum to His Excellency Woodrow Wilson at Washington, D.C.³ and at the audience had same day limited their ambitions, as per request of His Excellency, to obtaining for their brethren autonomy.

On November, 12, 1918, at Scranton, Pa., the members of the AMERICAN NATIONAL COUNCIL OF UHRO-RUSINS unanimously recommended a Union of the Uhro-Rusins as an autonomous state with the Czechoslovak Republic and decided to refer said recommendation to a vote of the Uhro-Rusins in America, of whom not over ten percent are naturalized American Citizens. This action by letters dated November 15, 1918 was made known to His Excellency Woodrow Wilson and also to the Department of State, copies of both said letters and the replies thereto, said replies bearing dates of November 19 and 27 respectively, are hereto attached and marked "Exhibits C, D, E, and F" respectively.

Deducing from the contents of the aforesaid replies that the submission of the recommendation of the National Council was not objectionable to His Excellency or the Department of State, a form of ballot was prepared and forwarded to the various local societies of the aforesaid major organizations, and also to each of the Greek Catholic Uniate Churches or Congregations. Each society received one vote for each fifty members, and each Church or congregation one vote for each fifty families. The plebiscite was completed December, 1918, the result thereof being as follows, towit.,

vention of Greek Catholic Union of Rusin Brotherhoods was still in session in Braddock, Pennsylvania. (Cf. Report of the said society's 15th convention in *Jubilee Almanac of the Greek Catholic Union of the U.S.A., 1892-1967*. Munhall, Pa., 1967, pp. 63-66) The Council was created on July 23, 1918. (See G. I. Zatkovic's *Otkrytie-Exposé*, Homestead, Pa., [n.d.] p. [1])

³ This memorandum, prepared by G. I. Zatkovich, embodied the following resolution adopted by the Council of Uhro-Rusins on July 23, 1918: "1. The people of Subcarpathien Ruthenia should receive complete independence. 2. If this should not be possible, they should be united with their Galician and Bukovinian brethren. 3. If this should also not be possible, they should receive autonomy." (Cf. Zatkovich, op. cit., p. [1])

For Union of Uhro-Rusins with Czechoslovakia	732 votes
For Union of Uhro-Rusins with Ukrainians	310 votes
For Total Independence of Uhro-Rusins	27 votes
For Union of Uhro-Rusins with Carpatho Russians	13 votes
For Union of Uhro-Rusins with Russia	10 votes
For Union of Uhro-Rusins with Magyarland	9 votes
For Union of Uhro-Rusins with Galicia	1 vote
<hr/>	
Total:	1102 votes

The foregoing represents a total vote of from 60,000 to 70,000 people, and is a fair, true and honest expression of the wishes of the people as the plebiscite was taken without coercion or oppression in a land where freedom of thought and expression are not curbed.

The undersigned were elected as a commission to bring the result of the foregoing plebiscite to Europe as proof of the desires of the Uhro-Rusins to become an autonomous part of Czechoslovakia. The original ballots are in possession of the undersigned.

Uhro-Rusins are to be found nowhere except in the Northern part of former Hungary, where they number approximately 700,000, half of whom are now in territory occupied by the Czechoslovaks, half viz- in the Counties of Ung, Bereg Ugoča and Maramaroš still under the dominion and control of the Magyars, and the rest are all in the United States of America.

Respectfully submitted as data bearing on the question of the Union of the Uhro-Rusins as an autonomous part of Czechoslovakia.

AMERICAN UHRO-RUSIN COMMISSION

Gregory Ignatius Zsatskovich—*Chairman.*

Attest.

Julius G. Gardos—*Sec. and Treas.*

"EXHIBIT C"

AMERICAN NATIONAL COUNCIL OF UHRO-RUSINS
HEADQUARTERS:GREEK CATH. UNION OF RUSIN BROTHERHOODS BLDG.
HOMESTEAD, PA.Washington, D.C.
November 15, 1918To His Excellency Woodrow Wilson,
President of the United States of America,
White House, Washington, D.C.

Your Excellency:

It is with the deepest pleasure that I have the honor to inform you that as per your suggestion at the audience that was granted to the Executive Officers of the American National Council of Uhro-Rusins on October, 21, 1918, it has pursued the policy that the Uhro-Rusins of Hungary shall constitute an autonomous state in union on a democratic federative basis with other state or states of Mid-Europe.

The Uhro-Rusins were accepted as a separate nationality into membership in the Mid-European Union,⁴ of which Prof. Thomas Masaryk is President.

The undersigned is the duly accredited representative of the Uhro-Rusins in said Union.⁵

⁴ The Mid-European Democratic Union was a forum where the representatives of the smaller nations of East Central Europe met with the purpose of discussing their ethnographic and political problems and, if possible, to enter the Peace Conference in Paris with a concerted plan. Following nationalities were represented in the Union: The Czecho-Slovaks, Poles, Yugoslavs, Ukrainians, Armenians, Lithuanians, Roumanians, Albanians, Carpatho-Ruthenians, Italian irredentists, Unredeemed Greks, and Zionists.

⁵ Gregory Ignatius Zatkovich (until 1920-ies he spelled his name as Zsatkovich; other possible spellings Zatkovič, Zhatkovych), a Pittsburgh lawyer and the most prominent leader of Carpatho-Ruthenians in the U.S.A., who won the respect of his countrymen both in the United States and in Carpatho-Ruthenia. Zatkovich was born in Carpatho-Ruthenia in 1886 and was brought to the U.S.A. at the age of five. After World War I he devoted all his efforts to bring about the union of Carpatho-Ruthenia with the Czechoslovak Republic. Although an American citizen, he became on August 12, 1919 the head of the governing Directorium of Subcarpathian Ruthenia (Dyrektoriiä Pidkarpats'koi Rusy) and on Apr. 20, 1920 the country's first Governor. But after vainly endeavoring to secure from central Czechoslovak government the full autonomy of Carpatho-Ruthenia and the delimitation of the frontier between Ruthenia and Slovakia, on March 16, 1921 he submitted

The Uhro-Rusins signed at Independence Hall, Philadelphia, on October, 26, 1918, a Declaration of Common Aims of the Oppressed Nationalities of Mid-Europe.

The National Council of Uhro-Rusins at a meeting held at Scranton, Pa., on November, 12th., 1918, did unanimously decide as follows, to-wit:

"That the Uhro-Rusins with the most liberal self-governing autonomous powers, as a state shall join on a federative basis with the Czechoslovak Republic, with the condition that there shall belong to our country the original Uhro-Rusin Counties, viz: Spis, Saris, Zemplin, Abauj, Gemer, Borsod, Ung, Ugocsa, Bereg and Maramaros."

By the plebiscite the resolution of the National Council of Uhro-Rusins is now being referred to the Uhro-Rusins in the United States, of whom there are approximately one-half million, who within the next three weeks will decide by open ballot whether the action of the National Council of Uhro-Rusins shall be ratified by them or not. At the conclusion of the ballot the result will be given to the Uhro-Rusins through the medium of a Committee of three duly elected for that purpose viz: Gregory I. Zsatkovich, Chairman, Rev. Valentine Gorzo, and Julius G. Gardos. This Committee will leave for Europe in about four weeks from now and in addition to notifying the Uhro-Rusins of the result of the vote of their brethren in the United States, it shall also do works of charity by distributing monies, food and clothing to destitute Uhro-Rusins, who have been impoverished by the ravages of war.

Prof. Masaryk, President of the new Czechoslovak Republic has been personally informed of the foregoing and was delighted with addition to his republic.

I am authorized to thank you, Your Excellency, most heartily for

to President Masaryk his resignation and when on Apr. 13, 1921 his resignation was accepted, he returned to the United States.

Soon after his return to Pittsburgh, he published his Otkrytie-Exposè outlining his work on behalf of Carpatho-Ruthenia and the reasons of his resignation. In Pittsburgh he served at one time as city solicitor and was one of the founders of the American Slav Congress. He also continued to maintain his interest in the fate of his country of origin and during World War II tried again to bring about the union of Carpatho-Ruthenia with Czechoslovakia under Saint Germain-en-Laye Treaty. (See his cablegram to President Eduard Beneš of Sept. 1, 1941 reprinted in *The Carpathian*, official organ of the American Carpathian-Russian Council. Pittsburgh, Pa., July/Sept. 1943, vol. 3, no. 7/9, p. 4) Zatkovich died in Pittsburgh, Pa. on March 26, 1967.

the kindnesses extended to us and for the consideration shown to the Uhro-Rusins and the other small nationalities of Europe.

I beg to remain, Your Excellency, with sincere respects,

Gregory Ignatius Zsatkovich
Representative of the Uhro-Rusins in the
Mid-European Union.

“EXHIBIT D”

The White House
Washington.

19th November 1918.

My dear Mr. Zsatkovich;

Thank you for your letter of November 15th. I have received the information it conveys with the utmost interest and congratulate you on the progress made towards satisfactory relations.

Cordially and sincerely yours,
Woodrow Wilson.

Mr. Gregory I. Zsatkovich,
The Democratic Mid-European Union,
McLachlen Building, Washington, D.C.

“EXHIBIT E”

National Council of Uhro-Rusins;

Washington, D.C.
November 15th, 1918.

TO THE HONORABLE ROBERT LANSING,
SECRETARY OF STATE,
Washington, D.C.

Honorable Sir:

It is with the deepest pleasure that I have the honor to inform you that as per suggestion at an audience that was granted to the Executive Officers of the American Council of Uhro-Rusins, by his Excellency President Woodrow Wilson, on October the twenty-first, 1918, it has pursued the policy that the Uhro-Rusins of Hungary shall constitute an autonomous state in union on a democratic, federative basis with other state or states of Mid-Europe.

The Uhro-Rusins were accepted as a separate nationality into membership in the Mid-European Union of which Prof. Thomas G. Masaryk is President.

The undersigned is the duly accredited representative of the Uhro-Rusins in said Union. The Uhro-Rusins signed at Independence Hall, Philadelphia, on October 26th, 1918 a declaration of common aims of the oppressed nationalities of Mid-Europe.

The National Council of Uhro-Rusins at a meeting held at Scranton, Penna, on November 12th, 1918, did unanimously decide as follows, to-wit:

That the Uhro-Rusins with the most liberal selfgoverning autonomous powers, as a state, shall join on a federative basis with the Czechoslovak Republic, with the condition that there shall belong to our country the original Uhro-Rusin Counties, viz: Spis, Saris, Zemplin, Abauj, Gemer, Borsod, Ung, Ugoca, Bereg and Marmaros."

By the plebiscite the resolution of the National Council of Uhro-Rusins is now being referred to the Uhro-Rusins in the United States, of whom there are approximately one half million, who within the next three weeks will decide by open ballot whether the action of the National Council of Uhro-Rusins shall be ratified by them or not. At the conclusion of the ballot the result will be given to the Uhro-Rusins through the medium of a Committee of three duly elected for that purpose, viz: Gregory I. Zsatkovich, Chairman, Rev. Valentine Gorzo and Julius G. Gardos. This Committee will leave for Europe in about four weeks from now and in addition to notifying the Uhro-Rusins of the result of the vote of their brethren in the United States it shall also tend to do works of charity by distributing monies, food and clothing to destitue Uhro-Rusins, who have been impoverished by the ravages of the war.

Prof. Masaryk, President of the new Czechoslovak Republic has been personally informed of the forgoing and was delighted with the addition to his republic.

The forgoing has been brought to the attention of His Excellency, President Woodrow Wilson.

I beg to remain with sincerest respects, my dear Mr. Secretary,

Gregory Ignatius Zsatkovich
Representative of the Uhro-Rusins in the
Mid-European Union.

"EXHIBIT F"

Department of State
Washington

November 27, 1918.

Mr. Gregory Ignatius Zsatkovich,
National Council of Uhro-Rusins,
McLachlen Building,
10th and G Streets,
Washington, D.C.

Sir:

The Department acknowledges the receipt of your letter of November 15, 1918 regarding a resolution adopted at a meeting of the Uhro-Rusins held at Scranton, November 12th, relative to the Uhro-Rusins joining on a federative basis the Czecho-Slovak Republic, with the condition that there shall belong to their country the Uhro-Rusins Counties, viz: Spis, Saris, Zemplin, Abauj, Gemer, Borsod, Ung, Ugoca, Bereg and Marmaros.

I am, Sir,

Your obedient servant,
For the Secretary of State:
William Phillips
Assistant Secretary

763:72LL9/2691

Structural Changes in Ukrainian Industry Before World War II

IWAN S. KOROPECKYJ
(Temple University, Philadelphia)

The purpose of this paper is to investigate quantitatively the structural changes in the industry of one of the economically most important regions of the USSR, namely, Ukrainian SSR,¹ in the years prior to World War II. Specifically, the procedure will consist of the following: (1) establishment of changes in the specialization of Ukrainian industry; (2) determination to what extent the locational decisions were responsible for these changes; and (3) study of some economic aspects of these decisions.

I

A structural change in industry of a region in relation to the industry of the whole country can be shown through the changed importance of individual industrial branches of this region in the respective branches of the whole country. This change can be demonstrated most desirably in terms of all three main variables: output, employment, and invested capital. In regard to output, the data expressed in current prices would be conceptually most appropriate for the analysis of structural changes. Such data for individual branches of industry are not available for the USSR as well as for the Ukraine for the period under discussion. However, in this particular case, even if they were available, they could not be used for the meaningful comparison of the value of output at the beginning and the end of the period, because of differential price increases resulting from then existing inflation and changing rate of turnover taxes and subsidies on various products. The data expressed in 1926/27 prices, which are available, can also not be used for our purpose. These "constant" prices fail to reflect adequately the changes in output, because of changes in the scarcity relations which took place during this period of extraordinarily rapid industrialization. In addition, they refer

¹ Subsequently referred to as the Ukraine.

to the gross output and as such they can be affected by the changes in the vertical integration of industry.

The available employment data for individual branches of industry, which are comparable for the Ukraine and the USSR, are also not useful for our purpose. They cover only a part of the period under discussion, namely, the period between January 1, 1929 and January 1, 1936.² In addition, these data include only the workers³ of large-scale industry⁴ and, moreover, only those who were registered by the labor division of the contemporary Central Statistical Administration.⁵

Of necessity, our analysis has to rest only on the data of so-called productive fixed capital. The official beginnings of the First (October 1, 1928) and Third (January 1, 1938) Five Year Plans have been chosen as benchmark dates, since they provide greatest availability of data. According to the Soviet definition, productive fixed capital means the capital "concentrated in the sphere of material production."⁶ During the period under discussion, it was usually subdivided into the following three broad groups: (1) buildings and structures, (2) transportation means, and (3) equipment and machinery.⁷ Its valuation in the USSR presents, however, a number of difficulties. In order to understand them, it is necessary to describe the Soviet practice of fixed capital accounting.

In view of the differential price changes, the decline in the real cost of production of the same assets or of their close substitutes resulting from technological progress, technological obsolescence, and physical wear and tear, Soviet planners undertake periodically an inventory of

² TsUNKhU Gosplana SSSR, *Sotsialisticheskoe stroitel'stvo SSSR* (Moscow, 1934), pp. 327-31 and *Sotsialisticheskoe stroitel'stvo SSSR* (Moscow, 1936), pp. 520-21.

³ In addition to workers, who accounted, for example, for 79.9 per cent of all employed in industry of the Ukraine and 78.8 per cent of the USSR on January 1, 1936 (*ibid.*, pp. 518-19), there were the following categories of employed: apprentices, engineers and technical personnel, administrative personnel, and minor service personnel.

⁴ Whether a plant belonged to the large-scale industry depended on the number employed, the use of mechanical power, and the branch of industry; see *ibid.*, p. 394.

⁵ It is reported that workers registered with the labor division of TsUNKhU accounted in 1934 for 48 per cent of all workers in industry. See Donald R. Hodgman, *Soviet Industrial Production, 1928-1951* (Cambridge, 1954), p. 37.

⁶ P. G. Bunich, *Osnovnye fondy sotsialisticheskoi promyshlennosti* (Moscow, 1960), p. 12.

⁷ *Ibid.*, p. 23.

existing assets.⁸ The knowledge of their value is of obvious importance for decision making. Such a revaluation, pertinent to our period, took place in 1925. In the case of machinery, equipment, and transportation means, the value was estimated on the basis of market prices of that year for the same assets or their close substitutes, while the value of buildings and structures was appraised on the basis of the current cost of construction. The wear and tear, in turn, was estimated by experts taking into account the actual condition of each asset, its length of use, the expected life, etc.⁹ Following this revaluation, the value of fixed assets in all industry or in one of its subdivisions at any given point of time would be equal to: (1) initial net value in 1925 at the prices of this year, (2) plus the value of introduced assets at current prices, and (3) minus retired assets between 1925 and the point of time under investigation at original prices.¹⁰

Such an accounting practice was obviously applied in the Ukraine as well, and the value of its fixed assets in industry, as shown by official statistics, is thus formally comparable to the value of corresponding assets in the USSR as a whole. The crucial assumption, however, has to be made that, if these data suffer from certain deficiencies and biases, and they most probably do, both the Ukraine and the USSR are affected by them equally. Therefore, for our purpose—to analyze the changes in the structure of Ukrainian industry relative to the USSR industry between 1928 and 1937—the official data have to be accepted as correctly reflecting the changes which took place. It needs to be pointed out that, in view of the scarcity of necessary data for all industry, our data cover the major component only, namely, the large-scale industry. But, because the shares of large-scale industry in all industry were almost identical in the Ukraine

⁸ For description of the most recent revaluation (1959), see Norman M. Kaplan, "Capital Stock" in Abram Bergson and Simon Kuznets, eds., *Economic Trends in the Soviet Union* (Cambridge, 1963).

⁹ P. Bunich, *Pereotsenka osnovnykh fondov* (Moscow, 1963), pp. 15–16. For the criticism of this revaluation, see *ibid.*, pp. 16–17; V. S. Ostroumov and A. V. Shevchuk, *Osnovnye fondy SSSR* (Moscow, 1963), pp. 79–81. All these authors believe that because of many inadequacies in the planning and execution of this revaluation, the value of assets was overestimated by as much as 40 per cent.

¹⁰ A. Arakelian, *Osnovnye fondy promyshlennosti SSSR* (Moscow, 1938), p. 19. During the First and Second Five Year Plans capital repairs were not distinguished from investment, in contrast to the subsequent practice; see Ostroumov and Shevchuk *op. cit.*, p. 126; Abram Bergson, *The Real National Income of Soviet Russia since 1928* (Cambridge, 1961), p. 379. Thus it could be assumed that they were included in the value of introduced assets.

and the USSR,¹¹ the former can be considered as representative of the latter. An attempt was made by this writer to make the data for the same industrial branches in the Ukraine and the USSR as comparable as possible, despite very inadequate explanations of definitions and methodology. In regard to their internal consistency, the Ukrainian data seem to be superior to those for the USSR. The former are based on the same source,¹² and the reasonable hope can be entertained that its editors and compilers used the same methodology and definitions. In contrast, the data for the USSR were compiled by Professor Norman Kaplan from scattered sources¹³ and thus the possibility of divergencies is here obviously greater. Using these data for our comparison, to paraphrase an expression used in a similar context,¹⁴ I have put burdens on them which Kaplan probably did not intend them to bear.

The accompanying table presents the value of fixed assets of the large-scale industry, by branches, in the Ukraine and the USSR for the benchmark dates, their index numbers at the end of the period, and their percentage distribution on these two dates.¹⁵ In addition, Columns (6) and (7) give the values of location quotients on these two dates. Their importance will be discussed shortly. On the initial

¹¹ According to Ju. F. Vorobyov, *Vyravnyanie urovnei ekonomicheskogo razvitiia soiuznykh respublik* (Moscow, 1965), p. 140, the output shares of large-scale industry in all industry for two years, which are close to our benchmark years, were as follows:

	Ukraine	USSR
1926/27	84.8	85.0
1939	92.2	93.7

On the basis of the above data it can be inferred that a similar relationship between large-scale and all industry existed also in the case of fixed assets.

¹² Both sources for our table, P. A. Khromov, *Promyslovist' Ukrainy pered vitchyznyanoyu viynoyu* (Kiev, 1945), and L. I. Kukharenko, *Peretvorenniya Ukrainy z ahrarnoyi v mohulnyu industriyal'no-kolhospnu respubliki* (Kiev, 1959) cite their data from *Narodne hospodarstvo URSR, Statystychnyi dovidnyk* (Kiev, 1940), which, however, could not be obtained, despite many efforts of this writer.

¹³ See extensive description of sources of and the informative notes to revised Appendix Table II, in Norman Kaplan, *Capital Investment in the Soviet Union, 1924-1951* (Santa Monica, 1951).

¹⁴ Raymond P. Powell, "Industrial Production" in Bergson and Kuznets, *op. cit.*, p. 153.

¹⁵ In order to facilitate our discussion, in the subsequent comparisons between the Ukraine and the USSR, the data for the latter include the former. Thus, the difference between the two is to some extent blunted by the importance of the Ukraine within the USSR in the case under investigation and this importance, of course, varied widely from case to case.

date the quotients are listed in descending order, while the numbers in brackets indicate their changed order on the terminal date. The breakdown of the total is limited to only 15 branches and the residual, because of the paucity of comparable data. In the residual, called "other," the most important branches are probably mineral building materials, and mining and smelting of nonferrous metals. The oil industry, of importance in the USSR, was then nonexistent in the Ukraine.

Productive Fixed Capital of Large-Scale Industry by Branches
in the Ukraine and the USSR on October 1, 1928, and January 1, 1938

Branch of industry	Millions of rubles at original cost- gross depreciation allowances.		Index on Jan. 1, 1928—100		Percentage of total		Location quotients	
	Oct. 1, 1928	Jan. 1, 1938	Oct. 1, 1928	Jan. 1, 1938	Oct. 1, 1928	Jan. 1, 1938	Oct. 1, 1928	Jan. 1, 1938
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Ukraine								
Total	2163	11968	553.3	100.0	100.0			
1. Coal	359	1139	317.3	16.6	9.5	4.41	2.39	(2)
2. Iron ore	27	162	600.0	1.3	1.4	3.37	1.91	(3)
3. Iron & steel	415	2681	646.0	19.2	22.4	2.87	2.44	(1)
4. Chemical	154	1270	824.7	7.1	10.6	1.82	1.54	(4)
5. Food	582	1400	240.6	26.9	11.7	1.80	1.11	(6)
6. Glass, china, & pottery	30	141	470.0	1.3	1.2	1.22	1.38	(5)
7. Apparel	8	37	462.5	.4	.3	.98	.77	(9)
8. Metalworking & machinebuilding	293	2419	825.6	13.6	20.2	.73	.80	(8)
9. Printing & publishing	22	41	186.4	1.0	.3	.72	.46	(12)
10. Electric power	107	1097	1025.2	4.9	9.2	.72	.93	(7)
11. Leather, fur boot, & shoe	26	66	253.9	1.2	.6	.64	.49	(11)
12. Paper	17	25	147.1	.8	.2	.50	.19	(15)
13. Woodworking	15	105	700.0	.7	.9	.30	.36	(13)
14. Other	78	1186	1520.5	3.6	9.9	.23	.52	(10)
15. Textile	29	182	627.6	1.3	1.5	.07	.23	(14)
16. Peat	1	17	1700.0	.1	.1	.06	.10	(16)
USSR								
Total	10262	57935	564.0	100.0	100.0			
1. Coal	385.5	2301.8	597.1	3.8	4.0			
2. Iron ore	37.9	409.0	1079.2	.4	.7			
3. Iron & steel	685.7	5298.9	772.8	6.7	9.2			

4. Chemical	401.3	3991.7	994.7	3.9	6.9
5. Food	1530.7	6085.2	397.5	14.9	10.5
6. Glass, china, & pottery	116.7	494.0	423.3	1.1	.9
7. Apparel	38.8	233.0	600.6	.4	.4
8. Metalworking & machinebuilding	1905.9	14664.2	769.4	18.6	25.3
9. Printing & publishing	145.9	425.8	291.8	1.4	.7
10. Electric power	706.7	5696.6	806.1	6.9	9.8
11. Leather, fur, boot, & shoe	194.2	651.2	335.3	1.9	1.1
12. Paper	161.3	650.0	403.0	1.6	1.1
13. Woodworking	236.1	1412.0	598.1	2.3	2.4
14. Other	1631.8	11004.2	674.4	15.9	19.0
15. Textile	2006.4	3793.4	189.1	19.5	6.6
16. Peat	77.1	824.0	1068.7	.7	1.4

Sources:

- Ukraine:
- a. All data are from Khromov, *op. cit.*, pp. 35, 37, except for the following branches: glass, china, and pottery, leather, fur, boot, and shoe, printing and publishing, and apparel which are from Kukhareno, *op. cit.*, p. 110.
 - b. Branch "other" was obtained as a difference between the sum of the listed branches and the total.
- USSR:
- a. All data are from Kaplan, *Capital Investment*, App. Table II.
 - b. For the following branches the data are unavailable for January 1, 1938, but are available for January 1, 1937: leather, fur, boot, and shoe, paper, printing and publishing, and peat. I extrapolated for one year on the basis of the average rate of growth for a given branch during four years of the Second Five Year Plan (January 1, 1933 and January 1, 1937).
 - c. The data for chemical and petroleum refining branches are combined in order to make thus derived branch comparable to Ukrainian data.
 - d. The data for glass, china, and pottery are obtained through the subtraction of mineral building materials from branch called stone, clay, and glass products.
 - e. Branch "other" derived in the same way as for the Ukraine.

As can be seen, the growth of total industry was almost identical for both the Ukraine and the USSR: the assets increased about five

and one-half times.¹⁶ However, individual branches displayed different rates of growth in most cases. For some, the growth was substantially higher in the USSR than in the Ukraine, for example, coal, iron ore, or iron and steel branches, while other branches showed less pronounced changes in both directions. This development found its expression in changed distributions of both industries at the end as compared to the beginning of the period under discussion. The faster growth of the above enumerated branches in the USSR, in which the Ukraine was already particularly well developed, suggests that the Ukrainian industry was becoming less specialized in relation to the USSR industry.

The change in specialization can be expressed numerically for individual branches as well as for the distribution of the whole industry. In regard to the former, the location quotient is used. It is defined as follows: "Since the localization in a given industry may be considered to occur when a particular industry deviates from common pattern, a measure may be obtained for a specific area by dividing the share of the national total for a given manufacturing industry in the area by its share of all manufacturing." Furthermore, "The higher the location quotient in any distance, the greater the degree of localization of that particular industry, as compared to all manufacturing."¹⁷ Column (6) in our table shows that at the beginning of the period under discussion, the quotients for six branches had values higher than the unity. In other words, the Ukraine was specialized in these branches relative to the USSR. In all six cases the quotients decreased during these period, and for such branches as coal, iron ore, or food, quite substantially, but never did drop below the unity (Column 7). Of the remaining ten branches, which had values less than unity at the beginning of the period, the quotient increased at the end in six cases, but continued to stay below the unity. Obviously, this tendency of quotients to move toward the unitary value from both directions indicates the definite decrease in the specialization of Ukrainian industry relative to the USSR industry.

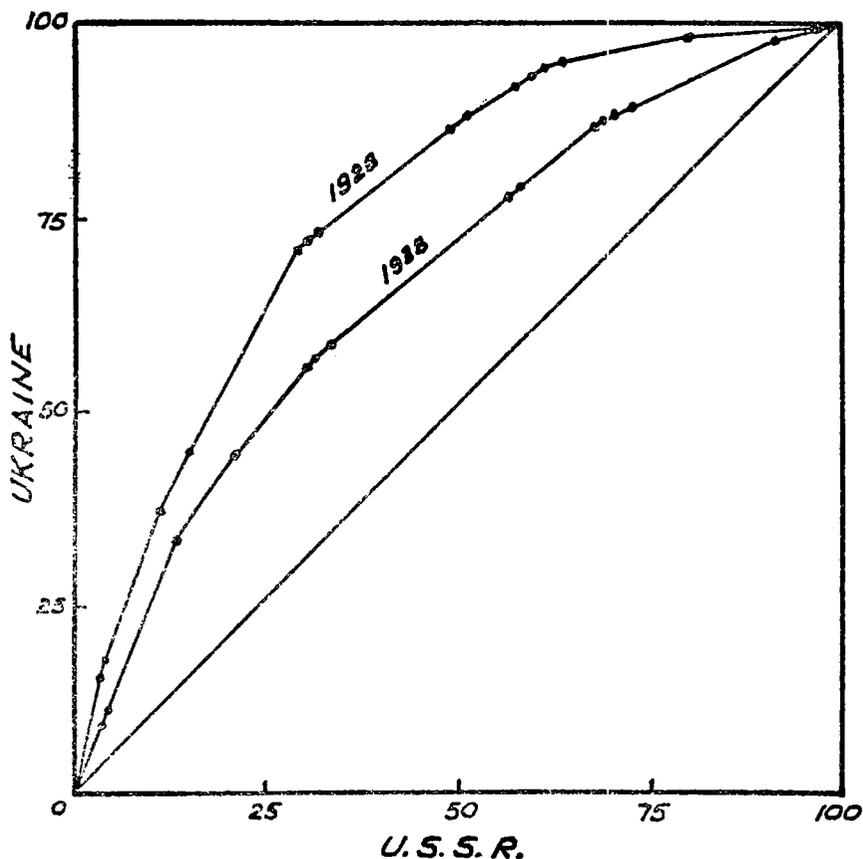
For the purpose of establishing the degree of decline in the spe-

¹⁶ The revised estimates for the USSR show a 15 per cent lower growth rate of gross fixed capital than the official statistics: the index number of 1937 (1928=100) is 455.6 and 433.2, using 1928 and 1937 prices, respectively. See *ibid.*, p. 190.

¹⁷ P. S. Florence, W. G. Fritz, R. C. Giles, "Measures of Industrial Distribution" in U.S. National Resources Planning Board, *Industrial Location and National Resources* (Washington, 1943), p. 107.

cialization of the total Ukrainian industry relative to the USSR industry, the coefficient of specialization and specialization curves are used. The former is obtained in the following manner. The share of each individual branch in the industrial distribution of a region

Specialization Curves of Distribution of Fixed Capital in Large-Scale Industry of the Ukraine Relative to the USSR for Benchmark Dates



Source: Same as in table.

is subtracted from the corresponding shares of the distribution for the whole country. Then the sum of all plus (or minus) differences is divided by 100.¹⁸ Thus, the obtained coefficient may vary between 1 and 0. The lower its value, the more similar is the branch distribution of industry in this region to the distribution for the whole country. Applying this procedure to the distributions of the Ukraine and the USSR, the coefficient value of .43 for October 1, 1928 and .25 for January 1, 1938 is obtained. As can be seen, the degree of the specialization of Ukrainian industry declined considerably during the period under discussion.

This trend can be observed graphically with the help of specialization curves. In contrast to the coefficients of specialization, these curves aid in identification of contributions of particular branches to the trend of the whole industry.¹⁹ They are obtained by plotting the cumulative percentage distribution of Ukrainian fixed capital by industrial branches on the vertical axis and of the USSR branches on the horizontal axis. The branches are ordered according to the size of the location quotient, from the largest to the smallest, as shown in our table. The further the specialization curve lies from the diagonal the more specialized is a given distribution in relation to its base. As can be seen in the accompanying figure, the curve presenting the terminal date of our period is much closer to the diagonal than the curve for the initial date. It indicates the significant decline in the specialization of the Ukrainian industry to the USSR industry between the two benchmark dates.

The above-discussed measures of the structural changes of Ukrainian industry in relation to the USSR suffer from a basic deficiency, namely, that the absolute level of the coefficient of specialization and the shape of the specialization curve depend on the degree of branch clarification of the total industry.²⁰ However, for the purpose of this paper, the absolute level of these measures is of lesser importance. Of interest is their relative change over time, and this change is meaningful when the classification is uniform for the Ukraine and the USSR on both benchmark dates. A much more important deficiency of these measures is the fact that they lack any analytical value: they

¹⁸ Walter Isard, *Methods of Regional Analysis: An Introduction to Regional Science* (New York, 1960), pp. 270-71.

¹⁹ *Ibid.*, p. 273.

²⁰ Cf. *ibid.*, pp. 262 ff.

represent the instantaneous pictures at two points of time, without being able to identify the causes responsible for changes, as disclosed by the comparison of these pictures.

II

Some quantitative indications as to the reasons for the change in the structure of fixed capital in Ukrainian industry relative to the USSR for the period under consideration can be obtained with the help of "shift" technique.²¹ Before the application of this method to our problem, it is necessary first to define possible reasons for structural changes. One can be the concentration of branches in a given region which are growing nation-wide at a faster²² rate than the whole industry. The resulting shift in the growth variable, in our case in the fixed capital, is called "proportional." Another cause of the faster regional growth and the resulting structural changes is the improvement of the over-all access to inputs and/or markets of outputs of some branches, regardless of whether their national rate of growth is faster or slower than of the whole industry. The shift in the fixed capital for this reason is called "differential."²³ In the case of command economy, it is conceivable that the location decisions of planners, affecting the differential shift, can be motivated, in addition to the purely economic factors, by such factors as defense considerations or the need to develop regions inhabited by the national minorities, etc. Proportional and differential shifts add to the total net shift in a given variable of a region relative to the whole country. It will now be interesting to determine to what extent each of the two contributed to the total net shift in the fixed capital of Ukrainian industry during the discussed period.

Since the differential shift is comparatively easier to obtain, its calculation will be undertaken first. Then this result will be subtracted from the net total shift of Ukrainian fixed assets in order to derive their proportional shift. The differential shift is calculated in

²¹ Developed by Daniel Creamer, "Shifts of Manufacturing Industries" in U.S. National Resources Planning Board, *op. cit.* For the simplified approach, used in this paper, see Harvey S. Perloff et al., *Regions, Resources, and Economic Growth* (Baltimore, 1960), pp. 70-74.

²² The same method, of course, can be used for the analysis of more slowly growing industries.

²³ *Ibid.*, p. 71.

the following manner. Fixed capital of an individual Ukrainian branch at the initial date is multiplied by the relative increase in fixed capital of this branch for the whole USSR during this period of time. The obtained figure is subtracted from the actual value of fixed capital in this Ukrainian branch at the terminal date. If the latter figure is greater (the difference in footnote is preceded by the plus sign), the growth of fixed capital in this particular branch was greater in the Ukraine than on the average for the whole USSR, because of existing locational advantages in the former. If the growth was smaller (the difference preceded by the minus sign), it means that the locations for the development of this branch were regarded more advantageous in other parts of the USSR than in the Ukraine. Adding the results for individual branches, the negative total differential shift in the amount of 1637.4 mill. rubles is obtained.²⁴ Adverse differential shifts are quite pronounced in such branches as coal, food, iron and steel. The positive shifts in other, electric power, metalworking and machinebuilding, and some other branches were too small to offset this trend.²⁵

Having obtained the sum of differential shifts by branches, the following calculation can now be undertaken:

Net shift in total fixed capital	— 244.3 mill. rubles
Differential shift in total fixed capital	—1687.4 mill. rubles
Proportional shift in total fixed capital	+1443.1 mill. rubles

The top figure shows the net shift for the whole Ukrainian industry. It is derived by the multiplication of Ukrainian fixed capital on October 1, 1928 by the index for the USSR fixed capital on January 1, 1938 and subtracting the derived figure from the actual value of

²⁴ The results for individual branches are as follows (in mill. rubles): coal -1004.6, iron ore -129.4, iron and steel -526.0, chemical -261.8, food -913.7, glass, china, and pottery -17.3, apparel -11.0, metalworking and machinebuilding +164.6, printing and publishing -23.3, electric power +234.5, leather, fur, boot, and shoe -21.2, paper -43.5, woodworking +15.3, other +716.4, textile +127.2, peat +6.3 (source: our table).

²⁵ Obviously, the total differential shift depends on the degree of branch classification. For example, if leather, fur, boot, and shoe, printing and publishing, paper, and peat branches (these are the USSR branches for which the value for the terminal date was obtained through the extrapolation for one year; see source to our table) were not treated separately but included in "other," the total differential shift will be increased to 1820.0 mill. rubles. Despite this numerical difference in result, the trend is clearly seen.

Ukrainian fixed capital on the same date.²⁶ As was explained above, the net shift for the whole industry consists of differential and proportional shifts. Subtracting the former from the net total shift, the proportional shift, equal to +1443.1 mill. rubles, is obtained.

The preceding analysis warrants the following conclusion. In regard to the growth of total fixed assets of industry, the difference between the Ukraine and the USSR was negligible. However, under the surface two distinct trends can be discerned. First, the locations for the development of some branches of heavy industry such as coal, iron and steel, or iron ore, which were particularly favored during the period under discussion, have been considered by planners to be more advantageous in regions of the USSR other than the Ukraine. Since the trend in other branches was rather mixed, the total differential shift was negative for the Ukraine. Second, that the total fixed capital in the Ukraine did not decline in relation to the USSR correspondingly, but only insignificantly, is due to the fact that the Ukraine was specialized in these favored branches. Because their weight in the distribution of Ukrainian industry was high, even their relatively slower growth was almost sufficient to offset the higher growth of these fast-growing branches in the USSR, where their weight was lower than in the Ukraine, as well as the higher growth of some slow-growing branches, notably of food processing. In other words, large positive proportional shift in the Ukrainian industry during the discussed period is found to correspond to a negative differential shift of almost equal magnitude.

The discussion of structural changes and the reasons for these changes in the Ukrainian industry relative to the USSR was based on the value data of fixed capital which, as was explained above, was a summation of the initial values at 1925 prices and subsequent additions at current prices. In view of then-existing inflationary tendencies, a possible argument that our results are influenced considerably by the unevenness of these tendencies for individual branches can be rejected on the following two grounds. First, the inflation was much less pronounced in investment than non-investment components of the gross national product.²⁷ Second, the Ukrainian shares for in-

²⁶ (2163 mill. rubles \times 564.6) -11968 mill. rubles = -244.3 mill. rubles (see our table).

²⁷ This can be seen from the following data, showing the price indexes of

dividual branches were in almost all cases substantially high, say, over five per cent. Therefore, a small increase in fixed capital in any particular branch in the Ukraine, without any change in the corresponding branch in the rest of the USSR, would not seriously affect the share of that Ukrainian branch in the total for the USSR. Similarly, there will be little change in the relationship between the Ukraine and the USSR if there was a small increase in fixed capital of an individual branch in the rest of the USSR, without any change in the corresponding branch in the Ukraine. Moreover, as column (3) of our table indicates, there were no instances of increases only in the Ukraine or in the rest of the USSR, with no change in the other part. All industrial branches showed increases in their fixed capital in the Ukraine as well as in the rest of the USSR, although at different rates.

III

The negative differential shift for the Ukraine relative to other regions of the USSR means that the planners regarded investment in the latter more advantageous during the period under discussion. The advantages for the planners could have been economic as well as noneconomic. The effect of the given territorial distribution of investment on the growth rate is obviously an economic factor, while noneconomic factors would include defense considerations, the need to industrialize regions inhabited by national minorities, etc. Because of space limitations, an adequate treatment of noneconomic factors is not possible; therefore, the rest of the article will be devoted to the discussion of certain economic aspects of this investment policy.

The growth rate of the industry will be maximized if a number of problems connected with the allocation of investment will be op-

Soviet gross national product and of some of its components for 1937 (1928—100):

	1928 weights	1937 weights
Gross national product	425	265
Gross investment	173	136
Construction	205	199
Equipment	143	71
Noninvestment components of GNP	480	553

Source: Richard Moorsteen and Raymond P. Powell, *The Soviet Capital Stock, 1928-1962* (Homewood, 1966), p. 226, Table 8-1.

timally solved. One of such problems is the allocation of investment among different regions. In case of relative scarcity of capital to other factors of production, i.e., when its increase is a precondition for the increase in output, the efficient allocation means that investment should be directed to those regions in which the increase in output will be highest. A guide to such a policy will be the inter-regional comparison of aggregate incremental capital-output ratios (ICOR).²⁸ Under very realistic assumption that a similar situation existed in the USSR industry during the discussed period, the negative differential shift for the Ukrainian industry can be economically justified if the ICOR was higher in the Ukraine than in other regions of the USSR. The calculation of relevant ICORs, in order to test empirically the above proposition, requires that output and fixed capital be shown in constant prices of a selected year, and, in this particular case, should also be adjusted to factor cost, because of well known deficiencies of Soviet prices. Such data have been prepared for the USSR and on their basis ICORs for various periods have been estimated.²⁹ In order to make a comparison between the Ukraine and the USSR, an attempt was made by this writer, elsewhere, to estimate the ICOR for the former.³⁰ Certain simplifying assumptions, particularly in regard to the output changes, had to be employed, because of the unavailability of factor cost data for the Ukraine. These tentative results indicated that the ICOR was about one-quarter smaller in the Ukraine than in the USSR between 1928 and 1937.³¹

Here, I shall approach the problem of comparison of ICORs between the Ukraine and the USSR differently. I propose to use the

²⁸ There are various definitions of incremental capital-output ratio. In its most simple form, it is the ratio of the increase in fixed capital to the increase in output between two benchmark years. The use of this ratio in the allocation policy of investment among different regions is recommended officially in the USSR. See "Recommendations of the All-Union Scientific-Technical Conference on Problems of Determining the Economic Effectiveness of Capital Investments and New Technique in the USSR National Economy," *Problemy ekonomiki* (1959, No. 1) as translated in *Problems of Economics* (January, 1959), p. 87.

²⁹ Cf. Alexander Eckstein and Peter Gutnam, "Capital and Output in the Soviet Union, 1928-1937," *Review of Economics and Statistics* (November, 1956), p. 440; Simon Kuznets, "A Comparative Appraisal" in Bergson and Kuznets, *op. cit.*, p. 356.

³⁰ See my unpublished dissertation, *The Economics of Investment in Ukrainian Industry, 1928-1937* (Columbia University, 1964), Chaptre: IV.

³¹ *Ibid.*, p. 92.

concept of ICOR without, however, attempting to estimate its absolute level. In this way there will be no need either to adjust the official data to factor cost or to make some drastic assumptions. Instead, I shall utilize the previous discussion of structural changes in the fixed capital of Ukrainian and USSR industries as a basis for inferring the relative magnitudes of the ICORs. The following three factors will be analyzed in relation to the changing importance of individual branches of industry: (1) average capital-output ratios (ACOR), (2) the share of structures and buildings in total fixed capital, and (3) the scale of new enterprises. Obviously enough, these factors were only partially responsible for the relative level of ICORs. The discussion of other factors, which were certainly of no lesser importance but which were not connected with the structural changes of fixed capital, lies beyond the scope of this article.

(1) Because of different production functions and existing scarcity relations between factors of production, the ACORs differ in individual branches of industry. Clearly, the larger the share in the total industry of branches with relatively high ACORs, the higher is the aggregate ACOR. In order to determine in which industry, that of the Ukraine or the USSR, the ICOR tended to become higher between two benchmark dates as a result of rise in the aggregate ACOR, the following calculation will be undertaken. There are data available for gross output, in 1926/27 prices, by branches of the large-scale industry in the Ukraine and the USSR. There are also similar data for the fixed capital for the different dates of the period under discussion, presumably constructed according to the method described earlier. For our purpose, because they seem to be sufficiently meaningful,³² the output data for the year 1928 and the fixed capital data as of October 1, 1928 have been chosen. It has to be assumed that the latter are equivalent to the average fixed capital for 1928. Dividing the fixed capital by the output data for our 16 branches, the respective ACORs for the Ukraine and the USSR are obtained.³³

³² According to Oleg Hoeffding, *Soviet National Income and Product in 1928* (New York, 1954) p. 48, "The Soviet economy in 1928 was more of a 'market economy' than it became in the Five Year Plan era and . . . its price system was more 'meaningful' in the sense of being less remote from such an ideal as a system resulting from perfect competition."

³³ ACORs for individual branches of USSR and Ukrainian (in brackets) industries were as follows: (1) coal -1.023 (1.301), (2) iron ore -.972 (1.038), (3) iron and steel -.917 (1.017), (4) chemical -.535 (1.833), (5) food -.419 (.526), (6) glass,

Under assumption that these ratios did not change between our benchmark dates, they are weighted by the fixed capital distributions of both industries on these dates (see the table).

The following aggregate ACORs result from our calculation:³⁴

	October 1, 1928	January 1, 1938
Ukraine	1.043	1.202
USSR	.865	1.011

As can be seen, the Ukrainian ACORs are higher than those for the USSR on both dates.³⁵ Obviously, of decisive importance for this phenomenon is the concentration in the Ukraine of heavy industry, which is relatively capital intensive. However, of a greater interest in the present context is the relative change in ACORs over the discussed period and not their differences in the absolute level. This change was slightly higher for the USSR than for the Ukraine: the aggregate ACOR for the former rose by 17 per cent and for the latter by 15 per cent. In other words, there is no indication that, for this reason, the same increase in total fixed capital in the industry resulted in a greater increase in output in the USSR than in the Ukraine.

(2) Another important factor which affects the level of ICOR is the relationship, in the increments to the total fixed capital, between buildings and structures, on the one hand, and equipment, machinery, transmitting equipment, instruments, inventory (short-

china, and pottery -.581 (.682), (7) apparel -.086 (.131), (8) metalworking and machinebuilding -.851 (.747), (9) printing and publishing -.979 (.688), (10) electric power -3.904 (3.904), (11) leather, fur, boot, and shoe -.286 (.218), (12) paper -.978 (1.062), (13) woodworking -.425 (.425), (14) other -.591 (.453), (15) textile -.489 (.420), (16) peat -1.332 (1.332). Sources: USSR — *Sotsialisticheskoe stroitel'stvo 1936*, pp. 3-18; Ukraine — branches 1-5, 8, 12, 15 from Khromov, *op. cit.*, pp. 34-35, branches 6, 7, 9, 11 from Kukharenko, *op. cit.*, pp. 110-11, for branches 10, 13, 16 the output data are unavailable, therefore, the USSR ACORs are used. For branch 16 ("other") the USSR ACOR minus oil industry is used, because this industry was at that time nonexistent in the Ukraine.

³⁴ The aggregate ACORs are different from the ones calculated on the basis of total fixed capital and output in this year. The latter are equal to .609 for the USSR and .754 for the Ukraine. See *Sotsialisticheskoe stroitel'stvo 1936*, p. 3; Khromov, *op. cit.*, pp. 34-35. This is obviously due to the fact that our aggregate ACORs are arithmetical means of ACORs of our 16 branches weighted by their fixed capital.

³⁵ ACORs for the same branches in the Ukraine and the USSR behave irregularly: some are higher in the former and some are higher in the latter. Their level depends, of course, on the product mix within the given branch.

lived, small-value durables), and transportation means, on the other hand.³⁶ The higher the share of the former in these increments, the lower is usually the increase in output.³⁷ To measure the effect of this factor on the differential level of ICORs in the Ukrainian and USSR industries during the period under discussion, the method from the preceding paragraph will be applied. The available data on the composition of fixed capital, in this respect, in most important branches of the large-scale industry of the USSR in 1937 are used for this purpose.³⁸ On their basis, the composition in the remaining branches of our sample are estimated.³⁹ Now, under a drastic assumption that the shares of buildings and structures were the same in the same branches in the Ukraine and the USSR and did not change for the period between the benchmark dates, these shares are weighted by the branch distribution of both industries on benchmark dates (see the table). As a result, the following aggregate shares are obtained:

	October 1, 1928	January 1, 1938
Ukraine	54.7	52.8
USSR	50.4	50.9

The above calculation shows that the share of buildings and structures was larger in the Ukraine than in the USSR on both benchmark dates. It is due to the fact that they are relatively high in such branches as coal or iron and steel, which were important in the distribution of Ukrainian industry. However, the Ukraine shows a small decline over our period, while in the USSR a negligible change in

³⁶ The classification is according to Arakelian, *op. cit.*, p. 12.

³⁷ E.g., P. Bunich, "Proportsia mezhdru osnovnymi fondami i valovoi produkt-siei promyshlennosti," *Voprosy ekonomiki* (1962, No. 1), p. 65; L. Kantor, "Relationship Between Rates of Growth of Output and Fixed Assets of Industry," *Nauchnye doklady vysshei shkoly — ekonomichskie nauki* (1962, No. 1), as translated in *Problems of Economics* (January, 1963), p. 53.

³⁸ The share of buildings and structures in individual branches was as follows: coal -66.3, iron and steel -58.8, chemical -44.4, food -52.9, metalworking and machinebuilding -53.7, electric power -32.4, woodworking -52.7, textile -45.3, peat -49.8. See Arakelian, *op. cit.*, p. 12.

³⁹ For the remaining branches, for which the data are unavailable, the ratios of similar, in our opinion, branches (shown in brackets) are used: iron ore -66.3 (coal), glass, china, and pottery -50.3 (Group B of total industry), apparel -52.1 (total industry), printing and publishing -52.1 (total industry), leather, fur, boot, and shoe -45.3 (textile), paper -52.1 (total industry), other -52.1 (total industry). For the data in brackets, see *idem*.

the opposite direction is noticeable. Again, judging from the analysis of this factor, there is no evidence that the same increase in fixed capital resulted in a larger increase in output in regions of the USSR other than the Ukraine.

The above conclusion has been reached on the assumption that the share of buildings and structures in the total fixed capital by individual branches was the same in the Ukraine and other regions of the USSR. It is necessary now to discard this assumption for the following reasons. The bulk of investment in such favored branches as coal and iron and steel, in which the buildings and structures are particularly important and which were growing faster outside the Ukraine during the period under discussion, went to the regions of the Urals and Western Siberia which are notorious for their long winters and low temperatures. Under such climatic conditions the share of structures and, in particular, of buildings is even higher.⁴⁰ It is also relatively high in new projects, while the expansion and widening of existing facilities result mainly from the addition of machinery, equipment, etc., to the existing buildings and structures.⁴¹ There are data available for certain industrial branches which indicate that a relatively high proportion of investment during this period of time went in the Eastern regions into new projects, simply because such industries were previously nonexistent there in most cases, while in the Ukraine the expansion and widening accounted for the high percentage in total investment.⁴² These two considerations suggest that the increase in the share of buildings and structures in the total fixed capital of the USSR industry relative to the Ukraine was underestimated in the previous paragraph and, as a result, the effect of this factor on the differential level of ICOR in favor of the Ukraine was considerably greater than the obtained figures tend to indicate.

(3) The structural changes can also serve as a basis for the analysis of the effect of the scale of newly constructed enterprises on the ICOR. A completed larger enterprise requires initially a longer gestation period to attain its optimum output than a smaller enterprise

⁴⁰ L. M. Kantor, *Osnovnye fondy promyshlennosti i ikh ispol'zovanie* (Leningrad, 1947), pp. 9-10.

⁴¹ Bunich, *Osnovnye*, p. 33.

⁴² For example, according to R. S. Livshits, *Razmeshchenie chernoii metallurgii SSSR* (Moscow, 1958), p. 147, of all funds devoted to the expansion and widening in iron and steel industry, the Ukraine received all until 1931 and two-thirds between 1931 and 1937.

in the same industrial branch.⁴³ The effect of this factor on the differential level of ICORs in two regions, particularly during periods of intensive investment activity as was the case in the USSR during the period under discussion, is obvious: the more enterprises on a larger scale that are introduced in the industry of one region relative to the industry of another region, the higher will be the ICOR in the former. Unfortunately, the data necessary to test this proposition on the industries of the Ukraine and the USSR during this period of time are very sketchy. However, in spite of the fact that precise measurement is not possible, they seem to give a tentative insight into the problem under consideration.

The data which are available on this subject are for the period between 1928 and 1940.⁴⁴ They have to be considered as representative also for the period analyzed in this paper. On their basis the following observations can be made. The largest increase in the scale of plant took place in some branches of metalworking and machinebuilding. For example, for the establishments producing motor vehicles (nonexistent in the Ukraine at that time) the increase was as high as 36 times, ball bearings almost 30 times, etc. Since the increase in fixed capital of metalworking and machinebuilding was almost identical in the Ukraine and the USSR (see the table), the effect of the growth of enterprise scale on the differential level of ICOR cannot be ascertained without additional information. Relatively high increases in the plant scale can also be observed in such branches of nonferrous metallurgy as lead and zinc smelting, eight and seven times, respectively. These branches were developed outside the Ukraine at that time and, therefore, these increases had an upward effect on the ICOR in the USSR. The threefold increase in the scale of all electric stations and sevenfold increase in hydroelectric stations tended to exert an upward pressure on the ICOR in the Ukrainian industry, because the increases in fixed capital of this branch were larger in the Ukraine than in the USSR. The data for other branches, primarily those of food and light industries, indicate generally smaller increases in output per plant than in the previously mentioned

⁴³ Leon Smolinski, "The Scale of Soviet Industrial Establishments," *American Economic Review* (May, 1962), p. 145.

⁴⁴ See the unpublished dissertation of Leon Smolinski, *The Scale of Soviet Industrial Establishment, 1928-1958* (Columbia University, 1960), pp. 229-30, Table 6.2. The changes in the scale of plant are measured here by the changes of output in physical units per plant.

branches. The effect of these increases on the differential level of aggregate ICORs in the USSR and the Ukraine can be considered as not very important in view of the lack of attention to the development of these branches during this period of time, as reflected in the relatively small increases in their fixed capital.

However, of particular importance in this connection are coal and iron and steel branches, because of their weight in the structure of Ukrainian industry as well as of the emphasis on their development at this period of time. Furthermore, it seems that gestation period is usually longer in these branches than in other branches of comparable establishment scale. The increase in the establishment scale was here relatively high, more than three and one-half times for coal mining and almost four times for the component of iron and steel branch, namely, for pig iron output, for which the data are available.⁴⁵ Since these branches grew at a faster rate in the USSR than in the Ukraine, the introduction of predominantly large-scale enterprises pulled upward the relative level of ICOR in the former. Moreover, even within these branches the increases in the establishment scale were larger in the USSR than in the Ukraine, particularly during the Second Five Year Plan. In the case of coal mining, the mines introduced during the First Five Year Plan were on the average about one-quarter larger in the Donetsk Basin than in the Kuznetsk Basin, while during the Second Five Year Plan, when the growth of this branch was particularly rapid, the scale was about one-third larger in the latter.⁴⁶ The new blast and open-hearth furnaces of iron and steel industry were generally larger in developing centers of the Urals and Western Siberia than in the Ukraine during both Five Year Plans.⁴⁷ On the basis of preceding discussion, it seems rea-

⁴⁵ *Idem*. The construction of huge Magnitogorsk iron and steel complex can serve as a good example of the general approach also toward the development of other components in this branch.

⁴⁶ Calculated from Smolinski, *American Economic Review*, p. 144, Table 2.

⁴⁷ This can be seen from the following table:

Average Capacities of Blast and Open-Hearth Furnaces Introduced During the 1st and 2nd FY Plans by Selected Regions of the USSR

	Blast furnaces (cubic meters)		Open-hearth furnaces (square meters)	
	1st FYP	2nd FYP	1st FYP	2nd FYP
Urals	327	1180	19.9	65.8
Western Siberia	821	1163	54.7	66.6
Ukraine	644	955	26.5	51.7

Source: Calculated from Livshits, *op. cit.*, pp. 149-50.

sonable to conclude that the scale of newly introduced establishments was on the average higher in the USSR than in the Ukraine. Resulting longer gestation periods tended to pull upward the aggregate ICOR in the former relative to the latter.

To sum up, the previous analysis indicates the capital-intensive branches, buildings and structures in total fixed capital, and large-scale enterprises were becoming relatively more important in the industry of the USSR than of the Ukraine. In addition, it can be with certainty assumed that some factors, not discussed in this article, such as the supply of labor, urbanization, the availability of social overhead, and climate were more favorable for industrialization in the Ukraine than in some other regions of the USSR, particularly in rapidly developing centers of the Urals and Western Siberia. All this tends to support our previous findings⁴⁸ that the aggregate ICOR in industry was lower in the Ukraine than in the USSR during the discussed period. In view of these investment advantages, the negative differential shift for the Ukraine can be explained not by economic but mainly by political and defense considerations. The development of the Ural-Kuznetsk Combine is a good example of the contemporary investment policy, influenced by the considerations of this kind. Our results suggest that even higher growth rates would have been achieved in the Soviet industry before World War II if non-economic arguments had not interfered with the purely economic rationale of regional investment allocation.

⁴⁸ See p. 16 above.

Tunisia, France, the United States, and West Germany: A Tentative Appraisal of Tunisian Economic Policy in 1964-1966*

YAROSLAV BILINSKY (University of Delaware)

Writing on "The Tunisian way" in the April 1966 issue of *Foreign Affairs* President Bourguiba concluded:

. . . It will be necessary for the poor countries to rid themselves of demagogues, of verbalism and the sterile conflicts engendered by power complexes or the will to dominate. *Let them recognize their true problems, which are essentially domestic and, more precisely, economic.* . . . We should establish a systematic dialogue with the advanced countries to find a lasting solution to one of this century's greatest challenges: the development of the two-thirds of humanity who live today with the shooting pains of hunger.¹

Earlier in the article he had indicated the most important dimensions of the "true problem" of his country. On achieving independence in 1956 the Tunisian G. N. P. had been \$508.8 million; in 1965 it reached \$835.2 million.² As promising as these figures may look in the aggregate, they work out to only \$134 G. N. P. per capita in 1956 and about \$186 G. N. P. per head in 1966, an amount that is none to high even for Africa.³ This article does not aim to analyze all aspects of the problem of economic growth. I will focus instead on Tunisia's "dialogue" in 1964-66 with three advanced countries: France,

* This paper has been made possible through the University of Delaware General Research Fund. Its support is being gratefully acknowledged.

¹ Habib Bourguiba, "The Tunisian Way," *Foreign Affairs*, Vol. 44 (April 1966), p. 488. Emphasis added.

² *Ibid.*, p. 483.

³ According to the census of 1956, the total population of Tunisia numbered 3,783,169; after the census of 1966, it was *estimated* at 4.5 million. See *The Middle East and North Africa, 1966-67* (London: Europa Publications, 1966), p. 661. Since the latter figure is itself an estimate, I have not tried to readjust it backward to 1965. In 1961 the Tunisian G. N. P. per head was \$161. In that year two countries in North Africa outproduced Tunisia: Algeria, with \$281, and Libya (\$204). Besides the Republic of South Africa (\$427), five countries did so in sub-Saharan Africa: Gabon (\$200), Ghana (\$199), Ivory Coast (\$184), and Senegal (\$175). See the table in Peter J. M. McEwan & Robert B. Sutcliffe, eds., *Modern Africa* (New York: Crowell, 1965), pp. 424-25.

the United States, and the German Federal Republic, and will try to elucidate the reasons for the temporary interruption of the relations with France in 1964, its consequences for Tunisian-American and Tunisian-German economic relations. The analysis will hopefully aid in understanding the foreign aspect of Tunisia's growth supplementing the literature on its internal preconditions.

The issue which in 1964 led to the rupture of Franco-Tunisian economic relations turned on the unforeseen expropriation of remaining French settlers. When Tunisia achieved her independence in 1956, French interests owned a total of almost 610,000 out of 7.5 million cultivable hectares, or about 1.5 million out of 18.5 million acres.⁴ Even though the French lands comprised only 9 per cent of the agricultural area, they produced 28 per cent of the country's total agricultural output. Other Europeans owned about 75,000 hectares, of which 56,000 were held by about 4,000 Italians. Since independence the Tunisian government has unceasingly proclaimed that because of demographic pressures those lands would have to be eventually expropriated and turned over to Tunisian agricultural cooperatives.⁵ Despite official encouragement of family planning and the raising of the legal marriage age the population pressure is undeniable: one Tunisian source even speaks of a "runaway increase in population."⁶

⁴ Out of the 610,000 hectares 440,000 were owned by 2,000 individuals or partnerships, and 170,000 were owned by about 60 stock companies. See Victor Silvera, "L'évacuation de Bizerte et les rapports Franco-Tunisiens," *Revue de Défense Nationale*, January 1964, p. 94. The source will henceforth be abbreviated Silvera (1964). Victor Silvera, Docteur en Droit, is in charge of "Travaux pratiques à la Faculté de Droit et des Sciences Économiques de Paris."

⁵ *Ibid.* On population pressure, especially in the countryside, see Salah-Eddine Tlatli, *Tunisie Nouvelle: Problèmes et Perspectives* (Tunis: Sefan, 1957), p. 101; Moncef Guen, *La Tunisie indépendante face à son économie: Enseignements d'une expérience de développement* (Paris: Presses Universitaires de France, 1961), pp. 27-40, 61-64. On cooperatives see Kenneth H. Parsons (Professor of Agricultural Economics, University of Wisconsin), "The Tunisian Program for Cooperative Farming," *Land Economics*, Vol. XLI (November 1965), pp. 303-16 (on pp. 313-14 he gives good examples of overcrowding). Also, Pierre Biacabe (Agrégé des facultés de droit et des sciences économiques), "Le développement du mouvement coopératif dans l'agriculture," *Le Monde*, May 31, 1966, p. 11.

⁶ See *Tunisia in Brief* (Tunis: Secrétariat d'Etat à l'Information et à l'Orientalion, 1966), p. [36]—pages not numbered in original. The annual population increase amounts to 2.3 per cent (*ibid.*, p. [2]). Source courtesy of the Embassy of Tunisia, Washington.) This means that the country has to feed, clothe and school some 100,000 additional citizens a year and find jobs for about 70,000. 44 per cent of the population are under 15 years old. See K. B., "Gleichgewicht zwischen sozialem Soll und wirtschaftlichem Haben." *Das Parlament* (Bonn), Vol. 16, No. 29 (July 20, 1966), p. 4. For a valuable concise analysis of the Tunisian demogra-

As industry and services can still employ only a minority, the demographic increase weighs more heavily on the already crowded agricultural sector. Poverty in the countryside is wide spread, rural slums are not unknown.⁷ Apparently, there was general agreement among both Tunisian and French Government officials that settler lands would eventually be expropriated,⁸ the question was only when and how.

Already on May 8, 1957, a year after her achievement of independence, Tunisia concluded with France an agreement providing for the purchase of 127,000 hectares of settlers' lands. The transaction was facilitated by a French government loan of 60 million francs.⁹ A second convention, of October 13, 1960, provided for the purchase of additional 100,000 hectares of French owned lands. Tunisia would pay the French government 10 dinars (ca. \$23.50) per hectare, the French government in turn would offer the settlers grants and long-term loans to help them re-establish themselves in France.¹⁰ After some difficulties engendered by the Bizerte crisis of 1961,¹¹ the expropriations under the convention of October 1960 were confirmed and extended in the very important agreement of March 2, 1963. 50,000 additional hectares were to be purchased by Tunisia in 1963, at the same price of 10 dinar a hectare of wheat land, the French government again advancing long-term loans to the repatriated settlers. A new lot of 50,000 hectares was scheduled for purchase in 1964.

phic problem see also J. G. Magnin, "Le contrôle des naissances," *IBLA* (Tunis), Vol. XXVIII (1965), No. 109, pp. 96-99. As late as 1955 the average number of children per Tunisian family was 5.6. The rapid population increase is attributed to early marriages, a greatly increased total number of marriages and rapid decline in the death rate.

⁷ See, e.g., Jean Cuisenier, "Le sous-développement économique dans un groupe-ment, rural: le Djebel Lansarine," *Les Cahiers de Tunisie*, (Tunis), Vol. VI (1958), pp. 219-66.

⁸ See Parsons, *loc. cit.*, p. 304, referring to his interviews with Tunisian officials in the summer of 1963; *The Maghreb Digest* (Los Angeles), Vol. II, No. 7 (July 1964), p. 27, referring to *Le Monde Diplomatique*, of June 1964: the French government was irked most by the *manner* of nationalization, not the principle. *The Maghreb Digest* will henceforth be abbreviated *M. D.*

⁹ Silvera (1964), *loc. cit.*, p. 94.

¹⁰ *Ibid.*, p. 95.

¹¹ *Ibid.* See also Clement H. Moore, *Tunisia since Independence: The Dynamics of One Party Government* (Berkeley & L. A.: University of California Press, 1965), pp. 98-103. Also, Charles Debbasch, "La politique de Bizerte," *Annuaire de l'Afrique du Nord*, Vol. II (1963) (Paris: Centre National de la Recherche Scientifique, 1965), pp. 199-215.

The remaining land was to be bought later, in stages. An addition to the protocol included a very important provision: the Tunisian government undertook "to assure French agriculturists, not included in the purchase program, peaceful enjoyment [of their possessions] during a period of at least five years from the signing of the protocol," i.e., until March 1968.¹² The French government was satisfied with the agreement. The compensation was below the value of the land, but the French settlers in Tunisia were to receive better treatment than their compatriots in Algeria.¹³ August 9, 1963 France and Tunisia concluded a series of protocols on investments, and special privileges in foreign trade.¹⁴ As late as February 25, 1964 some outstanding issues in foreign trade were renegotiated, to quote the official communiqué, "in an atmosphere of good will and of mutual understanding . . . [leading to] results considered by both parties as a good sign for the future of French-Tunisian relations."¹⁵ The Tunisian law of May 12, 1964, immediately expropriating the remaining foreign lands, therefore, struck the French like a clap of thunder from the blue sky. Little warning was given.

April 28, 1964, at a speech at Sbikha, which was barely noticed abroad, President Bourguiba proposed to open negotiations to solve the problem of so-called colonization lands. April 29, Mongi Slim, one of Tunisia's top diplomats, is said to have repeated the proposition.¹⁶ According to the French Embassy in Tunis, the French were not officially requested to open the negotiations until May 8, though the decision to nationalize foreigners' lands had already been taken in the Tunisian cabinet a week before.¹⁷ The French government refused to sanction what seemed to them a unilateral violation of the

¹² "Après la reprise des terres de colonisation étrangère en Tunisie," *Maghreb* (Paris), No. 4 (July-August 1964), p. 6. See also "Les conventions franco-tunisiennes en 1963," *Maghreb*, No. 1 (January-February 1964), p. 51. Source henceforth abbreviated *M.* Also *M. D.*, Vol. II, No. 6 (June 1964), p. 28-29; and Silvera, (1964), *loc. cit.*, p. 95. According to French officials, France bore in fact 90% of the resettlement costs (*New York Times*, May 14, 1964, p. 4.)

¹³ "Les conventions franco-tunisiennes en 1963," *loc. cit.*

¹⁴ See below.

¹⁵ *M.D.*, Vol. II, No. 4 (April 1964), p. 28; also *Le Monde*, February 27, 1964, pp. 1 and 8.

¹⁶ *Le Monde*, May 12, 1964, pp. 1ff. In April Mongi Slim met with French Foreign Minister Couve de Murville and both agreed that Franco-Tunisian relations were good (*New York Times*, May 13, 1964, p. 17).

¹⁷ *Le Monde*, May 13, 1964, p. 3, and May 3-4, 1964, p. 4.

Franco-Tunisian accord of March 2, 1963.¹⁸ May 11 the Tunisian Parliament passed a brief expropriation law, making no clear provision for compensation. It was promulgated by President Bourguiba the next day.¹⁹ Upon signing the law President Bourguiba made a long speech in which he hinted that Tunisia would pay only a "symbolic" compensation and that nothing would prevent France from indemnifying her citizens herself.²⁰ In an interview given to Radio Lausanne on October 15, 1964, President Bourguiba explained the compensation provision of the law of May 12 as follows:

We will indemnify only those who have really brought in capital, who have bought the lands, who have really invested, and not those who have come and received the land and the capital from France and the French government in fulfillment of a universally known policy. These latter, in our estimate, have been sufficiently compensated by the very bountiful harvests they have been able to amass. It is up to France to decide whether they should receive an additional indemnity [from her].²¹

The Italian government, in line with this, asked for special consideration for its nationals because they had bought and did not simply appropriate their lands, but the negotiations between Rome and Tunis remained inconclusive as of May 1966.²²

What led President Bourguiba to nationalize the 300,000–350,000 hectares of remaining foreign lands in May 1964?²³ A combination of

¹⁸ See, e.g., the communiqué of the French foreign office in *Le Monde*, May 14, 1964, p. 3, or *Annuaire de l'Afrique du Nord*, Vol. III (1964) (Paris: Centre de la Recherche Scientifique, 1965), p. 649.

¹⁹ Law No. 64-5, of May 12, 1964, is reproduced in toto in *Annuaire de l'Afrique du Nord*, Vol. III (1964), pp. 648–49. Art. 6 "opened the right for a compensation," the amount of which would be determined by a special commission. That commission would take into account the nature of the land, the origin of property, the length of exploitation, depreciation, and the current condition of the land.

²⁰ *Ibid.*, p. 646. The speech is reproduced in full on pp. 639–48. A slightly different shorter version of speech is in *Le Monde*, May 13, 1964, p. 3.

²¹ Cited in Victor Silvera, "Les rapports franco-tunisiens depuis la nationalisation des propriétés agricoles étrangères en Tunisie," *Revue de Défense Nationale*, April 1965, p. 553. Henceforth cited as Silvera (1965). Journal courtesy of the French Embassy Press and Information Division, New York. See also *Le Monde*, October 16, 1964, p. 9.

²² *M.D.*, Vol. II, No. 8 (August 1964), p. 20 and Vol. IV, No. 5–6 (May–June, 1966), p. 114. According to the latter issue, the position of the 1,466 Italian cases was complicated by two facts: The Italian government—unlike the French vis à vis its nationals—had not advanced them any compensation until June 1965, and the Tunisian government suggested that the compensation be paid in dinars.

²³ The figures differ. *Le Monde*, May 13, 1964, p. 1, mentions 270,000 hectares held by the French. Same figure used by Maurice Flory in "Chronique Diploma-

economic and political factors seems to have been responsible for the decision. In his impassioned speech of May 12, 1964, President Bourguiba declared:

We must efface the last after effects of the colonization and extirpate all its roots.²⁴

For us it is truly a question of life or death. First in the field of economics; for we cannot freely organize our affairs, rationally plan our activities, successfully wage our economic struggle without integrating these vast and rich lands held by foreigners. This is an indisputable economic imperative. It is also a question of life or death on the level of national sovereignty, of the existence of the Tunisian state.²⁵

More concretely, it was pointed out by President Bourguiba in his speech at Sbikha (April 28, 1964)²⁶ and by J. Ben Brahem in *Le Monde*²⁷ that Tunisia lacked the foreign currency necessary to pay the French settlers. According to Ben Brahem, at the time of the nationalization the government already owed 1.5 million dinars for the land purchases in 1963, and an additional 0.5 million dinars for the scheduled purchases in 1964, after it had already paid the settlers 0.8 million dinars for their equipment. Furthermore, the price was bound to rise for land under vineyards and olive trees. All the land was also to be paid for in convertible currency, not dinars. Rather than endanger its plan of economic development which called for all available foreign currency reserves, the Tunisian government resolved to default on its obligations toward the foreign settlers. For good measure, it was also argued that faced with departure, the settlers either overexploited or neglected the lands, which would necessitate heavy investments later.²⁸

tique," *Annuaire de l'Afrique du Nord*, Vol. III (1964), p. 153. Flory adds that 25,000 hectares were owned by Italians, 15,000 by British citizens (Maltese), a smaller amount by Swiss (*ibid.*). The *New York Times*, May 14, 1964, p. 4, mentions 500,000 acres (ca. 200,000 hectares) owned by the French. The most specific is the estimate in "Après la reprise des terres de colonisation étrangère en Tunisie," *loc. cit.*, p. 6: On January 1, 1964, the French owned 230,000-240,000 hectares, the Italians 60,000 hectares, the Maltese 8,000 and the Swiss between 1,000 and 1,500 hectares. In *Le Monde*, May 31, 1966, p. 11, Pierre Biacabe sets the total expropriated in 1964 at 350,000 hectares.

²⁴ *Annuaire de l'Afrique du Nord* . . . , Vol. III (1964), p. 640.

²⁵ *Ibid.*, p. 641.

²⁶ As quoted in "Après la reprise des terres . . . ," *loc. cit.*, p. 7.

²⁷ *Le Monde*, May 12, 1964, p. 3.

²⁸ The economic factor is also stressed by Moore, *op. cit.*, pp. 205-06 and 206n.

French authors, while not discounting the importance of the economic factor, stress the primacy of the political. It is argued, e.g., that the Tunisian government lacked the technicians to quickly and effectively take over the management of the expropriated lands, which included orchards, olive plantations, and, above all, vineyards.²⁹ On the other hand, the policy of nationalization fitted in well with an attempted rapprochement with more "revolutionary" Algeria and with such Eastern Arab states as Nasser's U. A. R.³⁰ Furthermore, Bourguiba's hallmark has been "never to accept the second place to another North African country in national development."³¹ When Ben Bella nationalized settler lands in Algeria in October 1963, without any strong opposition from the French,³² Bourguiba's hand was almost forced, the more so, because he was scheduled to make a state visit to Algeria on May 22-23, 1964. (The visit was cancelled for reasons of health.)³³ "In his 12 May action, President Bourguiba checked possible opposition from an ambitious younger generation by assuming a position of leadership with respect to it," said *Le Monde Diplomatique*.³⁴ This writer, too, inclines towards the political explanation. Only weighty political reasons must have persuaded President Bourguiba to challenge France again. He must have known that Ben Bella who controlled the Saharan oil fields and atomic test sites was in a stronger bargaining position vis à vis France.³⁵ Bourguiba's speech

²⁹ "Après la reprise des terres . . .," *loc. cit.*, p. 7.

³⁰ Ben Bella indeed sent congratulations (*Le Monde*, May 22, 1964, p. 5); the Moroccan Istiqlal paper *Al Alam* also praised the Turisian example (*Le Monde*, May 13, 1964, p. 3). On the rapprochement with the Arab East see, briefly, "Après la reprise des terres . . .," *loc. cit.*, p. 7, and, more extensively, the present writer's "Moderate Realism in an Extremist Environment: Tunisia and the Palestine Question in 1965."

³¹ *Le Monde Diplomatique* of June 1964, as quoted by M.D., Vol. II, No. 7 (July 1964), p. 27.

³² See the series of Algerian decrees reprinted in *Annuaire de l'Afrique du Nord*, Vol. II (1963), pp. 797-862, passim, especially that of October 1, 1963 (p. 862). Also, Maurice Parodi, "L'Autogestion des exploitations agricoles modernes en Algérie," *ibid.*, pp. 61-84; "L'Autogestion agricole et la réforme agraire en Algérie," *M.*, No. 7 (January-February 1965), pp. 48-54. In English, there is valuable factual material in M.D., Vol. I, Nos. 5, 6, 8, 11, 12 (May, June, August, November and December, 1963), also the excellent economic analysis by Keith B. Griffin, "Algerian Agriculture in Transition," *Bulletin of the Oxford University Institute of Economics and Statistics*, Vol. 27 (November '65), pp. 229-52, esp. p. 233 ff.

³³ *Le Monde*, May 17-18, 1964, p. 1.

³⁴ M.D., *loc. cit.*

³⁵ *New York Times*, May 31, 1965, p. 20.

of May 12, 1964, was in fact a plea to the French to recognize the political significance of the nationalization and not to turn it into an affair "de gros sous" (pennies and dollars).³⁶ In addition, the slow buying out of all the settlers would have been hard on the Tunisian economy. Possibly France ought to have been more generous, but the very abrupt manner of nationalizing French lands was not calculated to put General DeGaulle in a conciliatory mood. It appears that for the second time President Bourguiba miscalculated the reaction of the French leader: The Tunisification of the settlers' lands in 1964 turned out an economic Bizerte. The French government in retaliation cancelled its economic aid and then abolished preferential tariffs that had been enjoyed by Tunisian exports to France.

Only in 1963 had France resumed her financial aid to Tunisia that had been suspended in May-June 1957 because of disagreements over the conduct of the Algerian war. According to the protocol of August 9, 1963, which was valid only for that year, the French government offered to Tunisia on convenient terms a total loan of 90 million francs (ca. \$18.2 million) and insured private French loans up to 100 million francs (\$20.2 million). Of the government loan 45 million francs were earmarked for public investments of an educational, economic, and social character (general and technical schools, hospitals, roads), 35 million were for industrial projects and 10 million for the retirement of Tunisian debts to France.³⁷ February 25, 1964 the agreement was renegotiated for 1964: France advanced 45 million francs for public investment, 55 million for industrial projects and insured a total of 110 million francs of private French credits, and advance over the sums lent in 1963.³⁸ In practical terms, on December 31, 1963, France paid one half of the salaries of 334 French technical experts and two-thirds of the salaries of 1,370 teachers in Tunisia working in Tunisian schools. Another thousand school-teachers were directly employed by French cultural missions.³⁹ Moreover, unlike the aid given by the United States (of which later) French financial as-

³⁶ *Annuaire de l'Afrique du Nord*, Vol. III (1964), p. 646.

³⁷ Silvera, (1964), p. 98. Silvera (1965), *loc. cit.*, p. 550, adds that the government loans ran for 20 years; the public investment loan at 3.5% per annum, the industrial loan at 3% per annum. See also *M.D.*, Vol. I, No. 9 (September 1963), p. 33.

³⁸ Silvera (1965), *loc. cit.*, p. 550; *M.D.*, Vol. II, No. 4 (April 1964), pp. 27-28; *New York Times*, May 13, 1964, p. 17 and May 14, 1964, p. 4; *Le Monde*, May 14, 1964, p. 3.

³⁹ *Le Monde*, *ibid.*

sistance was more convenient for Tunisia for it covered not only French goods and services but also local expenses, which customarily must be paid for by the recipient country.⁴⁰ May 13, 1964, the French cabinet annulled all financial aid to Tunisia, and soon afterwards withdrew 61 agricultural experts.⁴¹ Much to the dismay of the Tunisians, France also withdrew about one hundred French school teachers, in the fields of English, drawing, and physical education. The rest of the teachers, however, many of them teaching French, were allowed to remain, so that Tunisia started her new school year of 1964-65 with about 2,400 French teachers.⁴² Even more damaging was the revocation of the Franco-Tunisian commercial agreement of 1959, as of October 1, 1964.⁴³

Not unexpectedly, much of Tunisia's foreign trade has been with the former French metropolis. Tunisia would import from France petroleum products, textiles, automobiles, metal products, household appliances, and export mostly wine and hard wheat.⁴⁴ Since 1959 Tunisia has always had a trade deficit in her dealings with France. In terms of volume, imports from France fluctuated between a high 65.5 per cent in 1959 and a low of 44.9 per cent of total imports in 1964 (see Table 1 in the Appendix); exports to France fluctuated between a high of 54.8 per cent in 1961 to a low of 31.1 in 1965 (see Table 2). With the help of more recent data,⁴⁵ we have been able to calculate that in 1965 imports from France dropped further to 38.5 per cent of the total. From 1960 through 1963, the trade between Tu-

⁴⁰ J. Ben Brahem in *Le Monde*, January 8, 1966, p. 4. For a more detailed and authoritative discussion see "Les investissements étrangers en Afrique du Nord," *M.*, No. 4 (July-August 1964), p. 51.

⁴¹ Silvera (1965), *op. cit.*, p. 554.

⁴² *Ibid.* and *Le Monde*, September 3, 1964, p. 7, and September 27-28, 1964, p. 6.

⁴³ Silvera (1965), *loc. cit.*, p. 555. Notice of revocation was given June 10, 1964.

⁴⁴ "La politique du commerce des états d'Afrique du Nord depuis leur accession à l'indépendance," *M.*, No. 2 (March-April 1964), p. 41.

⁴⁵ France, Ministère de l'Economie et des Finances statistics' courtesy the French Embassy Press and Information Division, New York: in 1965 Tunisian imports from France were valued at 467,301,000 francs. Converted into dinar at the rate of 1 dinar = 9.41 francs, this would give ca. 49.7 million dinar out of a total of 129.0 million dinar imports, or 38.5 per cent. (The total from *The Middle East and North Africa, 1966-67*, p. 337). Incidentally the French Embassy data for exports to France in 1965 are 171,358,000 francs or 18.2 million dinar, not 19.6 million as in Table 2. Combined with the total from *The Middle East and North Africa, 1966-67*, p. 667, this would give a percentage of 28.9, not 31.1 as per Table. I have decided to use the more consistent set of data, both from *The Middle East and North Africa, 1966-67*.

nia and France may have been stimulated by the commercial agreement of September 5, 1959. That agreement provided essentially for three things: repudiation of quotas (with certain exceptions), preferential tariffs, and special subsidized prices paid for Tunisian wheat and wine in France.⁴⁶ The first principle was considerably modified by Tunisia. In fact about 30 per cent of the goods imported from France were limited by quotas.⁴⁷ The second was mutually adhered to; roughly three quarters of the Tunisian goods entered France free of duty, whereas about two-thirds of the French products imported into Tunisia were subjected to a light duty, which was about 15 per cent lower than that applied to third countries.⁴⁸ The third principle was the most interesting one: under it France agreed to buy annually 1.5 million hundred-weight (150,000 metric tons) Tunisian wheat and 1.25 hectoliter Tunisian wine at prices that were customarily paid to French producers, i.e., above world market prices.⁴⁹ That principle was modified by France. In 1962, in view of her obligations toward the Common Market, France bought Tunisian wheat at world prices, but paid Tunisia an indemnity of 1.75 million francs.⁵⁰ In 1963, the indemnity was discontinued, but February 25, 1964 it was agreed that French economic aid would be raised to compensate Tunisia for the decreased proceeds from her wheat exports.⁵¹ There were also some disagreements about the exact price to be paid for Tunisian wine in 1964, but in late February 1964, France agreed to accord Tunisian wine the same preferential treatment as that given to Algerian wine.⁵²

When in June 1964, France denounced the commercial agreement of 1959, Tunisian exports to France were seriously hurt. The total exports of hard wheat, of which France is the foremost importer, fell from 3.7 million dinar in 1963 to 2.8 million in 1964 to as little as 0.3 million dinar in 1965.⁵³ The export of wine, most of which was

⁴⁶ *Le Monde*, June 11, 1964, p. 5; "La politique du commerce . . .," *loc. cit.*, p. 41.

⁴⁷ *Le Monde*, *ibid.*

⁴⁸ *Ibid.*; also Silvera (1965), p. 555.

⁴⁹ "La politique du commerce . . .," *loc. cit.*, p. 41; *Le Monde*, *ibid.*

⁵⁰ *Le Monde*, January 1, 1964, p. 5, cited in *M.D.*, Vol. II No. 2 (February 1964), pp. 29-30. See also "Le marché tunisien des céréales," *M.*, No. 6 (November-December, 1964), p. 47.

⁵¹ *M.D.*, Vol. II, No. 4 (April 1964), p. 28.

⁵² *Ibid.*

⁵³ *The Middle East and North Africa*, 1966-67, p. 667.

bought by France, tumbled from about 10 million dinar in 1963 to 2.8 million dinar in 1965.⁵⁴ By the summer of 1966, Tunisian reserves of unsold wine rose to 2 million hectoliter, and Tunisia was forced to rent about 250,000 hectoliter space in the Netherlands, for her own tanks were literally overflowing.⁵⁵

What measures did the Tunisian government take to mitigate the suspension of French economic aid and the revocation of the commercial agreement of 1959? May 21, 1964, a law was passed obliging all Tunisian citizens to subscribe to a special development loan, proportionately to their incomes.⁵⁶ September 28, 1964, the dinar was devalued over 20 per cent.⁵⁷ December 31, 1964 the Tunisian parliament raised taxes and customs duties by 10 per cent across the board and "breaking with a tradition established since Roman times, . . . also declared that service fees charged by the liberal professions will henceforth be directly taxable."⁵⁸ Furthermore, Tunisia appealed to Eastern Arab states—with relatively modest results.⁵⁹ More fruitful were the negotiations with the United States and the German Federal Republic.

Ever since her achievement of independence Tunisia's relations with the United States have been generally harmonious. Tunisia has supported the Eisenhower doctrine of 1957, the landing of Marines in Lebanon in 1958, and more recently, the conduct of the war in Vietnam.⁶⁰ Partly for that reason the United States has been rather gen-

⁵⁴ *Ibid.*, pp. 664a and 667.

⁵⁵ *Le Monde*, June 28, 1966, p. 6.

⁵⁶ Silvera (1965), *loc. cit.*, p. 556; *Le Monde*, May 22, 1964, p. 5.

⁵⁷ *M.D.*, Vol. II, No. 11 (November 1964), p. 33, gives the figure of 21%; the *New York Times*, September 29, 1964, p. 68, and Silvera (1965), *loc. cit.*, p. 557, both give the figure of 25%; *The Middle East and North Africa*, 1966-67, p. 663b, gives the low figure of 20%. Same low figure in *M.*, No. 6 (November-December 1964), p. 24.

⁵⁸ *M.D.*, Vol. III, No. 2 (February 1965), p. 30.

⁵⁹ It was revealed that shortly after the nationalization Messrs. Mongi Slim and Habib Bourguiba, Jr., made a trip to Cairo. In late June 1964, Kuwait authorized a loan of 4.5 million dinar, later Kuwait gave a new loan of 2 million dinar. See *M.D.*, Vol. II, No. 8 (August 1964), pp. 21-22, and Silvera (1965), *loc. cit.*, p. 556.

⁶⁰ See "Les États Unis et le Maghreb," *M.*, No. 8 (March-April 1965), pp. 42-45, esp. pp. 43-44; also, on Vietnam, *M.D.*, Vol. III, No. 6 (June 1965), p. 29, and Vol. IV, No. 3 (March 1966), p. 57. A temporary shadow on the relationship was cast by Tunisia's unexpected recognition of Communist China (*M.D.*, Vol. II, No. 3 [March 64], p. 24), but it was lifted when in 1965, Tunisia abstained on the vote to seat the People's Republic of China in the UN and started exchanging sharp notes with the Chinese government (see *M.D.*, Vol. IV, No. 1 [January

erous toward Tunisia: From 1957 to June 1965, Tunisia was offered \$447.3 million in American economic aid, the highest per capita amount given to any African country.⁶¹ The aid appears particularly impressive in comparison with loans from other sources, in early May 1964 (see Table 3 in the Appendix). But on closer sight there emerge certain disadvantages from the Tunisian point of view. The figures in Table 3 show the aid that has been authorized, not necessarily paid out. As a rule, since 1961 American aid, with the exception of the Public Law 480 (Food for Peace) plan (the latter valued at \$218 million from 1957 through June 1965), has covered only purchases of goods and services in the United States. The Tunisian government must provide for complementary and frequently high local costs. Furthermore, American goods are often more expensive than comparable European merchandise, and American freight costs are said to exceed European freight costs four to five times. Those may be the main reasons why through June 1965, Tunisia has utilized only \$371.7 million out of the \$447.3 that have been offered from 1957.⁶² In 1963 Tunisia has drawn on only \$35.7 million of the \$63.8 million authorized by the U. S. Government.⁶³ In July 1964, Ahmed Ben Salah, the Tunisian Secretary of State of Finances, publicly complained of "the fantastic slowness with which the aid agreements were being realized." Washington took the hint. Between June and September 1964 some \$40 million were released, and Tunisia was promised the payment of another \$50 million in the last three months of 1964.⁶⁴ February 17, 1965 a new agreement was signed between the United States and Tunisia. U. S. Ambassador Russell said that "his government was particularly satisfied with the way in which Tunisia spent foreign aid," it was expected that Tunisia would receive an additional \$51 million in 1965.⁶⁵ There has been some private American investment in Tunisia amounting to about \$10 million in 1965, of which \$6.8 million were in oil prospecting.⁶⁶ But the sad fact about

1966], pp. 47-48 and Fritz Schatten, "The Relations between the People's Republic of China and North Africa," *Afrika* [Munich], Vol. VII, No. 4 [1966], pp. 7-8 and *passim*).

⁶¹ J. Ben Brahem in *Le Monde*, January 8, 1966, p. 4.

⁶² J. Ben Brahem in *Le Monde*, January 8, 1966, p. 4.

⁶³ "Les États Unis et le Maghreb," *loc. cit.*, p. 46, according to the 1963 report of the Central Tunisian Bank.

⁶⁴ *Silvera* (1965), *loc. cit.*, p. 556.

⁶⁵ *M.D.*, Vol. III, No. 4 (April 1965), p. 31.

⁶⁶ "Les États Unis et le Maghreb," *loc. cit.*, p. 47

Tunisian-American economic relations is that though imports from the U. S. have sharply increased (partly due to the "Buy American" provisions of U. S. aid), Tunisian exports have been small (compare Tables 1 and 2), resulting in substantial deficits (e.g., 11.0 million dinar in 1964).⁶⁷

More promising in the long run would appear the relations with the German Federal Republic. Germany might provide capital, would be a less formidable trading partner than the United States, and could help Tunisia to obtain associate status in the European Common Market. The political relations with West Germany have been satisfactory. Both *Ministerialdirektor* Gustav A. Sonnenhol, a high civil servant engaged in the administration of foreign aid, and the German Ambassador in Tunis, Dr. Kurt von Tannstein, have recently expressed their government's pleasure at the understanding shown by the Tunisian government toward the German attitude on self-determination (i.e., non-recognition of an unreformed East German Republic) and at the Tunisian support during the Arab-German crisis of 1965.⁶⁸ Sonnenhol has also praised the efforts of the Tunisian population and the sensible economic policy of the Tunisian government.⁶⁹ The first agreement on economic cooperation between Tunis and Bonn was concluded December 1, 1960, a supplementary protocol renewable every year was signed December 20, 1963. From 1960 through 1966 the German Federal Republic offered to Tunisia loans totalling 143.5 million German marks (approx. \$35.9 million) plus technical aid of ca. 38 million German marks (\$9.5 million). Of the former, 103.5 million G.Ms. had been contracted for, and 40 million G.Ms. were freshly authorized for 1966 in the agreement of June 3,

⁶⁷ This is not to downgrade the economic importance of such politically sensational news as the signing early in 1966 of a contract with the U. S. Tampa Ship Repair Co., allegedly to convert Bizerte into a highly profitable repair base for the U. S. 6th Fleet, as arranged in a secret annex. See *M.D.*, Vol. IV, No. 5/6 (May-June 1966), pp. 115-16. "Run of the mill" exports to the United States, however, have consisted mostly of olive oil. ("Les États Unis et le Maghreb," *ibid.*)

⁶⁸ Gustav A. Sonnenhol, "Fruchtbare Zusammenarbeit," *Das Parlament* (Bonn), Vol. 16, No. 29 (July 20, 1966), p. 6; and Kurt von Tannstein, "Nahes Verhaeltnis zur Bundesrepublik," *ibid.*, p. 1. (This is a special issue published in honor of President Bourguiba's state visit to the German Federal Republic.) On the Arab-German crisis see this writer's "Moderate Realism in an Extremist Environment: Tunisia and the Palestine Question in 1965."

⁶⁹ Sonnenhol, *ibid.*

1966.⁷⁰ These are modest amounts compared with American aid; the 1966 authorization is about one half of that offered by France in 1964. But the French aid had been cancelled altogether. Another characteristic of German aid is that 54 per cent of the technical and 63 per cent of the capital aid before 1966 was earmarked for agriculture, the remainder mostly for building the underpinnings for tourism (roads, adaptation of airports.)⁷¹

Private German investments in Tunisia and German exports have had their ups and downs. Most publicized was the contract for the exploration of industrial development possibilities in the Menzel Bourguiba-Bizerte area, including the abandoned French naval base, that the Tunisian government concluded with Krupp, in the summer of 1964, the details of which were not disclosed.⁷² Krupp apparently planned establishment of shipyards to be opened early in 1966 that would be able to repair ships of all sizes and build small and medium vessels. The German share of the capital was estimated by *Le Monde* at 300,000 dinars (\$570,000).⁷³ The final contract was signed with Krupp August 2, 1965,⁷⁴ but sometime in November 1965 final action on the contract was blocked.⁷⁵ The Tunisian government became convinced that it could not afford the expenses of building even smaller vessels and decided to award the contract to the American Tampa Ship Repair Company with overhauls of the U. S. 6th Fleet being apparently included in the package deal.⁷⁶ A fascinating glimpse into some of the obstacles to the increase of private German investments and exports is given in a German trade publication. Addressing himself to German businessmen, a spokesman of the Tunisian Union of Chambers of Commerce ("UTICA") complained that German firms were not sufficiently interested in investing in private Tunisian enterprises but preferred to do business with the Tunisian government instead. There were needless difficulties with communications

⁷⁰ Information courtesy the German Consulate, Philadelphia; and inset, *Das Parlament*, July 20, 1966, p. 8.

⁷¹ W. Rutherstroth-Bauer, "Beispiele deutscher Agrarhilfe," *Das Parlament*, July 20, 1966, p. 6; Sonnenhol, *op. cit.*, *ibid.*

⁷² The *New York Times*, August 10, 1964, p. 37. Also *M.D.*, Vol. II, No. 10 (October 1964), p. 33.

⁷³ See *M.D.*, Vol. III, No. 6 (June 1965), p. 28; referring to a press conference by Alfred Krupp in Tunis, April 24, 1965.

⁷⁴ *M.D.*, Vol. III, No. 9 (September 1965), p. 29.

⁷⁵ J. Ben Brahem in *Le Monde*, January 8, 1966, p. 4.

⁷⁶ See above.

that, incidentally, had been overcome by American firms. German executives wrote to Tunis in German, but UTICA had no German translators; Tunisian businessmen wrote to Germany (apparently in French) and were not even given the courtesy of a negative reply. German businessmen, on the other hand, complained that Tunisians were so used to dealing with French exporters that they would often buy goods that were already technologically obsolete. A capable German representative of Agfa sent to Tunis finally persuaded one Tunisian Ministry to use a more modern—and German—system of documentation and filing. The trade journal suggests that such resident representatives intensively cultivate the Tunisian market, but start with the government.⁷⁷ For the time being the trade between Tunisia and the German Federal Republic is relatively modest, amounting in the first nine months of 1966, e.g., to 42.0 million G. Marks (ca. \$10.5 million) of Tunisian imports from Germany and 24.6 million G.Ms. (ca. \$6.1 million) of Tunisian exports. But it may be growing: During the same period in 1965, the figures were \$4.9 million G.Ms. in imports and 19.6 million G.Ms. in exports. Moreover, in 1966 Germany bought 73,500 hectoliter of Tunisian wine.⁷⁸

Obviously, this is a far cry from the French imports of wine that from 1959 through 1963 amounted to 1.25 million hectoliter annually. Both the Tunisians and the Germans are aware that Germany cannot be a substitute for France. Declared Dr. Sonnenhol, who headed the West German financial delegation to Tunisia in April 1966: "We neither want nor are we able to take France's place in Tunisia."⁷⁹ Why then has the Tunisian Government attached so much importance to relations with Germany? Why did President Bourguiba make a state visit to Germany in July 1966?⁸⁰ German tourists bringing hard currency with them are the most numerous in Tunisia: in 1955 there had been 30,000 of them, in 1965—185,000, or a grand total of 390,000 over the entire period,⁸¹ but this is hardly the main reason.

⁷⁷ *Aussenhandelsdienst*, June 2, 1966, p. 470.

⁷⁸ Information courtesy German Consulate, Philadelphia.

⁷⁹ *M.D.*, Vol. IV, No. 5/6 (May-June 1966), p. 115, citing *Le Monde*, April 24-25, 1966, p. 5. Dr. Sonnenhol wrote the same thing in slightly different words in "Fruchtbare Zusammenarbeit," *Das Parlament*, July 20, 1966, p. 6.

⁸⁰ See *Die Welt* (Hamburg): July 19, 1966, pp. 1 and 3; July 20, 1966, pp. 1 and 4; July 21, 1966, pp. 1 and 4; July 22, 1966, p. 2. Other countries visited were Belgium and Luxemburg—see *Le Monde*: July 14, 1966, p. 1; July 16, 1966, p. 5.

⁸¹ Sonnenhol, *op. cit.*, *ibid.*, and *Handelsblatt*, February 28, 1966, p. 4. But see also the *New York Times*, January 25, 1965, p. 76 and January 27, 1967, p. 53.

It seems to me that good relations with the German Federal Republic have been regarded in Tunis as an entering wedge towards the Common Market, in which Tunisia would like to obtain associate status.

Trade relations between Tunisia and the E.E.C. have always been close. In 1957-58 Tunisian imports from the E.E.C. were 78 per cent of the total, in 1963 they were 65.5 per cent, in 1964 they decreased to 58.7 per cent. Exports to E.E.C. countries ranged from 73 per cent of the total in 1957, 70.0 per cent in 1963 and 65.2 per cent in 1964.^{81a} In 1960 Tunisia exported the following to the E.E.C. countries, arranged according to highest value: wine (\$20.0 million), phosphates (\$13.4 million), olive oil (\$13.2 million), wheat and flour (\$8.4 million), oil, raw or semi-refined (\$7.3 million), fresh fruit (\$7.0 million), fertilizer (\$3.3 million), and lead (\$3.3 million).⁸² September 27, 1963 President Bourguiba announced the decision to seek formal preliminary discussions for Tunisia's admission to the E.E.C. as an Associate Member.⁸³ The negotiations—informal and formal—have been held off and on since December 1963, but to no avail.⁸⁴ In April 1966 a conference was held in Tunis on the topic of "Tunisia and the E.E.C. . . ." It was jointly sponsored by the Neo-Destour Party and the German Friedrich Ebert Foundation, was attended by ranking Tunisian politicians and economic experts, a representative of the E.E.C. Executive, a representative of the German government, and parliamentarians from each of the six E.E.C. countries. But the promises of the departing legislators to influence their governments toward an early admission of the E.E.C. sounded very much like pious hopes.⁸⁵ The German Federal Republic appears to be the only country in the E.E.C. that is interested in the admission of Tunisia and of her sister countries Algeria and Morocco; this is said to stem from her desire to gain more influence in Northwest Africa.⁸⁶ The Netherlands

^{81a} 1957-58 figures from Marie Andrée Buisson, "Chronique économique," *Annuaire de l'Afrique du Nord*, Vol. III (1964), p. 320; the other from Hans-Juergen Wischniewski, MdB (Member of the Bundestag), "Tunisiens Verhaeltnis zur Europäischen Wirtschaftsgemeinschaft," *Das Parlament*, July 20, 1966, p. 9. Herr Wischniewski is a recognized German expert on Africa. His figures slightly deviate from those of Buisson: probably because of rounding.

⁸² "Le Maghreb et le Marché Commun," *M.*, No. 3 (May-June 1964), p. 49.

⁸³ As cited by Claude Zarka, "Chronique économique," *Annuaire de l'Afrique du Nord*, Vol. II (1963), p. 655.

⁸⁴ Those negotiations are analyzed in considerable detail in "Le Maghreb et le Marché Commun," *loc. cit.*, p. 52, and in "Les Conversations Maghreb-C.E.E.," *M.*, No. 11 (September-October 1965), pp. 3-8.

⁸⁵ Wischniewski, *op. cit.*

⁸⁶ "Les Conversations Maghreb-C.E.E.," *loc. cit.*, p. 7.

are alleged to have reservations toward a southward shift in the E.E.C. center of gravity, unless the United Kingdom is admitted at the same time.⁸⁷ France is distinctly cool: possibly because of the continuing absence of a settlement with former French settlers in Tunisia, more likely because of the competition between French and Tunisian wheat growers and vintners. Italy is definitely hostile fearing Tunisian competition in fruit, vegetables, and olive oil. There may be a small unsolved settler problem in Italy, too. Claude Zarka was absolutely right when he warned that Tunisia's prospects for admission to the E.E.C. were meager. Not only because of the opposition by Italy and to a lesser extent by France, but because the other members, too, have increased their productivity in agriculture.⁸⁸ Germany seems to be an exception to the rule, but the more the Six agree on a common agricultural policy, the more it becomes difficult, even for Germany, to help the admission of Tunisia, most of whose exports are agricultural.⁸⁹

Faced with the difficulty of dealing with the American colossus, the inability and the unwillingness of the German Federal Republic to play a more assertive role, and the vicissitudes of negotiating with the Common Market containing within itself two of her enemies, Tunisia in early 1966 decided to seek reconciliation with France. President Bourguiba, moreover, in addressing 50 American journalists from the National Newspapers Associations stated that France would henceforth replace the United States as the leading source of aid. He explained:

France has ended her decolonization process and is now involving herself in cooperation with the Third World countries. I think that this situation allows us to establish, or re-establish, special relations with her, and this cooperation will doubtless take first place. I believe, moreover, that the United States, who faces so many requests, understands our position and will be happy that the responsibility has been taken by France.⁹⁰

In December 1965, brief talks were held for the first time between Tunisian Finance Minister Ben Saleh and French Foreign Minister

⁸⁷ *Ibid.*

⁸⁸ "Chronique économique," in *Annuaire de l'Afrique du Nord*, Vol. II (1963; published in 1965), p. 655.

⁸⁹ This is documented in "Conversations Maghreb-C.E.E.," *loc. cit.*, pp. 4-6; but see also *M.D.*, Vol. III, No. 8 (August 1965), p. 41; *M.D.*, Vol. III, No. 11 (November 1965), p. 21, and *M.D.*, Vol. IV, No. 1 (January 1966), p. 50.

⁹⁰ As quoted in *M.D.*, Vol. IV, No. 3 (March 1966), p. 56.

De Murville and French Finance Minister D'Estaing—the first time that talks were held on the ministerial level since April 1964.⁹¹ But French measures of reconciliation were slow in coming. May 12, 1966, exactly two years after the nationalization of French lands, France re-established preferential tariffs for certain Tunisian products such as olive oil, fruit, dates, fish (except tuna and sardines), superphosphates, but not for wheat nor for wine.⁹² June 8, 1966, Tunisia reciprocated by reducing tariffs on French automobiles, metal products, perfumes, mineral water, watches, and clothes.⁹³ In September 1966, France increased technical aid, in the fields of health, justice, industry, and, above all, education.⁹⁴ Earlier, in June 1966, it had been announced that France would import 1.4 million hectoliter of Tunisian wine. Tunisia, in turn, offered the proceeds from the sale of 1 million hectoliter as gift to be applied toward the indemnification of French settlers expropriated May 12, 1964.⁹⁵ In December France authorized the entry of 300,000 hectoliter of Tunisian wine during a three months period, which led to the hope that in 1967 Tunisian wine exports to France could again approach the pre-1964 annual level of 1.25 million hectoliter.⁹⁶ With this Franco-Tunisian relations appeared to have come almost full circle, except for the restoration of capital aid.

To conclude: This is not a study in economic development as such. It does not show the determined sacrifices of the Tunisian population nor the skill of the government, nor does it comment on such fortunate events as the discovery of oil, which spur the process of growth.⁹⁷ But inasmuch Tunisia has relied on her traditional exports to obtain the means for development a survey of her relations with her partners in trade and investment is in order. With France they have been strained, with the United States and the German Federal Republic they have been harmonious but not really close. Tunisia has tried to associate herself with the European Economic Community, but so far the negotiations have not been successful, not because of lack of good will and effort on Tunisia's part.

⁹¹ *M.D.*, Vol. IV, No. 2 (February 1966), p. 44.

⁹² *Le Monde*, May 14, 1966, p. 5.

⁹³ *Le Monde*, June 9, 1966, p. 5.

⁹⁴ *Le Monde*, September 10, 1966, p. 3. Planned, e.g., was an increase from 2,500 to 3,000 teachers.

⁹⁵ *Le Monde*, June 28, 1966, p. 6.

⁹⁶ *Le Monde*, December 2, 1966, p. 21.

⁹⁷ Oil was first discovered in March 1964, see *M.D.*, Vol. II, No. 5 (May 1964), p. 37. An authoritative brief appraisal is by Tunisian economist Moncef Guen, "Die grosse Entdeckung: Erdoel," *Das Parlament*, July 20, 1966, p. 12.

In a deeper sense, the tension with France, her major trading partner that has cost Tunisia so dearly in the years 1964-66 may be attributed to something this article has merely adumbrated: the peculiarly close love-hate relationship the Tunisian leaders seem to have toward France. Because of this particular relationship it was apparently assumed in Tunis that the French government would understand the political necessity of expropriating the remaining settlers' lands, especially after they had accepted a similar action on the part of Algeria. The French leaders, however, who seem to be close to Tunisia, too, refused to be taken for granted and struck back very sharply. This particular relationship, the result of political struggle and genuine mutual admiration, explains why cultural interchange was maintained throughout the economic crisis and why finally France has decided to reopen the channels of trade. The main question that this hypothesis poses is: Do the young people in Tunisia share this close ambivalent feeling towards France, since 1881, Tunisia's "ennemie-amie"? Or are they now shifting their attachment and both emotionally and intellectually committing themselves to American technology, the Chinese revolution, or, more likely, to the Eastern Arab world?⁹⁸ The last two commitments (to China and to volatile Arab politics) do not seem to be conducive to the process of economic growth, and an American critic has said that the continuation of the existing trade patterns with France should also not be equated with real economic development.⁹⁹ Is American technology then the answer?

On a strictly economic plane this paper may be read as a case study of the failure of diversification of foreign trade. Analyzing the economic relations with Germany we have seen that with a lot of effort some old business links can be disjointed and new ones can be forged, but certain trade is very resistant to change: Neither the Germans nor the Americans, e.g., drink much wine which has traditionally been Tunisia's foremost export item. Being an exporter of primary goods is bad enough, but being dependent on a limited clientele is even worse. Incidentally, the paper shows the realism of Tunisian leaders in not expecting too much of American aid. Above all, it illustrates the need for constantly maintaining a "systematic dialogue"

⁹⁸ See the very thought provoking article by Josette Ben Brahem, "Tunisie: Mendes et la France," *Jeune Afrique* (Tunis), No. 237 (June 20, 1965), p. 6.

⁹⁹ Willard E. Beling, "Eurafricanism: Alternative to Pan Africanism?," *M.D.*, Vol. IV, No. 4 (April 1966), p. 10.

between the advanced countries and representatives of "the two thirds of humanity who live with the shooting pains of hunger."¹⁰⁰

¹⁰⁰ The words are President Bourguiba's, see above.

APPENDIX

Table 1

TUNISIAN IMPORTS FROM PRINCIPAL COUNTRIES,
1959-1965

	1959			1960			1961		
	V d. ¹ (1)	V \$ ² (2)	% (3)	V d (4)	V \$ (5)	% (6)	V d (7)	V \$ (8)	% (9)
France	42.1	98.9	65.5	47.0	110.4	58.7	47.4	111.4	53.6
Rest of franc zone:	1.8	4.2	2.8	1.5	3.5	1.8	1.7	3.9	1.9
Algeria	—	—	—	—	—	—	—	—	—
Other E.E.C. countries:	6.0	14.1	9.3	9.9	23.2	12.3	10.0	23.5	11.3
German Fed. Rep.	1.8	4.2	2.8	3.1	7.3	3.8	4.0	9.4	4.5
Italy	2.9	6.8	4.5	4.8	11.3	6.0	4.4	10.3	4.9
Netherlands	0.8	1.9	1.2	1.1	2.6	1.5	1.1	2.6	1.2
Belgium & Luxembg.	0.5	1.2	0.7	0.8	1.9	1.0	0.5	1.1	0.5
United States	2.7	6.3	3.7	6.3	14.8	9.0	13.2	31.0	14.8
United Kingdom	3.1	7.3	4.8	3.0	7.0	3.7	2.3	5.4	2.6
Greece	—	— ³	—	—	—	—	—	—	—
Yugoslavia	—	—	—	—	—	—	—	—	—
India	—	—	—	—	—	—	—	—	—
Ceylon	1.1	2.5	1.7	1.4	3.3	1.7	1.2	2.8	1.3
Switzerland	—	—	—	—	—	—	—	—	—
Libya	—	—	—	—	—	—	—	—	—
Communist bloc:	2.4	5.6	3.7	3.9	9.1	4.8	5.2	12.2	5.8
People's R. of China	—	—	—	—	—	—	—	—	—
Czechoslovakia	—	—	—	—	—	—	—	—	—
TOTAL WORLD IMPORTS	64.2	150.9		80.0	188.0		88.4	207.7	

NOTES:

¹ Value in million dinars.

² Value in million\$.

³ Not available.

Table 1 (Continued)

1962			1963			1964			(Jan.-Sept.) 1965		
V d. (10)	V\$ (11)	% (12)	V d. (13)	V\$ (14)	% (15)	V d. (16)	V\$ ⁴ (17)	% (18)	V d. (19)	V\$ (20)	% ⁵ (21)
47.6	111.8	52.3	44.7	105.0	48.0	49.9*		44.9	40.4	76.8	
2.0	4.7	2.2	—	—	—	—		—	—	—	
0.5	1.1	0.5	—	—	—	1.8		1.6	1.0	1.9	
12.2	28.6	13.4	—	—	—	—		—	—	—	
3.5	8.2	4.0	4.2	9.8	4.5	6.3		5.7	5.3	10.1	
5.9	13.8	6.5	9.2	21.6	9.9	6.7		6.0	6.1	11.6	
1.4	3.3	1.5	1.8	4.2	1.9	1.9		1.7	1.4	2.7	
1.3	3.0	1.4	—	—	—	—		—	—	—	
14.5	34.1	16.0	10.2	24.0	10.9	11.4		10.3	16.9	32.1	
2.8	6.6	3.1	3.6	8.5	3.9	4.6		4.2	4.7	8.9	
—	—	—	—	—	—	0.2		0.2	—	—	
—	—	—	—	—	—	1.6		1.4	1.0	1.9	
—	—	—	—	—	—	1.4		1.3	0.8	1.5	
1.6	3.7	1.7	1.3	3.0	1.4	—		—	—	—	
—	—	—	—	—	—	0.8		0.7	0.5	1.0	
—	—	—	—	—	—	0.3		0.3	2.3	4.4	
3.3	7.7	3.6	—	—	—	—		—	—	—	
—	—	—	—	—	—	0.1		0.1	0.2	0.4	
—	—	—	—	—	—	1.8		1.6	0.8	1.5	
90.9	213.6		93.0	218.5		110.9*					

⁴ Column (17) has been left blank because of the difficulty of converting 1964 dinars into dollars: the dinar was devalued in September 1964.

⁵ Column (21) has been left blank because the total for January-September 1965 is not available.

* (in Column [16]) figures adjusted after counterchecking with *Tunisia in Brief*.

SOURCES:

Columns 2, 3; 5, 6; 8, 9; 11, 12; and 14, 15—see "La politique du commerce des états d'Afrique du Nord depuis leur accession à l'indépendence," *Maghreb* (Paris), No. 2 (March-April 1964), p. 44. Column 1 is derived from column 2 by dividing the latter by 2.35 (1 dinar = \$2.35). Same applies to column 4 (column 5: 2.35), and so forth through year 1963. Figure for Algeria in column (10) from *The Middle East and North Africa, 1966-67* (London: Europa Publications, 1966; 13th ed.), p. 668.

Columns 16 and 19—see *The Middle East and North Africa, 1966-67*, p. 668. Column 20 is derived from column 19 by multiplying the latter by 1.90 (in 1965, 1 dinar equalled \$1.90). Percentages in column 18 calculated by author.

Figures in column (16) counterchecked against *Tunisia in Brief* (Tunis: Secrét-

tariat d'État à l'Information et à l'Orientalion, 1966), p. [4]—Pages not numbered in source.

Totals in Columns 2, 5, 8, 11, and 14—see "La politique du commerce . . .," *loc. cit.*; total in Column 16—*Tunisia in Brief*, p. 4, and *The Middle East and North Africa, 1966-67*, p. 667. The totals are *world* totals and usually exceed totals of the columns themselves that include the imports from principal countries only.

Table 2

TUNISIAN EXPORTS TO PRINCIPAL COUNTRIES, 1959-65

	1959			1960			1961		
	V d.	V\$	%	V d.	V\$	%	V d.	V\$	%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
France	30.2	70.9	50.7	26.2	61.6	52.1	25.4	59.7	54.8
Rest of franc zone:	3.3	7.8	5.5	3.7	8.7	7.3	1.2	2.8	2.5
Algeria	—	—	—	—	—	—	—	—	—
Other E.E.C. countries	13.1	30.7	20.3	7.1	16.7	14.1	5.1	11.9	11.8
German Fed. Rep.	1.2	2.8	2.0	1.1	2.6	2.1	0.3	0.7	0.6
Italy	11.2	26.3	18.8	5.2	12.2	10.3	4.1	9.6	8.0
Netherlands	0.6	1.4	1.0	0.7	1.6	1.3	0.7	1.6	1.5
Belgium & Luxembg.	0.1	0.2	0.1	0.1	0.2	0.1	—	—	—
United States	1.1	2.5	2.0	0.1	0.2	0.1	0.2	0.4	0.3
United Kingdom	3.3	7.8	5.5	3.6	8.5	7.1	2.8	6.6	6.1
Greece	—	—	—	—	—	—	—	—	—
Yugoslavia	—	—	—	—	—	—	—	—	—
India	—	—	—	—	—	—	—	—	—
Switzerland	—	—	—	—	—	—	—	—	—
Libya	—	—	—	—	—	—	—	—	—
Communist bloc:	2.8	6.5	4.8	2.5	5.8	5.1	4.5	10.5	9.7
People's R. of China	—	—	—	—	—	—	—	—	—
Czechoslovakia	—	—	—	—	—	—	—	—	—
TOTAL WORLD									
EXPORTS:	59.6	140.0		50.2	118.0		46.4	109.0	

SOURCES:

"La politique du commerce des états d'Afrique du Nord depuis leur accession à l'indépendence," *Maghreb*, No. 2 (March-April 1964), p. 45; *The Middle East and North Africa, 1966-67*, pp. 667-68, distributed as in Table 1, above. Also *Tunisia in Brief*, p. [4].

Table 2 (Continued)

1962			1963			1964			1965		
V d.	V\$	%	V d.	V\$	%	V d.	V\$	%	V d.	V\$	%
(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
25.7	60.3	52.7	26.3	61.9	49.8	29.4		51.3	19.6	37.2	31.1
2.6	6.1	5.3	—	—	—	—		—	—	—	—
1.2	2.8	2.5	2.1	4.9	3.9	2.1		3.7	2.3	4.4	3.6
9.9	23.2	20.2	—	—	—	—		—	—	—	—
0.6	1.4	1.2	0.8	1.8	1.4	1.4		2.4	2.1	4.0	3.3
8.1	19.0	16.5	9.0	21.1	16.9	5.9		10.3	7.6	14.4	12.1
1.2	2.8	2.5	0.6	1.5	1.2	0.6		1.0	1.3	2.5	2.0
—	—	—	—	—	—	—		—	—	—	—
0.7	1.6	1.4	0.3	0.8	0.6	0.4		0.7	1.0	1.9	1.6
2.3	5.4	4.7	2.1	5.0	4.0	2.2		3.8	3.3	6.3	5.2
—	—	—	—	—	—	1.2		2.1	2.4	4.6	3.8
—	—	—	—	—	—	1.4		2.4	2.7	5.1	4.3
—	—	—	—	—	—	0.8		1.4	2.2	4.2	3.5
—	—	—	—	—	—	0.3		0.5	1.3	2.5	2.0
—	—	—	—	—	—	2.1		3.7	5.6	10.6	8.9
3.4	7.9	6.9	—	—	—	—		—	—	—	—
—	—	—	—	—	—	0.1		0.2	1.3	2.5	2.0
—	—	—	—	—	—	1.2		2.1	—	—	—
48.6	114.2		52.9	124.3		57.3		62.9	119.5		

Table 3
FOREIGN INVESTMENT LOANS OFFERED TUNISIA
(since the entry in force of the Three Year Plan, 1962-64)

	\$million	\$million
United States:		
Remainder of loans approved in 1962	36.1	
Total authorization for the U.S. contribution to the Three Year Plan	180.0	
Loans specifically for 1963	12.4	
Subtotal	228.5	228.5
France:		
Authorization in 1963, of which		
Loans for public investments	9.1	
Loans for industrial projects	7.0	
Subtotal	16.1	16.1
Authorization in 1964, later cancelled, of which		
Loans for public investments	9.1	
Loans for industrial projects	11.1	
Subtotal	20.2	20.2*
USSR		27.5
Kuwait		19.6
Italy		10.0
Czechoslovakia		10.0
Poland		10.0
German Federal Republic		7.5
Bulgaria		6.0
Yugoslavia		5.0**
Netherlands.....		4.0
Sweden		1.0
International Organizations:		
I.B.R.D.	5.0	
International Development Association (related to IBRD)	5.0	
Society of International Financing	3.5	
United Nations Special Funds	2.5	
Subtotal	16.0	16.0
Grand Total Including French Loans of 1964		381.4
Grand Total Without Cancelled French Loans of 1964		361.2

* Cancelled May 13, 1964.

** J. Ben Brahem, who in *Le Monde*, January 8, 1966, p. 4, appears to use the identical figures applying them to 1964 only [sic], sets the Yugoslav aid at \$6.5 million, not \$5 million as per table.

SOURCE: "Les investissements étrangers en Afrique du Nord," *Maghreb*, No. 4 (July-August, 1964), p. 50.

TABLE 2: TUNISIAN EXPORTS TO PRINCIPAL COUNTRIES, 1959-1965

	1959		1960		1961		1962		1963		1964		1965								
	V.d.	V\$ %																			
France	30.2	70.9	50.7	56.2	61.6	52.1	25.4	59.7	54.8	25.7	60.3	52.7	26.3	61.9	49.8	29.4	51.3	19.6	37.2	31.1	
Rest of franc zone:	3.3	7.8	5.5	3.7	8.7	7.3	1.2	2.8	2.5	2.6	6.1	5.3	—	—	—	—	—	—	—	—	
Algeria	—	—	—	—	—	—	—	—	—	1.2	2.8	2.5	2.1	4.9	3.9	2.1	—	—	—	—	
Other E.E.C. countries	13.1	30.7	20.3	7.1	16.7	14.1	5.1	11.9	11.8	9.9	23.2	20.2	—	—	—	—	3.7	2.3	4.4	3.6	
German Fed. Rep.	1.2	2.8	2.0	1.1	2.6	2.1	0.3	0.7	0.6	0.6	1.4	1.2	0.8	1.8	1.4	1.4	2.4	2.1	4.0	3.3	
Italy	11.2	26.3	18.8	5.2	12.2	10.3	4.1	9.6	8.0	8.1	19.0	16.5	9.0	21.1	16.9	5.9	10.3	7.6	14.4	12.1	
Netherlands	0.6	1.4	1.0	0.7	1.6	1.3	0.7	1.6	1.5	1.2	2.8	2.5	0.6	1.5	1.2	0.6	1.0	1.3	2.5	2.0	
Belgium & Luxembg.	0.1	0.2	0.1	0.1	0.2	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
United States	1.1	2.5	2.0	0.1	0.2	0.1	0.2	0.4	0.3	0.7	1.6	1.4	0.3	0.8	0.6	0.4	0.7	1.0	1.9	1.6	
United Kingdom	3.3	7.8	5.5	3.6	8.5	7.1	2.8	6.6	6.1	2.3	5.4	4.7	2.1	5.0	4.0	2.2	3.8	3.3	6.3	5.2	
Greece	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Yugoslavia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.1	2.4	4.6	3.8
India	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.4	2.7	5.1	4.3
Switzerland	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.4	2.2	4.2	3.5
Libya	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.5	1.3	2.5	2.0
Communist bloc:	2.8	6.5	4.8	2.5	5.8	5.1	4.5	10.5	9.7	3.4	7.9	6.9	—	—	—	—	—	—	—	—	
People's R. of China	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Czechoslovakia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
TOTAL WORLD	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
EXPORT:	59.6	140.0	50.2	118.0	46.4	109.0	48.6	114.2	52.9	124.3	57.3	—	—	—	—	—	62.9	119.5	—	—	

SOURCES:

"La politique du commerce les états d'Afrique du Nord depuis leur accession à l'indépendance" *Maghreb*, No. 2 (March-April 1964), p. 45; *The Middle East and North Africa, 1966-67*, pp. 667-68, distributed as in Table 1, above. Also *Tunisia in Brief*, p. 14.

ERRATA: pages 248-251: See rearranged Tables 1 and 2, enclosed.

TABLE I: TUNISIAN IMPORTS FROM PRINCIPAL COUNTRIES, 1959-1965

	1959		1960		1961		1962		1963		1964		1965									
	V.d. ¹ (1)	V\$ ² (2)	% (3)	V.d. (4)	V\$ (5)	% (6)	V.d. (7)	V\$ (8)	% (9)	V.d. (10)	V\$ (11)	% (12)	V.d. (13)	V\$ (14)	% (15)	V.d. (16)	V\$ (17)	% (18)	V.d. (19)	V\$ (20)	% (21)	
France	42.1	98.9	65.5	47.0	110.4	58.7	47.4	111.4	53.6	47.6	111.8	52.3	44.7	105.0	48.0	49.9*	44.9	40.4	76.8			
Rest of franc zone:	1.8	4.2	2.8	1.5	3.5	1.8	1.7	3.9	1.9	2.0	4.7	2.2										
Algeria										0.5	1.1	0.5				1.8	1.6	1.0	1.9			
Other E.E.C. countries:	6.0	14.1	9.3	9.9	23.2	12.3	10.0	23.5	11.3	12.2	28.6	13.4										
German Fed. Rep.	1.8	4.2	2.8	3.1	7.3	3.8	4.0	9.4	4.5	3.5	8.2	4.0	4.2	9.8	4.5	6.3	5.7	5.3	10.1			
Italy	2.9	6.8	4.5	4.8	11.3	6.0	4.4	10.3	4.9	5.9	13.8	6.5	9.2	21.6	9.9	6.7	6.0	6.1	11.6			
Netherlands	0.8	1.9	1.2	1.1	2.6	1.5	1.1	2.6	1.2	1.4	3.3	1.5	1.8	4.2	1.9	1.9	1.7	1.4	2.7			
Belgium & Luxembg.	0.5	1.2	0.7	0.8	1.9	1.0	0.5	1.1	0.5	1.3	3.0	1.4										
United States	2.7	6.3	3.7	6.3	14.8	9.0	13.2	31.0	14.8	14.5	34.1	16.0	10.2	24.0	10.9	11.4	10.3	16.9	32.1			
United Kingdom	3.1	7.3	4.8	3.0	7.0	3.7	2.3	5.4	2.6	2.8	6.6	3.1	3.6	8.5	3.9	4.6	4.2	4.7	8.9			
Greece																0.2						
Yugoslavia																1.6	1.4	1.0	1.9			
India																1.4	1.3	0.8	1.5			
Ceylon	1.1	2.5	1.7	1.4	3.3	1.7	1.2	2.8	1.3	1.6	3.7	1.7	1.3	3.0	1.4							
Switzerland																						
Libya																						
Communist bloc:	2.4	5.6	3.7	3.9	9.1	4.8	5.2	12.2	5.8	3.3	7.7	3.6			0.8							
People's R. of China																0.3	0.3	2.3	4.4			
Czechoslovakia																						
TOTAL WORLD IMPORTS	64.2	150.9			80.0	188.0		88.4	207.7		90.9	213.6		93.0	218.5							

NOTES:

1 Value in million dinars.

2 Value in millions.

3 Not available.

4 Column (17) has been left blank because of the difficulty of converting 1964 dinars into dollars; the dinar was devalued in September 1964.

5 Column (21) has been left blank because the total for January-September 1965 is not available.

* (in Column [16]) figures adjusted after counterchecking with *Tunisia in Brief*.

SOURCES:

Column 2, 3; 5, 6; 8, 9; 11, 12; and 14, 15—see "La politique du commerce des états d'Afrique du Nord depuis leur accession à l'indépendance," *Magheb* (Paris), No. 2 (March-April 1964), p. 44. Column 1 is derived from column 2 by dividing the latter by 2.35 (1 dinar = \$2.35). Same applies to column 4 (column 5: 2.35), and so forth through year 1963. Figure for Algeria in column (10) from *The Middle East and North Africa, 1966-67* (London: Europa Publications, 1966; 13th ed.), p. 668.

Column 16 and 19—see *The Middle East and North Africa, 1966-67*, p. 668.

Column 20 is derived from column 19 by multiplying the latter by 1.90 (in 1965, 1 dinar equalled \$1.90). Percentages in column 18 calculated by author.

Book Reviews

P. A. Zuraev, *Severnnye Irantsy Vostochnoi Evropy i Severnogo Kavkaza (Savromaty, Skify, Sarmato-Alany, Anty, Yassy i Osetiny)*, vol. 1, New York 1966, 341 pp.

One of the weaknesses of present research in the ancient past of the northern Black Sea coast is, among others, the fact that the majority of scholars treat the problem of the Iranian people and tribes in the Eurasian steppe generally as cut off from their Old Iranian source. The problem, on the other hand, demands a more organic link with the prehistoric and ancient past of the Near Eastern Iranian environment. We should therefore, welcome the work of P. A. Zuraev, in which the author (an Ossetian) attempts to present a picture of the ancient Iranians in Eastern Europe in relation to other groups. Zuraev's work, a typical compilation in character, is a classic example of devoted work by an amateur historian. His task, difficult even for a professional scholar, was to solve a whole series of problems dealing with ancient Iranians on the basis of written sources and archaeological materials. The very boldness of design to clarify a whole series of problems—from the ancient period of the Caucasus (the pre-Koban and Koban periods) up to the migration of peoples and the problem of the Antes—shows the author's predilection for the ancient past of the ethnic group to which he himself belongs. As a result the author, despite his efforts, is not entirely free from certain tendencies of idealizing the ancient Iranians. Zuraev makes use of fairly numerous source materials and often shows a satisfactory critical approach. For example, he does not exaggerate the political power of the Goths on the northern Black Sea coast and presents the Hunnic period more realistically, avoiding the common oversimplifications. Unfortunately he also attempts to solve some ethnological problems with the help of his practical knowledge of Ossetian, forgetting, however, that this alone without the knowledge of the historical development of Iranian languages is far too insufficient.

Despite the vast amount of labor and self-dedication on the part of the author, he was unable to fulfill his task satisfactorily. The work is characterized by a whole series of shortcomings of which we will mention only the most typical. The author's use of the written source material, and especially of Herodotus, lacks in critical judgment. He not infrequently accepts the fantastic as the true and the true as the fantastic (e.g., the history of Darius's campaign against the Scythians, the interpretation of the concept "agricultural Scythians," the Cimmerian question, the problem of the Antes). According to him the Cimmerians ruled in the regions between the Volga and the Dniester (p. 54). On his reconstructed map of Herodotus's Scythia he incorrectly localizes certain people (e.g., the Androphagi and the Neuri),

especially the nomads whom he places, *inter alia*, in the central Dnieper basin, which is in disagreement with Herodotus's data (IV, 17-19). Noting that this map refers to the fifth century B.C., Zuraev localizes the "settled Scythians" in the Black Sea coastal area west of the Dnieper. In the fifth century B.C., however, the Scythians were not yet settled in any compact masses. The process of their settlement can be dated only in the latter half of the fourth century B.C. As mentioned above, Zuraev to a certain extent idealizes the Iranians, including the Scythians, even assuming a great cultural influence of the latter on the Greeks (p. 87). On certain questions the author gives too much credence to the older literature on the subject, and pays too little attention to newer works (e.g., in connection with the so-called "old Scythians" and nomadic Scythians—p. 63). The author considers the Gelons to be Finns (p. 70), which is at complete variance with Herodotus's data (IV, 108-109). To say that the Scythians organized a slave-owning state of world significance (Rostovtseff inclines to this view) is probably an exaggeration. The author does not show a full understanding of the view that in analogy to "Scythia" "Sarmatia" was a broad politico-geographic concept, and that by the terms "Scythians" and/or "Sarmatians" we must often understand a collective ethnic concept which extended to peoples and tribes under their domination. The author's view concerning the Sarmatization of the northern Black Sea coast in the cultural aspect as a matter of fact should be accepted with reservations. The politico-military aspect of this question is an entirely different matter: Sarmatian tribes became for a long period the dominant politico-military factor, at the head of which in the second century A.D. arose a powerful Alanic confederation with a strong military organization. Zuraev links the Alans with the Massagetes (p. 171 ff.). The author's conception of the Antes is not entirely clear: at one time he holds the Antes to be one of the Alanic groups (p. 271), then again he includes the Alans east of the Dnieper in an Antes political confederation (p. 284). This is to resolve the Antes problem at one time on the ethnological level, at another on the political level. It appears that Zuraev does not accept the possibility that the given political confederation could have included different peoples or tribes—Iranian and Slavic—in the face of a common danger. He does not treat the Slavic problem. Only at the very end of the work do we find a few laconic statements about the Slavs, whom Zuraev introduces as a kind of ethnographic *deus ex machina*.

Nevertheless Zuraev's work has some interest even for a professional scholar, who can appreciate the author's good intentions and make use of the positive elements of the book. For example, Zuraev gives some organization to the material which he compiled from different sources, some of them difficult to obtain. And finally one cannot but admire the moral valor of a tireless enthusiast of history. The reader will appreciate the extensive

bibliography, which regretfully contains many errors and lacunae. An alphabetical index would also facilitate the use of the book.

Alexander Dombrowsky

Arthur E. Adams. *Bolsheviks in the Ukraine; The Second Campaign, 1918-1919*. New Haven and London: Yale University Press, 1963. 440 pages.

This work is an intensive study of the crucial period of the Ukrainian Revolution between the end of the Hetmanate of General Skoropadsky in November 1918 and the rout of the Bolsheviks in the Ukraine in the summer of 1919. It begins with the establishment of the second Bolshevik Ukrainian government and concludes with the imposition of the third Soviet regime on the Ukrainians early in 1920. Professor Adams is concerned principally with the development and execution of Bolshevik policy during this decisive period and the reasons underlying its failure. Foremost among these was the lack of sufficient popular support and the Bolsheviks' inability to understand the peculiarities and special needs of the Ukrainian situation. The author demonstrates that the policy of agricultural requisitions, in which approximately 3,000 Russian urban workers from Petrograd and Moscow were used as food collectors, resulted in peasant hostility toward the Soviet regime. The Bolshevik refusal to recognize the Ukrainian language and culture offended national sensibilities as did the extensive use of alien personnel and special plenipotentiaries from Moscow. Nor did the dreaded Cheka remain idle under the command of the Latvian Latsis. The proposals of Ukrainian Communists were usually ignored and Moscow thus undercut its own creation, the Ukrainian S.S.R.

Professor Adams' work conveys much of the diversity and complexity that characterized the period during which the Bolsheviks were but one of several contenders for power in the Ukraine. Thus attention is given the Directory, the Ukrainian S.R.'s and their left wing Borotbisty, the Russian White Guard forces led by General Denikin, and the French and Greek interventionists. However, approximately half of the volume deals with the anomalous relationship between Otaman Hryhor'yev (Grigorev) and the Bolshevik military commander on the Ukrainian Front, Antonov-Cvseenko. Indeed, the treatment accorded it by Professor Adams takes on a certain dramatic quality uncommon in a historical monograph.

The Bolsheviks' weak position and their inability to recruit rapidly a Ukrainian Soviet army made it necessary for them to utilize the partisan forces of Otaman Hryhor'yev as well as those of the anarchist Nestor Makhno. The wily, irresponsible and self-aggrandizing nature of Hryhov'yev is well depicted, and one of the author's principal contributions is to have provided a good descriptive portrait of the colorful partisan leader. Antonov-

Ovseenko had little choice but to use Hryhor'yev to expell the French from Odessa even though he had only recently defected from the UNR Army commanded by Petlyura. Hryhor'yev had become a nominal self-proclaimed "Bolshevik" but refused to permit Communist agitators to operate with his forces. Antonov was also prepared to liquidate the Otaman and had a special unit (under Anton Chaly) attached to his forces for that purpose. Hryhor'yev's decision to rebel against the Bolsheviks in May 1919 is explained by Professor Adams in the following terms:

"It [the Hryhor'yev rebellion] was, rather, an exceedingly important manifestation of the elemental political and social aspirations of millions of peasants, village folk, and townspeople—workers and intellectuals alike. It was also, in part, a product of ceaseless efforts by several Ukrainian nationalist political parties: its slogans and formulas for earthly salvation were theirs. Born of passions and ideas which ranged to the sophisticated theories of the Ukrainian SDs and the Borotbisty, this rebellion was to have immense significance for the Ukraine, and thus for all Russia." (page 313)

Although the Bolsheviks suppressed the rebellion they were, in the author's opinion, sitting on a volcano whose eruptions they could not control.

The rebellion heralded the collapse of the Second Soviet Ukrainian Republic, and it also precipitated the removal of Antonov-Ovseenko from the command of the Bolshevik military forces on the Ukrainian Front. In Professor Adams' treatment Antonov emerges with some of the qualities of the tragic hero who had some understanding of Ukrainian conditions (see Antonov's appraisal of the situation which the author quotes on page 266) but who was incapable of persuading the policy-makers in Moscow and at military staff headquarters at Serpukhov to adopt the appropriate measures. Thus Antonov had a running battle with I. I. Vatsetis, the former tsarist colonel who had become Soviet commander-in-chief, over priorities as they affected the Ukrainian Front. Indeed, one of the virtues of this work is that it discusses the various disagreements that plagued the Bolsheviks. There were those who, along with Vatsetis, ignored the Ukrainian Front and gave priority to the Southern Front facing the forces under General Krasnov in the Don and those of Denikin. There was disagreement over what policies should be employed and what status should be accorded the Ukrainian Communist Party organization.

In evaluating the significance of this period Professor Adams sees the Ukraine as the decisive factor that made possible Denikin's advance once Ukrainian anti-Bolshevik rebellions broke out in the spring of 1919. He also recognizes the decisive role of Ukrainian resistance—both that led by Petlyura

and that of Hryhor'yev—in preventing Lenin from coming to the rescue of Bela Kun's Communist regime in Hungary. As a result of the retreats and advances of 1919 and despite the hard fact of Bolshevik military victory, Professor Adams offers the following summation:

“Failing to prevail in the political climate of early 1919, the Bolsheviks were never again to have the chance to win friends among a politically primitive and innocent Ukraine. When they returned later to establish the third Soviet government, they came back to a country which had reflected on its agonies and which under fierce compulsion had thought long on its aspirations. The Ukrainian people had heard the siren song of nationalism. They had experienced the keen pleasures of feeling superior, of being *Ukrainian*, and they had debated with guns about the kind of political and economic systems they preferred. To the extent that the nationalist parties and the partisans helped to rouse and educate the nation, theirs was a lasting victory. Its consequences were to be seen in the growing nationalism of Ukrainian thought after 1919, in the changes wrought in the attitudes and ideas of important members of the KP (b) U, even in such recent phenomena as the nationalist oppositionist movements of the Second World War.” (page 401)

While the important issues are dealt with in this study, the method of presenting them primarily in terms of the activities of Antonov, Hryhor'yev, Vatsetis, and Makhno can leave the uninitiated reader with something of a one-dimensional effect at times. A reviewer might also cavil at the author's tendency to depict Ukrainian developments primarily in terms of a chaos syndrome, “anarchic localism” and the like. It is easy to exaggerate this feature of the Ukrainian political landscape of that time to the exclusion of other developments. Professor Adams also employs the archaism “Great Russia” and “Great Russians”—a common practice of some historians who decline to adopt the more accurate current Soviet usage in this respect. Yet he has at times unhesitatingly adopted the Soviet practice of referring to the forces of the Directory as “Petlyurist forces.” However, these matters are vastly overshadowed by the volume's scholarly apparatus and its generally dispassionate treatment of events. It effectively complements the much broader study by Professor Jurij Borys, *The Russian Communist Party and the Sovietization of Ukraine* (Stockholm, 1960).

Throughout the volume the author has relied extensively upon Antonov-Ovseenko's memoirs, *Zapiski o grazhdanskoj voine*. He has also made full use of the relevant Ukrainian and Russian Communist and non-Communist literature and has utilized the Trotsky Archives. He is to be commended for having produced an outstanding and exceptionally well-written study.

Obituaries

IVAN BASILEVICH

(1899-1965)

Professor Ivan Viktorovych Basilevich, an outstanding gerontologist and clinic physician, a full member of the Academy, author of numerous publications in several fields of medical science died on December 11, 1965.

Ivan Basilevich was born on October 30, 1889, in the village of Seltse, Volhynia in a family of Ukrainian intellectuals. In 1917 he graduated with honors from a Gymnasium in Stavropol. In the same year he entered the Medical Department of St. Volodymyr University in Kiev and graduated in 1922 from Kiev Medical Institute. During his last years at the Institute he became interested in internal medicine and began to work under the guidance of the prominent Ukrainian clinical internist, academician Teofil Yanovsky. In 1928 he defended his Doctor's Thesis, *The Surface Tension of Urine and its Clinical Value*. In 1930. Basilevich was elected the professor of the Chair of Internal Diseases. In 1934 he was invited by academician O. Bohomolets to work simultaneously as a full member and a department head at the Research Institute of Clinical Physiology (now named the Bohomolets Institute) attached to the Ukrainian Academy of Sciences. He studied intensively the problems of old age but his work was interrupted at the Time of Terror in 1937-38. Basilevich was imprisoned. Eleven of his relatives were arrested, some of them perished in prisons, others were exiled. After his discharge he was reinstated to his former position at the Bohomolets Institute.

In 1943 Basilevich emigrated to Germany. In 1949 he came to the United States. Both in Germany and in the U.S.A. he was employed as a medical doctor and continued his work on the problems of aging and old age.

Basilevich was the author of some 100 scientific works, 70 of which were published in Ukrainian, Russian, English, German, and French. In his autobiography Ivan Basilevich subdivided his publications into seven groups related to the following topics: 1. Clinical fermentology; 2. The gall-producing function of the liver; 3. The physiology of work and fatigue; 4. Cardiovascular failures; 5. Blood circulation in lungs; 6. Gerontology and geriatrics; 7. Varia. Of nine publications on clinical fermentology the most important are as follows: "The Functioning of the Pancreas" (1925), "Periodical Stomach Function and Blood Enzymes" (1927), "Serological Changes Induced by Lung Tuberculosis" (1930), and the fundamental monograph, *Klinichna fermentolohiya* (Clinic Fermentology), Kiev, 1936. The second group, also comprising nine publications, includes his published Doctor's Thesis, *The Surface Tension of Urine and its Clinical Value* and such important papers as "The Gall-Producing Function of the Liver," "Kidneys and the Surface

Tension of Urine" and "Clinical Capillarometry and its Significance." Basilevich's nine works on the physiology of work and fatigue include the following: "The Study of Muscular Exercises Performed by Patients with Diseases of the Liver, Heart, and Kidneys," "A Disturbance of Gas Metabolism during Manual Work," "The Arterial Hypoxia as an Early Indication of the Left-side Heart Failure and, to Some Degree, of a Decrease in the Vital Lungs' Volume," and "The Effect of Muscular Exercises on the Hemodynamics of Patients with Kidney Disease" (1936). The most important of eleven publications on cardiovascular failures are as follows: "The Hemodynamic Characteristics of Stages of the Right-side and Left-side Heart Failures" (1936), "The Effect of Drugs Treatment of Heart Diseases and of Diuretics on Lungs Circulation" (1936), and "Hemodynamic Disturbances in Neurotics During and After Manual Work (1936). In 1935-1938 Basilevich applied the multiple method of investigation of the blood circulation in lungs and established that the nature of hemodynamic changes resulting from loss of blood indicates a decrease in the temporary heart volume, and acceleration in the lung blood circulation. He found that drugs (histamine, nitroglycerin, theobromine group, and partly amethine) cause peripheral vasodilation and lung depletion. On the basis of these studies, Basilevich advanced a hypothesis of "Depositive Therapy" as a basis for treating acute left-side heart failure and emphysema.

Basilevich's most interesting publications dwell on the problems of gerontology and geriatrics. He began his clinical gerontological studies as early as in 1927 at the clinic headed by academician Teofil Yanovsky. Later, while working at the Bohomolets Institute, he developed intensive research on gerontology. He studied clinical aspects of gerontology and organized scientific expeditions to localities where centenarians were living. In 1935 he concluded that there is a natural physiological process of aging which should be studied. He observed healthy old men including in this research many workers of the Bohomolets Institute, also the author of this article. In 1938 the first gerontological conference was held in Kiev where the Bohomolets school advanced a doctrine of "the syndrom of natural aging." Basilevich was a pioneer in gerontology which originated as a science in the Ukraine on the initiative of academician Bohomolets and his school. The Germans began to study aging around 1938 and the Americans after World War II. Before the war, four works on gerontology and geriatrics were published by Basilevich and six by his associates. Several of Basilevich's studies are still in manuscript. While living in the U.S.A., he published several papers in English. His voluminous monograph, *The Medical Aspects of Natural Old Age (An Introduction to Clinical Gerontology)* appeared in Munich, 1959.

LEVKO CHIKALENKO

(1888-1965)

Levko Yevhenovych Chikalenko, a distinguished Ukrainian archeologist, died in New York City on March 7, 1965. He was born on February 18, 1888 in the village of Pereshory, Kherson Province. In 1907 he graduated from a Gymnasium in Kiev and in the same year entered the Department of Natural Science at the University of Lausanne. In 1909 he transferred to St. Petersburg University where he studied until 1917 with an interval (1911-13) caused by his exile to his native village for his participation in revolutionary activities. In the summer of 1909 Chikalenko participated in the scientific expedition to Volhynia headed by Khvedir Vovk, the prominent archeologist and anthropologist, professor of St. Petersburg University whose influence was decisive in turning him toward archeology as a career. The purpose of this expedition was to collect materials on the prehistory and ethnography of Volhynia. Chikalenko also took anthropometrical measurements on natives. In 1911 he travelled in Kuban, Kherson, and Poltava Provinces, studying anthropometric characteristics of Ukrainians. In 1912-1916, under the guidance of Professor Vovk, he excavated Paleolithic settlements in the village of Mizyn, Chernihiv Province and in the village of Horodok, Volhynia. Together with Professor Vovk, he excavated Scythian Sarmatian burial sites in Kherson Province and burial sites of the Bronze Age in Kiev and Poltava Provinces.

Levko Chikalenko actively participated in the events of the Ukrainian National Revolution in 1917-20. He was secretary of the Ukrainian Central Rada. After the defeat of the Ukrainian Army he went abroad and between two wars lived mostly in Warsaw and Prague. For his Thesis "An Outline of the Development of Geometrical Ornament in the Paleolithic Age" he received his Ph. D. at the Ukrainian Free University in Prague. He lectured on the Prehistory of the Ukraine at the Ukrainian Pedagogical Institute in Prague and worked as a research assistant for the Czech National Museum where he studied Neolithic cultures on the territory of Czechoslovakia and, in particular, the culture of "spiral-meander" ceramics. As a result of his study of ornaments on the Moravian painted pottery he established its relationship with the Ukrainian Neolithic painted ceramics of the Trypilian culture. Results of his investigations were summarized in three articles published in Czech, Ukrainian, and German.

In 1928 Chikalenko went to Warsaw and continued his study of the "rhythmographics" of ornaments on the Ukrainian painted pottery. In 1942 he lived in Lviv and worked with the Lviv Archeological Committee.

Chikalenko was the author of several publications dwelling on the problems of his lifework. The most important are as follows: *Narys rozvytku*

heometrychnoho ornamentu paleolitychnoyi doby (An Outline of the Development of the Geometric Ornament in the Paleolithic Age), Prague, 1923; *Tekhnika ornamentuwannya keramichnykh vyrobiv Mizyns'kykh neolitychnykh selyshch* (The Technique of Decoration of Pottery Found at the Mizyn Neolithic Settlement), Prague, 1925; *Narys rozvytku ukrayins'koyi neolitychnoyi malyovanoyi keramiky—Bil'che Zolote. Trypil's'ka kul'tura na Ukrayini* (An Outline of the Development of Ukrainian Neolithic Painted Ceramics—Bil'che Zolote. The Trypilian Culture in the Ukraine), volume 1, Ukrainian Academy of Sciences, Kiev, 1926; "Vivifikatsionizm" (Vivificationism), *Naukovyi Zbirnyk na chest' prof. D. Antonovycha* (Scholarly Collection Honoring Prof. D. Antonovych), Prague, 1933. He also left his memoirs concerning his political activities.

Dr. Levko Chikalenko was one of the founders of the Ukrainian Academy of Sciences in Germany in 1945 and one of the leading members of the Ukrainian Academy of Arts and Sciences in the U.S.

NEONILA KORDYSH-HOLOVKO

SEMEN DEMYDCHUK

(1884–1965)

Semen Demydchuk was born on April 22, 1884, in the Town of Busk, Western Ukraine. He was educated at the University of Lviv and graduated in 1914 with the degree of Doctor of Law.

While still attending the university, he visited the U.S.A. as a delegate of the School Union of Galicia in order to solicit funds for Ukrainian schools. He was very successful in this noble cause. In 1914 he returned to the U.S.A. as a special delegate of the Ukrainian Council (Radz.) for the propagation of the idea of Ukrainian independence. He was the organizer of the First Ukrainian Assembly (Sejm) in the United States which met in New York City in 1916. In 1919 he worked as the director of the Ukrainian Press Bureau which was established under his guidance as a separate committee to conduct meetings and demonstrations in New York and other cities with a purpose to gain recognition by the United States of the Independent Ukraine and to protest against the Polish occupation of the Western Ukraine.

Later he worked as co-editor of the Ukrainian daily *Svoboda*, Jersey City, N.J. In 1939 he worked as an instructor and lecturer in Ukrainian for officers of the West Point Academy who studied for the diplomatic service. He participated in the organization of many important events in the U.S.A., such as the performance of the Ukrainian ballet at the Metropolitan Opera House in 1930. He supported the organization of concerts of the Koshyts Ukrainian Choir in 1932.

Demydchuk was a prolific journalist and published many articles and studies related to the Ukrainian problem and the Ukrainian immigrants in America. He edited several Ukrainian almanacs for the Ukrainian National Association and the Jubilee Book of the Ukrainian Catholic Church. Some of his most important works are as follows: 1. "The Heritage of Kiev," a cycle of articles, 1935-36; 2. "The Ukraine-Cossacks Country" (in French); 3. "Ukrainica in America," a pioneer work published in 1944, subsequently extended and printed in *Ukrainian Weekly*, 1944-45; 4. Several works on the Ukrainian Greek Catholic Church in New York; 5. The Ukrainian Community in the U.S.A., 1949; 6. For the Ukrainian Heritage in America, 1951; 7. The obituary of Rev. A. Honcharenko, *Svoboda*, May, 1915; 8. A study of old maps of Europe on which the Ukraine is marked.

Demydchuk actively participated in the work of the Academy as the Chairman of the Commission for the Study of the History of Ukrainian Immigration to the United States. His significant contribution was a study of the life and activities of the first Ukrainian political immigrant to the U.S.A., Father Agapius Honcharenko who came to this country in 1865.

Semen Demydchuk died on September 20, 1965. He will be long remembered for his fine cooperation and friendly help to those who needed it. He was the most venerated and honored builder of Ukrainian life in the United States of America.

JOHN V. SWEET

ILLJA HRYHORENKO

(1889-1965)

Illja Hryhorenko, a specialist in animal husbandry, played a prominent role in the promotion in the Ukraine of research and education in the fields of animal husbandry and veterinary.

Hryhorenko was born in 1889 in the village of Dekantsi, Poltava Province, into the family of the manager of Prince Kochubey's estate. He graduated from a technical secondary school, then from a military school and served as an officer in the Russian Army. After the Revolution of 1917, Hryhorenko joined the Ukrainian Army and participated actively in the struggle for the liberation of Ukrainian people in 1917-20. He did not evacuate to the West with the retreating Ukrainian Army but remained in the Ukraine and participated actively in the development of Ukrainian culture.

In the years 1920-23, at the Kiev Polytechnical Institute Hryhorenko studied agriculture, particularly animal husbandry. Beginning with his student days he carried on research at the Institute's experimental station. Subsequently he was appointed a lecturer at the Kiev Institute of Veterinary

and Animal Husbandry with the Department of Animal Husbandry headed by Professor Ustyantsev. In 1930, after Professor Ustyantsev had been arrested, Hryhorenko became the Department Chairman. He was actively engaged in research.

In 1937 Hryhorenko was arrested. He spent 19 months in prison where he was tortured both physically and mentally. After discharge he had problems in finding a scholarly position. Finally in 1939 he was employed by the Research Institute of Fishery as the Head of the Breeding and Genetics Department. World War II interrupted his work at this Institute where he successfully carried out several research projects.

In 1943 Hryhorenko fled to the West and resided first in Germany and then in the U.S.A. While abroad, Hryhorenko was associated actively with the work of Ukrainian educational and scientific institutions. He was a professor of the Ukrainian Technical and Husbandry Institute and one of the founders of the Ukrainian Free Academy of Sciences. He died on July 13, 1965, in Utica, N.Y.

Although Hryhorenko's scientific heritage is not prodigious, it is of great value. Many of his works were destroyed by the NKVD at the time of his arrest, others were lost during the war. Only a few works were published, several are preserved in manuscripts. Chronologically, Hryhorenko's research can be outlined as follows.

In 1921-27 Hryhorenko concentrated on problems related to the feeding of dairy cows and the development of methods to ensile beetroot haulm. He completed the following works: 1. The grazing of dairy cows on vetch-oat pastures; 2. The ensiling of beetroot haulm and the usage thereof for the feeding of dairy cows; 3. The vetch-oat mixture as a green fodder for dairy cows; 4. A practice of ensiling beetroot haulm.

In 1928-37 he continued his research on problems of fodder and completed the following works: 1. Grainforage gassed by dichloroethane as fodder for dairy cows; 2. Grainforage gassed by dichloroethane as fodder for draught-horses; 3. The feeding of hogs by grainforage gassed by dichloroethane; 4. The raising of young pigs on grainforage gassed by dichloroethane.

In 1938-41 Hryhorenko completed the following works: 1. Goats in the Ukraine and their economic importance; 2. Sheep in the Ukraine and their importance in the national economy; 3. Pond, lake, and stream fish in the Ukraine; 4. On the problem of the rate of carp placement into ponds for growth and feeding; 5. External changes in carps in the winter time.

Before World War II Hryhorenko's works appeared in technical periodicals published in the Ukraine. After the war, two of his articles were printed in *Ukrayin's'kyi Hospodarnyk* (The Ukrainian Economist): "Nova formula dlya rybovodiv Ukrayiny" (A new formula for fish culturists in the Ukraine), 1954-56, and "Narostannya kryhy v stavkakh Ukrayiny" (Ice

formation in the ponds of the Ukraine). "The Carp Cultivation in Ponds of the Ukraine" in manuscript, is preserved in the Academy archives.

IVAN ROZHIN

IVAN KRYPIAKEYVCH

(1886–1967)

On April 21, 1967, one of the greatest historians of Ukraine, Ivan Petrovych Krypiakevych, died in Lviv.

He was born in Lviv on June 25, 1886, in the family of Rev. Dr. Petro Krypiakevych (1857–1914), a distinguished Ukrainian Greek-Catholic theologian and writer who had emigrated from the region of Kholm.

In 1904 Ivan Krypiakevych began his studies of Ukrainian history at the University of Lviv under the direction of Mykhailo Hrushevsky (1866–1934). Already in the following year (1905) his first scholarly work entitled "Materials for the Commercial History of Lviv" appeared in print in the series "Zapysky NTSh." This work was written in the seminar conducted by Mykhailo Hrushevsky. Hrushevsky immediately took notice of the talented young student and gave him an assignment for the Archaeographic Commission of the Shevchenko Scientific Society (NTSh) to collect archival materials for the Cossack period of Ukrainian history in Cracow (1906–1907), Warsaw (1910) and Moscow (1911). A part of these materials was published by Krypiakevych in 1908 as the eighth volume of the "Sources to the History of Ukraine-Ruś." These consisted of documents down to 1631 and allowed the young scholar to dispel one historical legend, that is, the problem of the so-called Bathory liberties.

In 1908 Ivan Krypiakevych completed his university studies and in 1911 received the Doctor of Philosophy degree. Because of existing conditions he could not remain at the university and had to take up work as a teacher of history in secondary schools (1909–10 Rohatyn; 1912–1928 Lviv; 1929–1934 Zhovkva; 1934–39 Lviv). Nevertheless, he continued his scholarly work in Ukrainian scholarly institutions.

In 1911 Ivan Krypiakevych was elected full member of NTSh, the highest Ukrainian scholarly institution at the time. When a Ukrainian state came into being he was called in 1919 to become a docent in Ukrainian history at the newly founded Ukrainian State University in Kamianets-Podilsky. Further political developments, however, prevented his undertaking this position.

In the years 1921–23 Ivan Krypiakevych was on the faculty of the Ukrainian Underground University in Lviv, heading the chair of Ukrainian history. He later held the same position in the reorganized Ukrainian Greek-Catholic Theological Academy in Lviv (1929–1939).

In 1934 Ivan Krypiakevych was elected chairman of the historico-philosophical section of NTSh and editor of the "Zapysky NTSh" and other publications of this section. He retained this position until the forced liquidation of NTSh in 1939.

In addition to holding the chairmanship of a section, Ivan Krypiakevych directed the work of historical commissions of the NTSh, notably the Commission on Old Ukrainian History and the Commission on Source-Studies. The latter, his own creation, was a kind of substitute for a seminar in the history of Ukraine: Ukrainian students from the University of Lviv, in which there was no chair of Ukrainian history under the Polish rule, had the opportunity to obtain training in the methodology and specific problems of Ukrainian history as a supplement to their university program.

Ivan Krypiakevych continued similar work in Lviv during the German occupation (1941-44) in much more difficult circumstances: the University of Lviv was closed and even private Ukrainian scholarship had to go underground.

The annexation of Western Ukraine to the U.S.S.R. (1939 and 1944) posed a very important task for Ivan Krypiakevych: to be on guard for the purity and dignity of Ukrainian scholarship in special circumstances.

He was charged with the organization and direction of the chair of Ukrainian history at the University of Lviv (which now became the Ivan Franko University) and the organization of the Lviv branch of the Institute of History of the Academy of Sciences of the UkrSSR (on the basis of the historical commissions of the liquidated NTSh). In 1944-46 Krypiakevych was also the dean of the history department of the Ivan Franko University.

In 1946 began a period of repression aimed at Krypiakevych which lasted until 1951. He had to leave his beloved Lviv. Sentenced to exile he was not sent to Siberia, due to his state of health, but had to live in want in Kiev, separated from his closest family (1946-48). In 1948 Krypiakevych received permission to return to Lviv and was given a poorly paid position as an assistant in the Museum of Ethnography and Handicrafts (1948-1950).

The rehabilitation of Ivan Krypiakevych began in 1951, evidently in connection with the preparations for the three-hundredth anniversary of the Treaty of Pereiaslav. He was given charge of the department of Ukrainian history at the newly created Institute of Social Sciences (a new variant of the Lviv branch of the Academy of Sciences of the UkrSSR), and in 1953 he became director of the entire Institute. In 1958 Ivan Krypiakevych was elected full member of the Academy of Sciences of the UkrSSR in Ukrainian history.

Ivan Krypiakevych holds a special place in Ukrainian historiography. He was a scholar of an unusually wide range. Not only was he an historian of all periods, archaeographer, historiographer, historiosopher, but there was

no area in the field of Ukrainian culture into which he did not bring a significant contribution.

Ivan Krypiakievych is the author of over 600 scholarly works. Unfortunately the majority of them are scattered in over 60 different publications, including daily newspapers, popular weeklies, monthlies and calendar-almanacs. Such was the fate of the Ukrainian scholar, especially between the two World Wars, that he had to publish his scholarly articles without documentation, in popular form, because of the lack of understanding among the people for the needs of Ukrainian scholarship.

But each outwardly popular article of Ivan Krypiakievych is a precious gem. Every line is based on a wonderful and detailed knowledge of primary sources with new and bold horizons. The collection of his scholarly inheritance, which is being prepared by the Committee on Ukrainian Studies in Harvard University, will clearly show us his greatness. In the meantime we can only roughly characterize the legacy of this giant of scholarship.

His works may be divided into at least seven sections. The first consists of monographs of a synthetic nature: History of Ukrainian Culture, History of Ukraine (the last version was published by emigres under the name of "Kholmsky"), histories of the Ukrainian Weltanschauung, Ukrainian customs, military forces, etc., as well as numerous articles for Ukrainian encyclopedias.

The next group of works consists of numerous handbooks and school textbooks in Ukrainian history on which entire generations of Ukrainian students were educated. Ivan Krypiakievych was undoubtedly the greatest popularizer of Ukrainian history.

Ivan Krypiakievych paid special attention to auxiliary fields and the methodology of Ukrainian history. Whether in bibliography, source studies, archives study, diplomatics, book studies, chronology, sphragistics, paleography—in every field we find his valuable contributions. He worked with particular devotion in historical bibliography, historical geography and regional studies. Throughout his entire life he unremittingly collected materials and prepared collective undertakings with his students. Unfortunately, most of these materials are lost, as for example the large bibliography of Ukrainian history prepared in 1937–39.

The fourth area of Ivan Krypiakievych's research was the Cossack period. We already mentioned his works in the history of Cossackdom before 1631. But in the center of his interest stood the great figure of Bohdan Khmelnytsky and the Ukrainian state created by that great Hetman. Ivan Krypiakievych contributed to Ukrainian scholarship his classic "Studies on the state of Bohdan Khmelnytsky," a complete collection of documents of Bohdan Khmelnytsky and a synthetic monograph on the Hetman himself, which could appear only in an edition on which the author could have no influence.

The fifth field is the history of his Lviv. As we already have seen, Krypiakievych began his scholarly career with his "Materials to the Commercial History of Lviv." He resurrected the shades of the Rusyny-proprietors in Lviv, the Rus' of Lviv in the first half of the 16 century, guild and non-guild laborers of Lviv, giving us dozens of sketches, articles, scholarly monographs. He will always be fondly remembered by every Ukrainian of Lviv (and not only of Lviv) for his magnificent "Historical promenades through Lviv."

The sixth area is local and regional history. Here in the foreground appear Galicia, the native region of the scholar, and the Kholm region, the land of his ancestors.

The last area is his publishing activity. Ivan Krypiakievych is widely known as the editor of learned journals and series, in the first place of those institutions in which he worked: NTSh, the Ukrainian Publishing House (Lviv-Cracow) and the institutes of the Academy of Sciences of the UkrSSR. But the range of his activity as a publisher was much wider. Thus we find, in addition to the "Istorychnyi Visnyk," the student organ of the Ukrainian Underground University in Lviv 1923), and "Iliustrovana Ukrayina" (Lviv 1913), also "Turystyka i Kraieznavstvo" (Lviv 1925), and even "Dzvinok," an illustrated periodical for children and youth (Lviv 1911-14).

Ivan Krypiakievych holds a special place in Ukrainian scholarship. By the will of Providence he not only lived to a deep old age, but did not abandon his creative labors until his death. He represents an entire era. For indeed, rare are the instances when a scholar works actively for a span of sixty-three years.

Unfortunately the bitter fate of Ukrainian scholars in general did not by-pass Ivan Krypiakievych. His activities, which may be divided into two periods—one until 1939 (1904-1939) and the other after 1939 (1939-1967)—were hindered by specific circumstances. Before 1939, although he had freedom of expression, he could not make full use of it. Without a university professorship, without any material basis for the realization of his long-range plans, he could give, with titanic effort, only a fragment of his potential. From 1939, having theoretically at his disposal both university professorships and institutes of the Academy of Sciences, he was circumscribed by the heavy censorship of an alien regime, which was not only uninterested in the development of Ukrainian humanities, but did everything possible to prevent such a development.

But in every situation Ivan Krypiakievych succeeded in achieving the possible maximum. Both before 1939 and after 1939 he trained generations of Ukrainian historians, communicating to them his creative fervor, his long experience and reverence for the humanities. It can be safely said that historical science in Ukraine could scarcely have survived its "Time of

Troubles" if the authority and chivalry of the great scholar, Ivan Krypiakievych, did not radiate in Lviv and in Kiev.

In concluding these few words I cannot pass in silence his stature as a teacher. His relations with students were extraordinarily warm and cordial, while maintaining the proper distance. Although busy earning his living and with his numerous scholarly and civic affairs, he was always available to his pupils. Himself without financial resources, Krypiakievych used all his connections to help one of his penniless students, even although this thankless role of a mediator between students and institutions (with money but without understanding for the importance of scholarship), took up much of his already limited time.

I myself was a witness how in the years 1936-1939, Ivan Krypiakievych came at least several times a week to the study room of the Historical Source-Studies Commission which he himself founded to inquire about his students' affairs. On these occasions he never failed to bring a gift. Experiencing with the young scholar all the uplifts and disappointments, he always had with him either some rare publication (for which the young scholar had unsuccessfully searched), or at least several bibliographic cards with invaluable information which the given student could have bypassed.

But what was most important, from the very beginning he forced young candidates for historians to have a broader perspective on the subject of his research, to distinguish main problems from marginal ones. I remember well the shock which I experienced in the winter of 1937/38. I was then working on archival and other materials concerning the political friend of Hetman Ivan Mazepa, Princess Anna Dolska (who was linked through various means with Lviv). My disappointment was inexpressible when, having shown my mentor triumphantly the mountains of materials which I collected, I received his answer that he cannot discuss my problems with me because I do not know them! I, who had for weeks collected all these vast materials! Seeing my reaction, Ivan Krypiakievych added with a gentle smile that in about ten days, after I eliminate at least nine-tenths of the less important material and retain only that which is really significant, he will gladly discuss with me all my problems. During the next ten days and nights I waded through my precious hoard. I read each note ten or more times, trying to save it as essential for the understanding of the given problem. But orders were orders. One selection replaced another, and in ten days I not only grasped all the material perfectly, but my eyes opened to the real problems.

For me and for all his students, Ivan Petrovych Krypiakievych will always remain a dear teacher and friend, "Johannes de Fabulis," as he liked to call himself in our circle.

VIACHESLAV F. SAVITSKY
(1902-1965)

Viacheslav F. Savitsky, a geneticist specializing in sugarbeet breeding, and full member of the Academy, died suddenly on April 16, 1965, in Salinas, California.

Savitsky was born in 1902 in the Kuban Province, North Caucasus. He graduated from Kharkov Agricultural Institute in 1924 and received his Ph. D. from Leningrad University.

In 1925-29 he was the Head of the genetics laboratory at the Bila Tserkva Breeding Station near Kiev and lectured on genetics at the Agricultural Institute in the same town. In 1930 he was appointed the head of the genetics laboratory at the All-Union Research Institute for Sugar Industry in Kiev. In 1943 Savitsky emigrated to Poland where he worked at the Institute for plant breeding in the University of Poznan. From 1945 to 1947 he lived in Germany and worked as a geneticist at the University of Halle, as a plant breeder for the Schreiber Seed Company, and also as a professor at the Ukrainian Technical and Husbandry Institute.

Savitsky came to the United States in November, 1947 and was employed by the Beet Sugar Development Foundation. At first he lived in Salt Lake City, Utah. In 1961 he was transferred to Salinas, California. At the time of his death, he was actively engaged in research on genetics and breeding of sugarbeets.

While a student at Kharkov University, Viacheslav Savitsky met Helen Kharechko who was also interested in genetics and cytology. They were married in 1926 and as a husband-wife team attained an international reputation as sugarbeet specialists.

In the years of his research in the Ukraine, Savitsky published more than 50 works on genetics and breeding of sugarbeets. While working in the United States, he concentrated on the breeding of monogerm sugarbeets. He was successful in his endeavors and during the first year of his work found plants with single-seeded fruits. Having used generations of these plants for crossing with the best varieties of sugarbeets, Savitsky obtained productive monogerm varieties of sugarbeet. At present, the use of monogerm seeds enables the American farmer to reduce by one-half the former labor requirements for thinning and weeding; it offers the possibility of complete mechanization of field practices in sugarbeet production. This genetic material has been widely distributed among sugarbeet breeders in Europe and the heritable monogerm seed character is being utilized in most countries of the world where sugarbeet is grown as a source of sugar. At present, 90% of the sugarbeet acreage in the United States is planted with monogerm seed.

Savitsky published in the United States more than 20 works treating the genetics of sugarbeets. The main results of his research are summarized in the article by Helen Savitsky in this issue of *The Annals*. Savitsky was an active participant in scientific congresses on genetics and breeding of sugarbeets. He also participated in international genetics congresses. He was a member of numerous scientific societies: The American Society of Sugar Beet Technologists, The American Society of Genetics, The American Genetical Association, The American Society of Agronomy, and The International Organization for Sugar Beet Research.

The prodigious work conducted by Savitsky in the United States and his findings brought great changes in the sugar beet technology in his adopted homeland.

ALEXANDER ARCHIMOVICH

DMYTRO SOLOVEY

(1888–1966)

Dmytro Fedorovych Solovey, a Ukrainian historian and public figure, a full member of the Academy, died on July 9, 1966, in St. Paul, Minnesota.

Dmytro Solovey was born in Sribne, Poltava Province, in a farmer's family on October 23, 1888. He graduated from Kharkov University and completed post-graduate studies at the Chair of the History of Ukrainian Culture headed by Academician Dmytro Bahaliy. He also was trained in statistics while working under the guidance of Hryhory Rotmistrov, the prominent statistician and an active *Zemstvo* worker. Dmytro Solovey was active in the fields of economics, co-operative movement, Ukrainian history, and children's literature. His primary interest was in the research on the colonial status of the Ukraine. Beginning with his student years and till his death Solovey was an ardent fighter for the Ukraine's independence. He was repeatedly persecuted both during the Tsarist and Soviet times.

In 1919, on the initiative of Dmytro Solovey the association "Ukrainian Culture" was founded in Poltava. It had the purpose of disseminating knowledge of Ukrainian culture and of supporting Ukrainian schools which were then oppressed by the occupational regime. In 1918–1920, he was the editor of the journal *Poltavs'kyi kooperator* (The Poltava Co-operationist). He contributed articles on topics related to culture, education, and children's literature to this journal and also to the periodical *Ukrayins'ka kul'tura* (Ukrainian Culture).

In the second half of the 1920's Dmytro Solovey moved to Kharkov, then the capital of the Ukraine. He was employed by the Central Statistical Administration of the Ukraine as the head of its subdivision in charge of

statistics related to special branches of commerce. In 1933–36 he was the head of the subdivision (later department) in charge of the statistics of Ukrainian manufacturing co-operatives. Several articles by Solovey treating statistical and economical subjects appeared in technical publications of the Central Statistical Administration of the Ukraine.

Beginning with 1929, Dmytro Solovey simultaneously worked (after he had defended his thesis) at the Dmytro Bahaliy Institute of Ukrainian Culture until this Institute was liquidated in 1934. He wrote several papers mainly dwelling on the history of economics of the eighteenth and nineteenth centuries, which were published in collections of the Bahaliy Institute, in publications of the Historical Section of the Ukrainian Academy of Sciences edited by Mykhaïlo Hrushevskyy, and in the journal *Chervonyi Shlyakh* (The Red Path).

During the Time of Terror in the second half of the 1930's Dmytro Solovey had to interrupt his scholarly work, as well as his statistical investigations. Beginning with 1936 and until World War II he worked as a teacher of Ukrainian language and literature in the high schools of Kharkov. He published several articles on topics related to education and linguistics in the central pedagogical journal of the People's Commissariat for Education of the Ukrainian SSR. Prior to World War II, Dmytro Solovey published more than 80 works.

After the end of the war, while living in a DP camp in Germany, Solovey organized the publication of mimeographed textbooks for pupils and teachers of Ukrainian schools. He was also active as a teacher and wrote more than 60 articles for Ukrainian periodicals in West Germany. In 1949 Solovey came to the U.S.A. Here he concentrated on the research on the Ukraine's colonial status since 1914. In the years 1951–1966 he wrote more than 80 books and articles related to this subject; the most important are his monographs: *Holhota Ukrayiny* (The Ukraine's Calvary), *Ukrayina v systemi sovjets'koho kolonializmu* (The Ukraine in the System of the Soviet Colonialism), *Polityka KPRS u plyanuvanni rozvytku promyslovosti ta promyslovkh kadriv na Ukrayini* (The CPSU Policy Towards Planning the Development of Industry and Training Skilled Workers in the Ukraine), and *Ukrayins'ka nauka v koloniyal'nykh putakh* (Ukrainian Science in the Chains of Colonialism).

Dmytro Solovey was a member of the Institute for the Study of the USSR and a member of the Association of Workers in the Field of Ukrainian Children's Literature. He never belonged to political parties but in his writings ardently promoted democratic principles.

VOLODYMYR P. TIMOSHENKO

(1885–1965)

On August 15, 1965, Volodymyr Prokopovych Timoshenko, a prominent Ukrainian economist, died in Palo Alto, California. He was a full member of the Academy, the head of its Economics and Law Section, and a member of the Editorial Committee of *The Annals*.

Volodymyr P. Timoshenko was born on April 25, 1885, in the village of Bazylivka, Konotop County, Chernihiv Province into a family of Cossack ancestry. In 1902 he was graduated from the gymnasium in Romny, and in 1911 from the Economics Department of St. Petersburg Polytechnical Institute. During his student years he was a member of the Ukrainian Student Organisation in St. Petersburg. In 1911, Timoshenko was appointed to a position at the Economics Department of the Railroad Administration. Later he worked at the Ministry for Agriculture having participated in the economical investigation of the Fergana region. During the World War I he was assigned to serve at the Ministry for Commerce and Industry.

In December 1917 he came to the Ukraine and accepted the position of a consultant at the Ministry of Commerce of the Ukrainian People's Republic. In 1918 he was invited by Professor Mykhaylo Tuhan-Baranovsky, chairman of the Social Sciences Department of the Ukrainian Academy of Sciences, to head the Institute of Economic Conjuncture under the auspices of the Academy.

In 1919, he was assigned as an expert in economics to a diplomatic mission of the Ukrainian People's Republic to the Paris Peace conference.

In 1922 Timoshenko began his scholarly and educational activities in Prague. He was granted a professorship at the Free Ukrainian University. His thesis *Cartels and rusts* was published. He also lectured at the Ukrainian Technical Husbandry Institute in Poděbrady and in the Czech Commercial School on economic geography, world economics, conjuncture, finances, and banking.

In 1925 Timoshenko obtained a scholarship from the International Educational Board–Rockefeller Foundation and came to Cornell University, U.S.A. He received his Ph.D. in 1927 for his thesis *Wheat Prices and the World Wheat Market*. (*Memoir* 118, Cornell University, Agricul. Exper. Station.) In 1928 Timoshenko became a professor at the University of Michigan, Ann Arbor. In 1930 his work *The Role of Agricultural Fluctuations in the Business Cycle*, was published by the University, and in 1933–*World Agriculture and the Depression*. Both works appeared in the series *Michigan Business Studies*. In 1928–31 Timoshenko was also associated with the Food Research Institute, Stanford University, Calif. and published his studies in publications of this Institute, such as "Danube Basin as Producer

and Exporter of Wheat," *Wheat Studies of the Food Research Institute*, (vol. VI, No. 5, March 1930, 100 pp.). His monograph *Agricultural Russia and the Wheat Problem* appeared as a separate publication of Stanford University. An abbreviated version of this work, under the title "Russia as Producer and Exporter of Wheat" was published in *Wheat Studies*, (vol. VIII, No. 5-6, 1932). In 1933 Timoshenko became a member of Roosevelt's Brain Trust. In 1934-1936 he worked as the Senior Agricultural Economist at the U.S. Department of Agriculture. In 1936 Timoshenko returned to his educational and research work at Stanford University. Beginning with 1950 he was professor emeritus and consultant there.

Volodymyr Timoshenko was a member of the American Economic Association, the American Farm Economic Association, the Royal Economic Society (England), Shevchenko Scientific Society, and others. He was one of the founders of the Ukrainian Academy of Arts and Sciences in the United States having cooperated closely with the Academy's first president, Michael Vetukhiv. His article "M. I. Tuhan-Baranovsky and Western European Economic Thought" was published in *The Annals*, vol. III, No. 3 (9), 1954. In addition to his scientific studies, Timoshenko published numerous articles in many languages on economic topics.

The works of Volodymyr Timoshenko mostly devoted to the problems of agricultural economics and fluctuation cycles are based on a thorough empirical and statistical analysis. He contributed generously to the science of world economics and to the study of Ukrainian economics.

IWAN ZAMSHA

PAVLO ZAYTSEV

(1886-1965)

A distinguished student of Shevchenko, Pavlo Zaytsev, was born on September 23, 1886, in the Slobidska Ukraine. He graduated in 1913 from St. Petersburg University, having completed the courses of studies at the historical-philological and law departments. Already in his student years he began to search for materials related to Shevchenko and to study them. His first publication about Shevchenko's poems was based on the study of autograph copies and was published in collections of the Kharkov Historical-Philological Society in 1913. In this study Zaytsev's purpose was to check critically Shevchenko's texts as they appeared in the first complete edition of *Kobzar* (1907 and 1908) edited by Vasyly Domanytsky. Zaytsev took as a basis the 1860 text corrected by Shevchenko himself, the so-called Tsvitkovsky copy and corrected changes in texts made by Domanytsky, who took them arbitrarily from various autograph copies. Unfortunately, Zaytsev published

only a part of his texts in the first and only one edition of *Kobzar* which appeared just before World War I. In the years before the war Zaytsev began to publish widely in journals and newspapers results of his research on Shevchenko and new materials which he found. Two of these publications are worth of mentioning. One is the article "Novoe o Shevchenko" (A New Data on Shevchenko) in *Russkiy Bibliofil* (The Russian Bibliophile), No. 1, 1914, about drawings and notes in Shevchenko's album from his last trip to the Ukraine in 1859. Zaytsev's second important article of this period is about Shevchenko's first love, published in *Vestnik Evropy* (The Herald of Europe), No. 2, 1914. This article, based on a fine analysis of early Shevchenko poems, for the first time revealed a relation between the poem "Chernytsi Mar'yani" (To Mar'yana the Nun) and Shevchenko's first romantic episode. Zaytsev himself was fond of this essay and in a few years published its Ukrainian version in the form of a booklet with a romantic vignette by George Narbut on its book cover (*Oksana. Pershe kokhannya Shevchenka* (Oksana. Shevchenko's First Love), Kiev, 1918).

Zaytsev's literary and scholarly work flourished in Kiev at the time of the Ukrainian Renaissance of 1917-18. In addition to his active participation in public and political events, he was also foremost in cultural and scholarly organizational work on a large scale. He was associated with the Ukrainian Academy of Sciences from its very beginning in November, 1918, and worked simultaneously as a member of the Commission for Publication of Modern Ukrainian Literature and as the editor of the Literature Section of the Commission for Compiling the Biographic Dictionary of Ukrainian Public Figures and Cultural Workers. The Historical-Philological Department of the Academy entrusted him with the editing of the *Zapysky* (Annals) of this Department. The *Drukar* Publishing House invited him to edit its literary publications, such as the first collections of poems by Pavlo Tychyna, Mykola Zerov, and others. His greatest service was the organization and editing of the historical journal *Nashe mynule* (Our Past). Among other materials, he published there a complete text of Mykola Kostomarov's *Knyhy bytiya ukrayinskoho narodu* (Books of Genesis of the Ukrainian People). He added his article on this work which reflected ideas of the St. Cyril and Methodius Brotherhood (*Nashe mynule*, No. 1, 1918).

In 1920 Zaytsev emigrated to the West and a new period in his life began. During the interval between the two world wars Zaytsev while professor at the University of Warsaw and associate at the Ukrainian Scientific Institute in Warsaw concentrated on the preparation for publication of the monumental complete edition of Shevchenko's works in 16 volumes. Zaytsev outlined the general plan of this edition, prepared poetical texts for publication and all the extensive supplements, such as variants and commentaries to the correspondence and diary; he wrote explanatory articles

to individual volumes and a well-grounded biography of Shevchenko. The latter was not published in time, because the whole project was interrupted by World War II. This biography was published separately in 1955 in Germany by the Shevchenko Scientific Society. The editing of the complete collection of Shevchenko's works gave Zaytsev an opportunity to write and publish two interesting works. One was the book, *Shevchenko and the Poles*, in Polish and the other was the very important article "Yak tvoryv Shevchenko" (Shevchenko's Creative Process). The latter is a brilliant achievement based on Zaytsev's thirty years research on the writings by the genius.

The end of World War II marked the beginning of the last period in Zaytsev's life. Uprooted from his cultural milieu of Warsaw, separated from his family and close relatives, he nevertheless tried to use his erudition for practical purposes. His broad plans of a new edition of Shevchenko's works and of memoirs on Shevchenko were not realized due to inappropriate conditions and insufficient funds. Yet Zaytsev participated in the work of the Ukrainian Free Academy of Sciences as the Head of the Shevchenko Institute. He was also active as a professor of the Ukrainian Free University. He published several well-written memoirs on his contemporaries: Volodymyr Vynnychenko (*Ukrayins'ka Literaturna Hazeta*, Munich), Oles', Olexander Koshyts, and Olexander Lototsky (*Ukrayins'ke Slovo*, Blomberg). This was a partial fulfillment of his plan to write a book of memoirs on his distinguished contemporaries. This plan, as well as many others, was interrupted by his death on September 2, 1965, resulting from an accident on a street in Munich.

W. M.

In Memory of Friends of the Academy

ZAKHARIY VASYLYOVYCH BORISPOLETS

(1895–1966)

Zakhariy Borispolets, a civil engineer, born in the Chernihiv Province, on September 5, 1895. In 1920 he left for Jugoslavia where he studied civil engineering. He came to the United States in 1950. While living in New York City, he supported the work of the Academy and bequeathed to it all his savings amounting to several thousand dollars. Z. Borispolets died on October 24, 1966.

IWAN ZAMSHA

YELISEY PROKHOROVYCH KRYVOBOK

(1898–1964)

Yelisey Kryvobok, a hydraulic engineer, born June 27, 1898 in the Poltava Province. He was an officer in the Ukrainian Army and left the Ukraine in 1920. In 1950 he came to the United States and lived in Phoenix, Arizona. Kryvobok was active in civil organizations. Before his death (October 21, 1964) he donated to the Academy \$3,000.

IWAN ZAMSHA

Chronicle

During the period from July 1, 1963 to December 31, 1967, the following lectures were delivered at the plenary sessions of the Academy:

- October 12, 1963 Conference inaugurating the 1963–64 academic year
- Alexander Archimovich: “Last Year’s Activities of the Academy”
 - George Y. Shevelov: “The Ukrainian Language as Reflected in the Reconstructed Common Slavic System of Intonation”
- October 20, 1963 Conference commemorating the fiftieth anniversary of Lesya Ukrayinka’s death
- Jurij Lawrynenko: “The Political and Ideological Paths of Lesya Ukrayinka”
 - Isidora Kossach-Boryssova: “Lesya Ukrayinka in her Family”
 - Petro Odarchenko: “New Studies of Lesya Ukrayinka’s Writings”
- October 26, 1963 Memorial meeting honoring the memory of the late Ivan Bahryanyi, sponsored by the Academy and the Union of Ukrainian Writers, *Slovo*
- Hryhory Kostiuk: Opening Address
 - *Ave Maria* performed by Hanna Scherey, Maria Cisyk, piano
 - Recitations of Bahryanyi’s works: Larisa Kukrytska-Lysniak and Wolodymyr Lysniak
 - “Ivan Bahryanyi speaking at the microphone”: a recorded interview given by Bahryanyi to a correspondent of Radio Liberty in New York, 1959
- November 2, 1963 Conference commemorating the thirtieth anniversary of the famine of 1932–33 in the Ukraine and U.S.S.R.
- Alexander Archimovich: “Grain Yield in the Ukraine and U.S.S.R. in 1932–33”
 - Mykola Haliy: “Famine in the Ukraine in 1932–33 as Reflected in the World Press”
- December 7, 1963 Ivan Lysiak-Rudnytsky: “The International Congress on Slavic History in Salzburg in July, 1963; Observations and the Summary of the Speaker’s Paper Delivered at the Congress: ‘The Ukraine Between East and West’ ”
- December 8, 1963 Conference commemorating the fiftieth anniversary of Lesya Ukrayinka’s death
- Isidora Kossach-Boryssova: Introductory Remarks

- Joseph Hirniak: Recitation from the unpublished work by Olga Kosach-Kryvnyuk, *Lesya Ukrayinka. Chronology of Life and [Creative] Work.*
 - The Slovo Theatre directed by Olympia Dobrovolska presented recitations of Lesya Ukrayinka's lyrical poems. Selections by Jurij Lawrynenko, musical accompaniment—Andriy Shul, recitations—Oryssa Andreyko, Mariyka Hlukha, Lidia Krushelnytska, Olha Kiritchenko, Lesya Lawrynenko, and Roma Shuhan
- December 22, 1963 The same program was presented at the Ukrainian National Home in New York City
- December 29, 1963 Conference commemorating President John F. Kennedy
- Iwan Zamsha: Opening Address
 - Vsevolod Holubnychy: "The Political and Social-Economic Ideas of President John F. Kennedy and His Activities"
- February 15, 1964 Conference commemorating Alexander Choulguine
- Levko Chikalenko: "Reminiscences of Alexander Choulguine"
 - Borys Rzepecky: "Alexander Choulguine as the Minister of Foreign Affairs of the Ukrainian People's Republic"
 - Vasyl Markus: "The Last Ten Years of Alexander Choulguine's Life and Work"
- February 16, 1964 Conference devoted to the 70th anniversary of the Ukrainian daily *Svoboda*
- Ivan Korovytsky: "The Ukrainian Daily *Svoboda* (1893–1963)"
 - Anthony Dragan: "*Svoboda* and Its Tasks"
 - Semen Demydchuk: "*Svoboda* and the Ukrainian Immigration"
- March 22, 1964 Conference honoring Professor Dmitry Čiževsky on the occasion of his 70th birthday
- George Y. Shevelov: Opening Address.
 - Wasyl Rudko: "Čiževsky's Philosophical Works"
 - Jurij Lawrynenko: "Dmitry Čiževsky as a Literary Scholar"
- April 12, 1964 Conference devoted to the 400th anniversary of Shakespeare's birth
- Jurij Lawrynenko: Opening Address
 - Oleh Zujewskij: "Shakespeare in Ukrainian Translations"

- Joseph Hirniak: Recitator of Shakespeare's works translated by Yuri Klen and Todos' Os'machka
- April 19, 1964 Conference devoted to the 100th anniversary of Olha Kobylanska's birth, sponsored by the Academy and the World's Federation of Ukrainian Women
- Natalia Pazuniak: "Psychological Development of Olha Kobylanska"
 - The *Slovo* Theatre directed by Olympia Dobrovol'ska presented recitations of Kobylanska's works by Olha Kiritchenko and Lidia Krushelnyska
- May 20, 1964 Conference honoring Borys Martos on the occasion of his 85th birthday
- Alexander Archimovich: "Highlights of Martos' Life"
 - Iwan Zamsha: "Martos' Part in the Cooperative Movement in the Ukraine"
 - Ivan Bakalo: "Martos' Work in the Institute for the Study of the USSR in Munich"
 - Jakiw Zozula: "Political Activities of Martos" Reminiscences on various aspects of Martos' work and life: Joseph Hirniak, Vsevolod Holubnychy, Rev. Ihor Hubarzhevsky, Mykola Zajcew, Z. Ivasyshyn, Volodymyr Kedrovsky, Jurij Lawrynenko, Borys Rzepetsky, and Iryna Shokh
- May 24, 1964 Conference commemorating Volodymyr Doroshenko
- Natalia Doroshenko: "My Brother Volodymyr Doroshenko: Memoirs"
 - Bohdan Zahajkewycz: "Doroshenko's Activities in Lviv"
 - Wolodymyr Mijakowskyj: "Volodymyr Doroshenko in Exile"
- May 31, 1964 Conference devoted to Academician Ivan Horbachevsky on the occasion of the 110th anniversary of his birth
- Mychaylo Slachtychenko: "Highlights of Ivan Horbachevsky's Life"
 - Mykola Zajcew: "Ivan Horbachevsky as a Scientist and Teacher"
- The Museum-Archives arranged the exhibit showing Horbachevsky's works and documents
- November 15, 1964 Alexander Archimovich: "Activities of the Academy in 1963-64"

- December 19, 1964 Conference honoring the memory of Maksym Ryl'sky
- George Y. Shevelov: "Introductory Remarks"
 - Jurij Lawrynenko: "Ryl'sky's Lyric and Epic Poems"
- February 28, 1965 Omeljan Pritsak: "Political Geography of the Eurasian Steppe of the 12th Century and its Reflection in the Igor Tale"
- May 1, 1965 Omeljan Pritsak: "The Date of the Composition of "Igor Tale"
- May 31, 1965 Ihor ševčenko: "The Poem on Iconoclasts in the Psalter of the Atonian Pantocrator Monastery"
- June 13, 1965 Olexander Ohloblyn: "My Work as an Ukrainian Historian"
- October 17, 1965 Alexander Archimovich: "Highlights of the Academy's Activities in 1964-65"
- November 14, 1965 Grand Conference on the Occasion of the 20th Anniversary of the Ukrainian Academy of Arts and Sciences
- Alexander Archimovich, President of the Ukrainian Academy in the United States: "The Ukrainian Academy in its Historical Development"
 - Jaroslav B. Rudnyčyj, President of the Ukrainian Academy in Canada: "The Cultural Assimilation or Integration of the Ukrainian Diaspora and the Role of Ukrainian Scholarship"
 - Iwan Zamsha, Secretary of the Ukrainian Academy: "On the Assistance Rendered to the Academy by the Ukrainian Emigres from Its Beginning to the Present Time"
- December 18, 1965 Omeljan Pritsak: "The Author of the Igor Tale"
- December 28, 1965 Conference devoted to the 100th anniversary of Mykhaylo I. Tuhan-Baranovsky's Birth
- Iwan Zamsha: "Tuhan-Baranovsky in the Ukraine in 1917-1919"
 - Lubomyr Koval: "Tuhan-Baranovsky as an Economist"
 - Myron Melnyk: "Long Cycles in the American Economy"
 - Vsevolod Holubnychy: "The Place of Tuhan-Baranovsky's Theory of Value in the History of Economic Thought"
 - Borys Martos: "Reminiscences of Tuhan-Baranovsky"

- February 19, 1966 Conference commemorating Dmytro Antonovych
- Borys Martos: "The Political and Public Activities of Dmytro Antonovych"
 - Wolodymyr Mijakowskyj: "The Scholarly and Cultural Activities of Dmytro Antonovych"
- February 26, 1966 Omeljan Pritsak: "*Rus'*, the Whole *Rus'*, and the *Rus' Land*"
- March 5, 1966 Conference honoring the memory of Levko Chikalenko on the occasion of the first anniversary of his death
- Alexander Archimovich: "Opening Address"
 - Alexander Dombrowsky: "The Participation of Levko Chikalenko in the Work of the Ancient History Section"
 - Borys Martos: "Political Activities of Levko Chikalenko"
 - Tatiana Iwaniwsky: "Chikalenko as an Archeologist"
 - Borys Rzepecky: "The Life and Times of Levko Chikalenko"
- March 13, 1966 The joint conference of the Ukrainian Academies in the U.S.A. and Canada honoring the 20th anniversary of the Ukrainian Academy in the free world
- Damian Horniatkevych: "The Artistic Work of Taras Shevchenko"
- March 20, 1966 George Shevelov: "The Modern Ukrainian Literary Language from the Typological Standpoint"
- April 30, 1966 Alexander Granovsky: "The Contribution of Ukrainians to the Life and Culture of the United States and Canada"
- November 12, 1966 Omeljan Pritsak: "'Non-wild' and 'Wild' Polovtsians'"
- November 20, 1966 Alexander Archimovich: "A Review of the Academy's Work in 1965-66"
- December 11, 1966 Grand Conference devoted to the 125th anniversary of Mykhaylo Drahomanov's birth
- Alexander Archimovich: "Opening Address"
 - Petro Odarchenko: "Drahomanov as a Student of Ukrainian Folklore"
 - Stepan Ripetsky: "Drahomanov's Ideas in the Western Ukraine"
 - Wolodymyr Mijakowskyj: "Acknowledgements to the Widow and Daughter of Svitozor Drahomanov for the Transfer of his Archives to the Academy"

- December 18, 1966 Grand Conference devoted to the centennial of Mykhaylo Hrushevsky's birth, sponsored by the Academy, the Historical Section of the Shevchenko Scientific Society, and the Ukrainian Historical Society
- Olexander Ohloblyn: "Mykhaylo Hrushevsky against the Background of his Time"
 - Omeljan Pritsak: "Historiosophy of Mykhaylo Hrushevsky"
 - Jaroslaw Pelenski: "The Social and Political Ideas of Hrushevsky"
 - Lubomyr R. Wynar: "The Lviv Period of Hrushevsky's Life and Work"
- February 18, 1967 Conference commemorating the 10th anniversary of Arnold Margolin's death
- Joseph L. Lichten: "The Life and Times of Arnold Davydovych Margolin"
 - Borys Rzepecky: "The Jewish Community at the Time of the Ukrainian Revolution and Arnold Margolin"
 - Ihor Wytwycky: "Problems of Statehood of the Ukrainian People's Republic as Viewed by Margolin"
 - Constantine V. Warvariv: "Arnold Davydovych Margolin—the Man and Statesman"
- March 18, 1967 George Y. Shevelov: "Khodkevych, Mitskevych, and Vorobkevych (from the History of Slavic and Ukrainian Family Names)"
- April 16, 1967 Ivan Lysiak-Rudnytsky: "The So-called Rehabilitation of Mykhaylo Drahomanov in the Soviet Union"
- June 24, 1967 Conference devoted to the Khazarian problem
- Norman Golb: "A Khazarian Document"
 - Omeljan Pritsak: "An Evaluation of the Golb Document from a Turkological and Historical Point of View"
- October 21, 1967 Alexander Archimovich: "A Review of the Academy's Work in 1966-67"
- November 11, 1967 Plenary conference with the participation of the Biological Section
- Alexander Archimovich: "Botanical and Geographical Changes in the Distribution of the Field Crops of the Ukraine During the Last Fifty Years"

- November 25, 1967 Omeljan Pratsak: "The Early Christendom in the Ukraine"
- December 3, 1967 Grand conference devoted to the 50th anniversary of the Ukrainian Revolution and the Rebirth of Ukrainian Statehood
- Alexander Archimovich: "Opening Address"
 - Jakiw Zozula: "The Second Universal of the Ukrainian Central Rada and its Legal and Historical Significance"
 - Borys Martos: "The Significance of the Third Universal of the Ukrainian Central Rada"

The Museum-Archives arranged an exhibit of historical documents

- December 16, 1967 Grand conference devoted to the 125th anniversary of Mykola Lysenko's birth sponsored by the Academy and the Theological Institute of the Ukrainian Orthodox Church in the United States
- Vasyl Zavitnevych: "Life and Creative Work of Mykola Lysenko"
 - Songs and operatic arias by Lysenko performed by Hanna Scherey, Mykhaylo Olkhnovyi, and Yuri Fedoriv; Eugene Krachno, piano

The following lectures were held under the auspices of the sections, institutes, and commissions of the Academy in New York City:

LITERARY AND PHILOLOGICAL SECTION

- August 30, 1963 ● Olga Voytsenko: "The Ninth International Congress of the Federation of Modern Languages and Culture"
- Moshe Altbauer (the University of Jerusalem) presented a summary of his paper delivered at the Ninth International Congress of the Federation of Modern Languages and Culture
- December 15, 1963 Wira Wowk: "Portuguese—Brazilian Modern Poetry"
- February 28, 1964 A Dokiya Humenna evening arranged by the Academy and the Union of Ukrainian Writers *Slovo* on the occasion of the 40th anniversary of the writer's work
- Hryhory Kostyuk: "Humenna as a Writer"

- Dokiya Humenna read her essay "Some Secrets of my Creative Work" and the short story "Two Roubles" published in 1924
 - Recitations of Humenna's writings: Olha Kiritschenko and Lidia Krushelnytska
- May 17, 1964 Ihor Hubarzhevsky: "The Policy towards the Ukrainian Language in the Ukrainian SSR in the Course of the Last Ten Years"
- March 21, 1965 An Evening of Shevchenko Poetry
- Yuriy Lawrynenko: "Introductory Remarks"
 - Joseph Hirniak: Poetry reading
- March 27, 1965 Wadym Lesytsch: "Contacts with Modern Polish Poetry (From a Translator's Workshop)"
- December 11, 1965 Conference contemplating Ukrainian translations of Albert Camus' works
- Yuriy Lawrynenko: "Introductory Remarks"
 - Oksana Solovey spoke on some aspects of Camus' creative work and recited her translations of Camus' short stories
- January 29, 1966 A Wira Wowk evening arranged by the Academy and the Union of Ukrainian Writers *Slovo*
- Hryhory Kostiuk: "Introductory Remarks"
 - Yuriy Lawrynenko: "The Poetry of Wira Wowk"
 - Yuri Tarnavsky: "Translations of Pablo Neruda's Poems by Wira Wowk"
 - Wira Wowk recited her ballads and translations
- May 28, 1966
- Hryhory Kostiuk: "New Materials on the Life of Oles Dosvitniy"
 - John V. Sweet: "The Flight of Oles Dosvitniy to America in 1916 and his Return to the Ukraine"
- March 25, 1967 Ihor Hubarzhevsky: "The Principles that have Guided the Preparation of the Ukrainian Polytechnical Dictionary Compiled by the Institute of Ukrainian Scientific Terminology"
- April 2, 1967
- Petro Odarchenko: "The Epistolary Heritage of Lesya Ukrayinka"
 - Lubov Drashevskya: "The Preparation for Publication of Olha Kosach-Kryvnyuk's Work: 'Lesya Ukrayinka. Chronology of Life and Creative Work'"
- November 24, 1967 Juriy Bojko-Blokhin: "Vasyl Simonenko as a Poet"

SHEVCHENKO INSTITUTE

February 23, 1964 Olexa Powstenko: "Ukrainian Architecture in Shevchenko's Drawings"

Conferences on the occasion of the 150th anniversary of Shevchenko's birth

March 8, 1964 ● Petro Odarchenko: "Shevchenko in the Writings of Western Authors"

● Wolodymyr Mijakowskyj: "Fifteen Years of Shevchenko Studies in the Ukrainian Academy of Arts and Sciences"

March 14, 1964 Mark Antonovych: "Olexander Konysky as Shevchenko's Biographer"

March 21, 1964 George Y. Shevelov: "Shevchenko and the Literary Trends of 1840's"

March 28, 1964 Petro Mehyk: "Shevchenko's Artistic Work against the Background of his Time"

April 25, 1964 ● Osyp Kravchenyuk: "Shevchenkianism in the United States and Canada"

● Olexa Powstenko: "The Nativity Church in Podol, Kiev"

June 19, 1964 Yar Slavutych: "Shevchenko's Poetry"

March 6, 1965 ● Borys Martos: "Shevchenko's Social and Political Ideas"

March 13, 1965 Stepan Ripetsky: "Kiev and Lviv in 1914 under the Banner of Shevchenko's Ideas"

The Museum-Archives arranged the exhibit of original photographs showing the ceremony commemorating Shevchenko in Lviv on June 27, 1914; on loan from the archives of The Brotherhood of Ukrainian Sich Riflemen

March 12, 1966 ● Olexa Powstenko: "The Icon of the Savior in Mezhyhiria Monastery as Reflected in Shevchenko's Works"

● Wolodymyr Mijakowskyj: "Shevchenkianism in the Academy Museum-Archives"

March 11, 1967 ● Volodymyr Odaynyk: "Shevchenko as a Humanitarian"

● Wolodymyr Mijakowskyj: "The Work of the Shevchenko Institute"

October 28, 1967 Conference on occasion of the 20th anniversary of the Shevchenko Institute

- Jurij Lawrynenko: "Opening Remarks"
- Wolodymyr Mijakowskyj: "Pavlo Zajcev as a Student of Shevchenko"

HISTORICAL SECTION

- November 7, 1964 ● Michael Luther: "Lenin's Theory of Nationality Policy"
- Vasył Omelchenko: "Professor Natalya Polonska-Vasylenko (on the Occasion of her 80th Birthday and the 55th Anniversary of her Work as Scholar and Educator)"
- Vsevolod Holubnychy: "Information on Microfilms Obtained from Helsinki of Unpublished Letters of Hetmans Demyan Mnohohrishnyi and Petro Doroshenko"
- April 3, 1965 Bohdan Korchmaryk: "The Significance of Kiev in the Religious and Cultural Life of Muscovia in the Period of Hetman Ukraine"
- October 2, 1965 Ivan Lysiak-Rudnytsky: "Impressions from the International Historical Congress in Vienna"
- April 17, 1966 Olexander Ohloblyn: "The Iconography of Hetman Ivan Mazepa"
- Vasył Omelchenko: "Remarks on the Occasion of the 15th Anniversary of Dmytro Doroshenko's Death"
- June 5, 1966 Mykhaylo Slachtychenko: "On the History of the Ukrainian Free University in Prague"
- November 19, 1966 John V. Sweet: "Japanese-Ukrainian Relations in 1905-1945"
- February 19, 1967 Ihor Hurin: "The Fate of the Polabians"

ANNUAL CONFERENCES OF UKRAINIAN HISTORIANS AND SOCIAL SCIENTISTS

- May 10, 1964 The third conference, devoted to the problems of the medieval period in Ukrainian history
- George Y. Shevelov: "On the Origin of the East Slavic Languages"
 - Yaroslav Pasternak: "The Origin of the Kievan State in the Light of Archeology"
 - Nicholas Chubaty: "The Beginning of the Ukrainian Church Organization"
 - Myroslav Labunka: "Yuriy Drohobyt'sky, a Renaissance Man, against the Background of Italian-Slavic Relations"

- June 12, 1965 The fourth conference, devoted to the problems of the Cossack and Cossack-Hetman periods of Ukrainian history
- Olexander Ohloblyn: "Opening Address"
 - Lubomyr Wynar: "The Beginning and Early Activities of the Ukrainian Cossacks"
 - Omeljan Pritsak: "The Etymology and Content of the Word "Cossack"
 - Bohdan Korchmaryk: "The Kiev-Mohyla Academy in the Cossack-Hetman Period"
- June 17 and 18, 1967 The fifth conference, devoted to the problems of history of Galicia under the rule of Austrian Empire in 1772-1918
- Omeljan Pritsak: "Opening Address and Eulogy of recently deceased Ukrainian historian Ivan Kryp'yakevych"
 - Myroslav Labunka: "The Policy of Austrian Enlightened Absolutism and the Ukrainians of Galicia"
 - Ivan Lysiak-Rudnytsky: "Ukrainian Political Thought in Galicia One Hundred Years Ago"
 - Leonid Rudnytsky: "The Evolution of Ivan Franko's Weltanschauung as Reflected in his Work as a Translator"
 - Stepan Ripetsky: "The Political Thought of the Ukrainian Sich Riflemen"

ANCIENT HISTORY SECTION

- November 9, 1963 Alexander Dombrowsky: "Topics Related to Ancient History in Lesya Ukrayinka's Works"
- December 21, 1963 Neonila Kordysh-Holovko: "The Survivals of Matriarchate in the Ukrainian Wedding Rites"
- February 2, 1964 Tatiana Iwaniwsky: "The Origin of the Saltiv Culture According to Recent Research"
- April 12, 1964
- Alexander Dombrowsky: "Ten Years of Work of the Ancient History Section"
 - Zenowij Lysko: "Ancient Elements in the Ukrainian Folk Songs"
- September 27, 1964 George Perchorowycz: "Northern Pevkins (Celts) in Volhynia"
- February 14, 1965 Tatiana Iwaniwsky: "Ways of Life in Ukrainian Territory in the First Half of the First Millenium as Revealed by Archeological Data"

- April 11, 1965 Alexander Dombrowsky: "Concerning the Anthropogeography and Geopolitics of the Ancient Ukraine"
- November 7, 1965 Alexander Dombrowsky: "The Literary Form of Herodotus' 'Scythia'"
- June 19, 1966 George Perchorowycz: "Concerning the Genesis of the Name 'Polianians-Polaks'"
- February 5, 1967 P. A. Zurayev: "The Cimmerians and Scythians, and their Campaign Against Near East"
- May 20, 1967 Conference devoted to the 100th Anniversary of Mykhaylo Hrushevsky's Birth
- Alexander Dombrowsky: "Herodotus' 'Scythia' in Hrushevsky's *History of Ukraine-Rus'*"
- December 10, 1967 Alexander Dombrowsky: "On the Problem of Folklore in the Ancient Ukraine"

THE LEVKO CHIKALENKO ARCHEOLOGICAL AND ANTHROPOLOGICAL INSTITUTE

- November 13, 1966 The first conference of the Institute commemorating Vincent Khvoyka
- Alexander Archimovich: Opening Address
 - Omeljan Pritsak: "Remarks on the Tasks and Purposes of the Institute"
 - Neonila Kordysh-Holovko: "Vincent Khvoyka as a Student of the Paleolithic Age and of the Trypillian Culture"
 - Tatiana Iwaniwsky: "Excavations of Burial Sites and of Ancient Kiev Conducted by Khvoyka"
- November 4, 1967 Roman Ishchuk: "Physiographic Peculiarities of the Ukrainian Territory and Their Impact on the History of Ukrainian People"
- November 26, 1967 George Perchorowycz: "The Site of the Battle Between Bozh (the Antes) and Vinitar (the Goths) in 374 A.D."

COMMISSION FOR STUDY OF THE POST-REVOLUTIONARY UKRAINE AND
THE SOVIET UNION

- October 31, 1964 Ivan Bakalo: "Nationality Policy of the CPSU in the Field of Education"
- December 20, 1964 Petro Stercho: "Relations Between Slovaks and Carpathian Ukrainians in 1938-39"
- May 22, 1965 Yaroslav Bilinsky: "The New Soviet Government and Old Problems, the Ukrainian Problem in Particular"

- October 24, 1965 Vsevolod Holubnychy: "Reforms Introduced by Premier Kosygin"
- November 20, 1965 Ivan Bakalo: "Skilled Workers and Professionals in the USSR and the Ukraine"
- January 15, 1967 Oleh Fedyshyn: "The Communist International in the Period of Conflict Between the USSR and China"
- February 11, 1967 Taras Hunchak: "Boundaries of the Ukraine as a Critical Factor in the Soviet-Polish Relations"
- March 12, 1967 Andriy Moskalenko: "The Partisan Movement in the Ukraine, 1921, Led by Nestor Makhno"
- December 9, 1967 Joint conference with the Commission for the Establishment of the Facts and Dates of the 1917-1920 Ukrainian Liberation Struggle Taras Hunchak: "Simon Petlyura and the Jewish Problem at the Time of the Ukrainian Revolution"

THE COMMISSION FOR THE ESTABLISHMENT OF THE FACTS AND DATES
OF THE 1917-1920 LIBERATION STRUGGLE

- November 3, 1965 The first conference of the Commission
- Averkiy Honcharenko (the officer in command of defense of the Town of Bakhmach in 1918): "The Battle at Kruty"
 - Ivan Honcharenko (the commanding officer of the students' company): "The Students' Company in the Battle at Kruty"
- February 5, 1966 Nicholas Chubaty: "Reminiscences of an Active Delegate to the Kiev Festival of Reunification"
- January 28, 1967 Borys Martos: The State of Ukrainian Cause on the Eve of Revolution of 1917"

COMMISSION FOR STUDY OF THE HISTORY OF SOCIAL THOUGHT IN THE UKRAINE

- January 25, 1964 Eugene Malaniuk: "Alexey Tolstoy, the Great-grandson of a Hetman"
- March 1, 1964 Eugene Ziblikevych: "The Vyacheslav Lypynsky Research Institute in Philadelphia and its Archives"
- April 5, 1964
- Borys Martos: "The Significance of Mykhaylo Tuhan-Baranovsky in the Development of Ukrainian Cooperation"
 - Iwan Zamsha: "On the Scholarly and Educational Activities of Mykhaylo Tuhan-Baranovsky in the Ukraine and his Impact on the Development of the

Ukrainian Cooperation, Particularly on the Ukrainian Cooperative Centre"

April 18, 1964

Petro Brok: "Some Polish *Khlopomany*"

November 6, 1965

Roman Legedza: "Trends and Influences Reflected in the Program of the Cyril and Methodius Brotherhood"

BIBLIOGRAPHICAL SECTION

December 13, 1964

Pavlo Dubrivny: "Union for the Liberation of the Ukraine and its Cultural Activities (1914-1918)"

January 16, 1965

Stepan Ripetsky: "Literature on the Ukrainian Sich Riflemen and an Attempt at Compiling a Bibliography"

January 23, 1963

Mykhaylo Shlyakhtychenko: "The Publisher 'Siyach' Attached to the Ukrainian Pedagogical Institute in Prague"

May 14, 1966

Bohdan Zahajkewycz: "Ten Years of Ukrainian Publishing Activities in Poland, 1956-1966"

BIOLOGICAL SECTION

October 18, 1963

Ivan Basilevich: "The Problem of Aging"

November 21, 1964

Serhij Krasheninnikov: "Impressions of the First International Parasitological Congress in Rome"

May 29, 1965

Natalia Ossadcha-Janata: "Insecticide Plants in Folk Medicine in the Ukraine"

June 4, 1966

Excursion to the Bronx Botanical Garden; guides: Alexander Archimovich, Natalia Ossadcha-Janata, and Elizabeth Hall.

PHYSIC, CHEMISTRY, MATHEMATICS, AND TECHNOLOGY

November 17, 1963

Mykola Zajcew: "The Influence of Chemical Processes Involved in the Production of Nutritious Fats on Their Health Value and Taste"

December 5, 1964

Mykola Zajcew: "Water Pollution in Industrial Countries"

May 16, 1965

Petro Hrycak: "On the Astrophysical Problem of Determining Satellite Temperature in the Stage of Shadowiness"

December 3, 1966

Mykola Zajcew: "The Problems Involved in Production, Investigation, and Consumption of Some Nutrients in Connection with the Disproportion in their Production and the Growth of the World's Population"

- February 4, 1967 A. Libatsky: "Phase Transitions in Some Colloidal Systems"

PHILOSOPHICAL SECTION

- December 12, 1964 Bohdan Cymbalysty: "The Psychology of Juvenile Delinquents"
- June 6, 1965 Bohdan Cymbalysty: "Consistent Causes of Failures in the Raising of Children"
- February 6, 1966 Ivan Holovinsky: "Etiological, Psychological, and Educational Aspects of Retardation"
- May 7, 1966 Ivan Fizer: "The Interpretation of Literature by Freud's Psychoanalytical Method"
- February 25, 1967 Ivan Fizer: "Schematization—the Esthetic Method or Psychological Necessity"
- December 17, 1967 Bohdan Cymbalysty: "Assimilation and the Problem of Ukrainian Cultural Education of Ukrainian Youth in America"

ECONOMICS AND LAW

- June 7, 1964 Conference devoted to Ukrainian economics
- Iwan Zamsha: "Opening Remarks"
 - Ivan Koropecyky: "The Economic Policy of Investments in the Ukrainian Industry in 1928–1937"
 - Vsevolod Holubnychy: "Research Conducted in Kiev on the National Income and Outgo of the Ukraine"
- October 25, 1964 Vsevolod Holubnychy: "The Economic Aspect of the Conflict between China and the USSR"
- February 14, 1965 Roman Legedza: "The Agrarian Policy in the Ukraine at the Time of German Occupation, 1941–44"
- May 9, 1965 Jakiw Zozula: "Constitutional Acts of the Ukrainian People's Republic and Their Authors"
- March 4, 1967 Vsevolod Holubnychy: "The Economic Aspect of the Nationality Problem in the Soviet Union"
- May 13, 1967 Stephen Prociuk: "The Problems of Settlement and Industrial Development of Siberia"

MUSICOLOGICAL SECTION

- December 1, 1963 Zenowij Lysko: "Ionian Rythms in Ukrainian Folk Songs"
- October 9, 1965 Stepan Maksymiuk: "Solomiya Krushelnytska and Her Recordings"; the lecture was illustrated by Krushelnytska's tapes

GROUP OF FINE ARTS

- June 20, 1965 Conference devoted to the artistic and scholarly activities of Damian Horniatkevych. Papers were delivered by Rose Szul, Olha Sonevytska, and Antin Maluca
- November 27, 1965 Conference on the occasion of the 950th anniversary of the death of Volodymyr the Great
- George Perchorowycz: "The Data of Ya. Hoffman, former Director of the Rivno Museum, on the builder of St. Basil Church in Volodymyr and the Time of its Construction"
- February 12, 1967 Grand Conference commemorating Oleksa Novakivsky
- Damian Horniatkevych: "Opening Address"
 - Rose Szul: "Life and Work of Oleksa Novakivsky"
 - Antin Maluca: "Novakivsky's Art School in Lviv"
- April 22, 1967 Conference on the occasion of the 70th birthday of Lew Getz
- Damian Horniatkevych: "Lew Getz, as the Artist and Man"; the exhibit was arranged of Getz' drawings.

COMMISSION FOR THE STUDY OF THE HISTORY
OF UKRAINIAN-JEWISH RELATIONS

- May 29, 1966 Conference on the occasion of the 80th birthday of Solomon Goldelman, a full member of the Academy residing in Jerusalem
- Alexander Archimovich: Opening Address
 - Lubow Margolena-Hansen: "Solomon Goldelman"
 - Borys Martos: "Goldelman as a Citizen of the Ukrainian People's Republic"
 - Borys Rzepecky: "Goldelman against the Background of Ukrainian-Jewish Relations at the Time of Ukrainian Revolution"
 - Jakiw Zozula: "Goldelman as an Economist"
- May 21, 1967 Vsevolod Holubnychy: "The Role of Jewish Capital in the Development of the Ukrainian Economy in the Age of Capitalism"

COMMISSION FOR THE STUDY OF THE HISTORY
OF UKRAINIAN IMMIGRATION TO THE UNITED STATES

- April 10, 1965 Ivan Sweet: "Ahapiy Honcharenko in New York in 1865-67"

- December 4, 1965 Conference commemorating Semen Demydchuk
- Ivan Sweet: "Semen Demydchuk as Political and Public Figure, and as Journalist"
 - Emil Revyuk: "Reminiscences"
 - Bohdan Zahajkewycz: "Reminiscences"
 - Iwan Zamsha: "Demydchuk's Work in the Commission for the Study of Ukrainian Immigration to the United States"
 - Mary Dushnyk: "Reminiscences on Demydchuk's Work with Ukrainian Youth Born in the United States"

COMMISSION FOR THE PRESERVATION OF THE LITERARY HERITAGE
OF VOLODYMYR VYNNYCHENKO

- February 9, 1964 Levko Chikalenko: "Reminiscences on Vynnychenko"
- March 27, 1966 Conference commemorating the 15th anniversary of Vynnychenko's death
- Hryhory Kostiuk: Opening Address
 - Zinoviy Turkalo: "My Visit to Vynnychenko's Residence *Zakutok* in 1948"
- An exhibit of Vynnychenko's paintings was arranged

ART EXHIBITS

- November 30, 1963 Opening of an exhibition of paintings by Olexa Bulavitsky
- Damian Horniatkevych: Opening Address
 - Olexa Bulavitsky: "On Trends in My Art"
 - Antin Maluca: "The Art of Oleksa Bulavitsky"
- April 4, 1964 Opening of the retrospective exhibit of paintings by Damian Horniatkevych
- Hryhory Kostiuk: Opening Address
 - Greetings:
 - Antin Maluca, The Association of Ukrainian Artists in America
 - Roman Kryshchalsky, The Association of Ukrainian Journalists
 - Olha Sonevytska, Association of Countrymen from the Chortkiv County
 - Wolodymyr Mijakowskyj, the Museum-Archives of the Academy

- November 15, 1964 Opening of two exhibits: fifty-nine oil paintings and 16 water colors by Myroslav Radysh and drawings by Lew Getz
- Damian Horniatkevych: Opening Address
- December 6, 1964 Conference commemorating Myroslav Radysh (1910–1956) was held on the closing day of the exhibit of his artistic works
- Jurij Lawrynenko: Opening Address
 - Jurij Solovij: “Reminiscences and Reflections on Radysh’ Time”
 - Panel discussion: M. Kuzmovych, moderator; Speakers—W. Lasovsky, L. Kuzma, A. Maluca, and B. Pevny
 - Wadym Kipa: Musical Epilogue in Memory of an Artist and Friend (piano)
- December 12, 1964 Opening of two exhibits: seventy-two paintings by Olena Kulchytska (Lviv) and twenty-one paintings by Sofiya Zarytska (Paris)
- Damian Horniatkevch: “Remarks on the Art of Olena Kulchytska and Sofiya Zarytska”
- On the closing day of the exhibition (January 30, 1965) a conference was held
- Damian Horniatkevch: Opening Address
 - Bohdan Zahajkewycz: “Reminiscences of Olena Kulchytska”
 - Antin Maluca: “On the Art of Two Artists”
- February 6, 1965 Opening of an exhibit of paintings by Nadiya Somko and Serhiy Makarenko
- Damian Horniatkevych: “The Art of Nadiya Somko and Serhiy Makarenko”
- May 23, 1965 An exhibit of drawings by the Ukrainian artist Nykyfor (Krynytsya, Ukraine) arranged by the Museum-Archives of the Academy
- Wira Wowk: Opening Address
 - Wadym Lesytsch: “Nykyfor’s Creative Work”
 - Stephen Peltz: “Remarks on Nykyfor’s Life”
- October 8, 1965 Opening of the retrospective exhibits of woodcuts by J. Hnizdovsky
- George Y. Shevelov: Opening Address
 - Damian Horniatkevych: “Hnizdovsky as an Artist”
 - Jurij Lawrynenko: “Hnizdovsky’s Works in Reviews by New York and Paris Art Critics”
 - J. Hnizdovsky: “Remarks”

- November 20, 1965 The Museum-Archives arranged an exhibit "The Young Artists in the Ukraine Today"; engravings and photographs of sculptures by T. Bryzh. and E. Beznisko
- Wira Wowk and Antin Maluca delivered talks on the Art of two artists
- December 4, 1966 Opening of an exhibit of watercolors and drawings by Luboslau Hutsaliuk
- Damian Horniatkevych: Opening Address
 - Jurij Solovij: "On Hutsaliuk's Works"
 - Mykhaylo Kuzmovych: "About the Artist"
 - Luboslau Hutsaliuk: "Remarks"

ARTS EXHIBITS ARRANGED BY THE FRIENDS OF THE ACADEMY

- October 6, 1963 An exhibit of paintings by 33 Ukrainian artists who donated their works to the Academy for its benefit and in payment of the mortgage
- Damian Horniatkevych: Opening Address
 - Marian Kots: "Artists Support the Academy"
- Artists: Mykola Anastasievsky, Katerina Antonovich, I. Bukojemska, Olexa Bulavitsky, Ohla Diadyniuk, Vasyl Doroshenko, Mariya Harasovska-Dachyshyn, J. Hnizdovsky, Damian Horniatkevych, Oleksa Hryshchenko, Anna Kalymon, Anatol Kolomiyets, Olena Kononenko-Trofimovska, Kateryna Krychevska-Rosyndych, Ivan Kuchmak, Ivan Kurakh, Volodymyr Kyvelyuk, Serhij Makarenko, Petro Mehyk, Kost Milonadis, Irena Nestorovych, Roman Pachovsky, Serhij Pastukhiv-Kindzyryavy, E. Rott, Stepan Rozhok, Dioniziy Sholdra, Taras Shumlovych, Valentyn Simyantsev, Andrij Solohub, Jurij Solovij, Nadiya Somko, Nataliya Stefaniv, Bohdan Tytla, R. Vasylyshyn, Yaroslav Vyzhnytsky, Sofiya Zarytska
- March 14, 1965 Friends of the Academy and the 28th Branch of the Ukrainian Women's Association in America (Newark) arranged in Irvington, N. J. an exhibit of paintings by Olena Kulchytska and Sofiya Zarytska

CONCERTS, POPULAR ILLUSTRATED TALKS, AND FILMS

- December 28, 1963 Concert of Roman Prydatkevych, violinist and composer; Hanna Prydatkevych, piano
- April 26, 1964 Concert of Wadym Kipa, piano

- November 15, 1964 Concert presented by two generations of musicians, arranged by Wadym Kipa
Participating artists: O. Bunina-Sarach, Mykola Chumachenko, Isabella Fomenko-Kurdydyk, Ivan Hosh, Wadym Kipa, Theodor Koretsky, Larysa Lawrynenko, Zoia Markovych, Halyna Sarach
- February 20, 1965 Presentation by Yuri Tamarsky, cinema producer, and Slavko Novytsky, assistant producer, of the film *Shevchenko in Washington, D.C.*
- February 27, 1965 An evening of Ukrainian songs
● Tamara Lykholay, lyrical soprano; Ihor Sonevytsky, piano
- October 17, 1965 Concert presented by two generations of musicians on the occasion of the 20th anniversary of the beginnings of the Academy in West Germany and the 15th anniversary of the Academy's work in the United States
● Participating artists: O. Bunina-Sarach, Phillis Falleta, Yuri Keis, Iryna Kipa, Eugene Krachno, Anela Kulinas, Tamara Makovska, Leo Rejnarowycz, Halyna Sarach
- October 28, 1965 F. Lutsiv: "Impressions of my Recent Trip to the Ukraine"
- November 20, 1966 Concert
● Wadym Kipa: "Introductory Remarks"
● Participating artists: Irena Kipa, Svetlana Tonkoshkur-Vozhakivska, Yuri Vozhakivsky, Valentyna ZhylaNalyvayko
- October 21, 1967 Concert arranged by Wadym Kipa
● Participating artists: Hanna Sherey, Eugenia Chapel-ska, Olha Tsehelska, Halyna Sarach, O. Bunina-Sarach, and students of the Nataliya Kotovych Music School in Philadelphia—Olena Kuzemska and Orest Kulynyak
- December 2, 1967 Dr. Jaroslav Turkalo: "Byzantine and Slavic Antiquities in Athos Monasteries. Impressions from my Recent Visit." The lecture was illustrated.

CONCERTS ARRANGED BY THE DOROSHENKO RELIEF COMMITTEE

- May 30, 1965 An evening of Ukrainian songs and music
● Participating artists: Antonina Piddubna-Lysenko and Zoia Markovych; Students: Zoia Graur and Pasha Ma-noylo

- December 5, 1965 Concert presented by the Ensemble of Young Artists
 ● Participating artists: Zoia Graur, Pasha Manoylo, L. Pelekh, Yuri Savytsky, Mark Sidorak, N. Tereshchenko, Yuri Vozhakivsky, A. Yurkiv, Valentyna Zhyla-Nalyvayko; piano: Eugen Krakhno, Zoia Markovych, and E. Waltz
- May 1, 1966 Concert presented by the Antonina Piddubna-Lysenko Music School in Philadelphia
 ● Participating artists: Antonina Piddubna-Lysenko, Pasha Manoylo, O. Stetsenko, N. Tereshchenko, Yu. Trypupenko; Zoia Markovych, piano
- January 29, 1967 Concert arranged by Wadym Kipa
 ● Natalia Ossadcha-Janata: "On the Tasks and Activities of The Doroshenko Relief Committee"
 ● Wadym Kipa: "Introductory Remarks"
 ● Participating artists: Margaret Leskiv, Yuri Savytsky, Hanna Sherey, Mark Sidorak, O. Omelsky, K. Chichka-Andrienko

GROUP OF THE ACADEMY IN DETROIT, MICHIGAN

- December 14, 1963 Conference commemorating Taras Shevchenko sponsored by the Academy group in Detroit and the group of the Shevchenko Scientific Society
 ● Mykhaylo Dmytrenko: "Shevchenko as an Artist"
 ● Pavlo Malyar: "On the Sources of Shevchenko's Esthetics"
- February 8, 1964 Antin Shutka: "Beginnings of Life in the Cosmos"
- March 22, 1964 Pavlo Malyar: "The Period of the Antes in Ukrainian History"
- April 12, 1964 Conference commemorating Taras Shevchenko sponsored by the Academy group in Detroit and the group of Shevchenko Scientific Society
 ● Vasyl Vytvytsky: "Shevchenko's 'Caucasus' in a Musical Interpretation by S. Lyudkevych," musical illustration—Lidiya Terletska, piano
 ● Sophie Parfanowycz: "The Influence of Shevchenko's Health on his Creative Work"
- April 26, 1964 Jaroslaw Zubal: "Game Birds"
- September 1964 until spring 1965 The exhibit *Ukrainian Arts and Crafts* was arranged by Professor Michael Ovchynnyk, head of the Academy group, at the Museum of the Michigan State University

- in Lansing; the exhibited material was lent by Zinowij Lew Melnyk, Maria Ovchynnyk, Yaroslava Sena, Jaroslaw Zubal, and others
- February 14, 1965 Vasyl Moroz: "The Nature of Light According to Modern Science"
- January 22, 1966 Teodor Kalytovsky: "The Extinct and Extinctive Animal Genuses"
- May 7, 1966 Conference sponsored by the Academy group in Detroit and the Ukrainian Historical Society in America
- Lubomyr R. Wynar: "Mykhaylo Hrushevsky's Youth"
- April 9, 1967 The First Franko Scholarly Session
- Roman Brzeski: "The Evolution of Franko's Weltanschauung"
 - Sophie Parfanowycz: "The Impact of Franko's Health on his Creative Work"

GROUP OF THE ACADEMY IN DENVER, COLORADO

- August 11, 1963 Conference held in Salt Lake City, Utah
- Filimon Ukradyha: "Production of 'Urine' from Human and Animal Blood"
 - Ivan Hromyk: "Results of the Study on the Population Dynamics during the Several Last Decades in Salt Lake City, Ogden, and Provo, and Planning the Automotive Traffic for 1960-1980"
- Vasyl Gvozdzetsky: "The Study of Soils in Connection with the Intensive Radiation of Air and Nutrients in the State of Utah"
- Lev Bykovsky: "The Ukrainians in Trapezund in the Twentieth Century"
- November 16, 1963 Lubomyr Wynar: "Maksym Perebyinis (Kryvonis), a Tribune of the Ukrainian Folk"
- February 8, 1964 Mary Halun-Bloch: "The Problem of Translating Folklore Materials"
- April 11, 1964
- St. Hlushko: "The Cult of Shevchenko in Bukovina"
 - Lev Bykovsky: "The Academy's Contribution to Shevchenko Studies"
 - Ol. Shapoval: "Shevchenko's Love of the Ukraine"
- April 20, 1964 Lev Bykovsky: "My Four Years in Northern Russia, 1912-1916"
- September 12, 1964 Ivan Hromyk: "Modern Methods of Planning the Automotive Transport in Big Cities"

- October 7, 1964 George Slastion: "Bohdan's Church in Subotiv, an Important Historical and Artistic Monument of the Eighteenth Century"
- December 5, 1964 Yu. Moshynsky: "Impressions of My Trip to Japan in 1962"
- January 10, 1965 B. Ivanys: "The Collapse of Agriculture in the USSR and its Colonies"
- March 20, 1965
- Olexander Ohloblyn: "Mykhaylo Hrushevsky and the Ukrainian Renaissance"
 - Lubomyr Wynar: "The Creative Work of Olexander Ohloblyn"
 - Lev Bykovsky and George Slastion talked on their Contacts with Ohloblyn
- May 22, 1965 Bohdan Wynar: "The Colonial Exploitation of the Ukraine in Light of Recent Soviet Economic and Statistic Publications"
- September 12, 1965 Conference held in Salt Lake City, Utah
- Vasyl Prokhoda: "Reminiscences of Kiev Prisons"
 - Filimon Ukradyha: "Mechanism for the Excretion of Urine Constituents by the Kidneys"
 - Ivan Hromyk: "Reminiscences on My Association with the Kamenets-Podilsk Agricultural Institute"
 - Vasyl Gvozdetsky: "The Book by I. E. Buchynsky, *Klimat Ukrainy v proshlom, nastoyashchem i budushchem* (The Climate of the Ukraine in the Past, Present, and Future), Kiev, 1963"
 - Lev Bykovsky: "The Early Period in the Life of S. I. Goldelman, 1885-1913"
- September 25, 1965 The Conference held in Los Angeles, California
- Vasyl Prokhoda: "Fragments of Reminiscences of My Imprisonment in the Vorkuta Camp, the USSR"
 - Valentyn Hayevsky: "Lesya Ukrayinka's 'Forest Song' (a Fragment from the Manuscript 'Lesya Ukrayinka and the Theatre')"
 - Lev Bykovsky: "My Kamenets-Podilsk Period. Reminiscences, 1919-1920"
- September 25, 1965 The Conference held in San-Diego, California
- Vasyl Prokhoda: "The Activities of the Union for the Liberation of the Ukraine, 1914-18; Reminiscences of a *Sirozhupannyk* (Gray Coat)"
 - Lev Bykovsky: "Reminiscences of My First Years in Poland, 1921-1922"

- October 30, 1965 • Bohdan Wynar: "Volodymyr P. Timoshenko as a Scholar"
 • Lev Bykovsky: "Reminiscences of Timoshenko"
- December 4, 1965 • V. Moshynsky: "Reminiscences of the Ukrainian Theatre in Odessa in 1920"
 • A. Vusek: "The Ukrainian Artist Mykola Ivasyuk, (On the Occasion of the 100th Anniversary of His Birth)"
 • R. Kochrzhuk: "Reminiscences of Ivasyuk"
 • Lev Bykovsky: "Solomon Goldelman in Vienna in 1920-1921"
- February 5, 1966 • Alexander Archimovich: "The History of the Ukrainian Academy of Arts and Sciences"
 • Mary Halun-Bloch: "My Impressions of a Trip to Warsaw, Cracow, Prague, Munich, and Amsterdam, in the Spring of 1965"
- April 23, 1966 George Slastion: "The Tomb of Hetman Pavlo Skoropadsky and a Mystery Involved in his Funeral"
- May 7, 1966 • Mykola Novak: "Reminiscences on Michael Vetukhiv's Activities in California"
 • Lev Bykovsky: "Ten Years of Work of the Academy Group in Denver, Colorado"
- July 31, 1966 Conference held in Salt Lake City, Utah
 • Lev Bykovsky: "Ten Years of Scientific and Organizational Work in the Western United States (The Academy Group in Denver, Colorado, 1955-1965)"
 • Filimon Ukradyha: "Some Results of the Research on Kidneys Conducted in 1950-1965"
 • Ivan Hromyk: "A Centennial of Mendel's Publication"
 • Vasyly Gvozdetsky: "Radioactive Strontium and Cesium in Soils, Corn, and Milk in Utah During the Last Four Years (1962-1965)"
- August 7, 1966 Conference held in San Francisco, California
 • Helen Savitsky: "Monogerm Sugarbeet Varieties Which Have Replaced Multigerm Varieties in the United States"
 • V. Panasenko: "The Ecology of Mushroom Preservation"
 • Yu. Kostyrko: "Difficulties Involved in the Application of Ultrasonic Waves to the Investigation of Pro-

- perties of Solid Fuels and Other Microporous Materials”
 ● P. Lelyak: “Modern Cybernetics”
 ● Yu. Kamenetsky: “The Problem of the Origin of the Three Eastern Slavic Peoples”
 ● Leo Bykovsky: “On the Study of the Life and Creative Work of Yuri Lypa”
- October 29, 1966 R. Chubaty: “Reminiscences of Mykhaylo Hrushevsky and of my Trip to Kiev in 1941”
- December 10, 1966 ● H. Myalovsky: “Last Days of Natalena Koroleva”
 ● Halyna Slastion read the paper by Ivan Dzyuba delivered in Kiev on December 10, 1965: “On the Occasion of Vasyl Symonenko’s 30th Birthday (1935–1965)”
- February 25, 1967 K. Levchenko: “Reminiscences of the Famine in the Ukraine in 1932–33”
- April 8, 1967 A Dokia Humenna Evening
 ● Leo Bykovsky: Opening Address
 ● S. Levchenko: “Dokia Humenna’s Life and Creative Work”
 ● Dokia Humenna: “How the Novel *Dity Chumats’koho Shlyakhu* (Children of the Milky Way) was Created”; recital of selections from the unpublished novel *Zoloty Pluh* (The Golden Plough)
- May 27, 1967 Yu. Moshynsky: “Remarks on Modern Art and Artists”

GROUP OF THE ACADEMY IN WASHINGTON, D.C.

- October 26, 1963 Hryhorij Denysenko: “The Tax on Financial Turnover in the U.S.S.R. and the Amount of Tax Paid by Tax-payers in the Ukraine”
- December 21, 1963 ● Petro Odarchenko: “Life and Creative Work of Lesya Ukrayinka”
 ● Recitation of Lesya Ukrayinka’s poems by H. Dubrovskya, M. Kuliya, Yu. Lomatska, H. Maksymyuk, and I. Maksymyuk
- January 25, 1964 A Mykola Ponedilok Evening
 ● Petro Odarchenko: “Writings of Mykola Ponedilok”
 ● Mykola Ponedilok recited selections from his works
- March 7, 1964 Conference on the occasion of Shevchenko’s 150th Birthday
 ● Oleksa Powstenko: “The Ukrainian Village and Farmer’s Hut in Shevchenko’s Poems”

- Mykola Kushnirenko: "A National Trait in the Life and Creative Work of Shevchenko as Elucidated in V. Domanytsky's Work"
- March 7, 1964 Olexa Powstenko: "The Life and Works of Shevchenko Reflected in Drawings by Kievan Artists"
- May 10, 1964 A Ludmila Kovalenko Evening arranged by Friends of the Academy in Washington, D.C.
 - Ivan Dubrovsky: Opening Address
 - Kovalenko's play "Domakha" was performed. Participating artists: M. Dubrovska, S. Zapolenko, Yu. Lomatska, H. Birovets, V. Kuli, M. Stavnychy, M. Barney, O. Pashchak, H. Maksymyuk, V. Pidpal; Scenary by T. Dyachok
- November 4, 1964 Conference in honor of Shakespeare
 - Petro Odarchenko: "Shevchenko and Shakespeare"
- January 30, 1965 Petro Pavlovych: "The Creative Work of Mykhaylo Kotsyubynsky"
 - Recital of excerpts from Kotsyubynsky's *Shadows of Forgotten Ancestors* by Maria Dubrovska; musical selections from the suite on the theme of *Shadows of Forgotten Ancestors* by Mykola Nedzvedsky
- February 13, 1965 ● Isidora Kossach-Borysova: "An Important Work on the Life of Lesya Ukrayinka"
 - Petro Odarchenko: "Correspondence of Lesya Ukrayinka"
- February 14, 1965 ● Isidora Kossach-Borysova: "Reminiscences of Mykola Lysenko"
- March 13, 1965 ● Panteleymon Kovaliv: "The Significance of Shevchenko in the Formation of Ukrainian Literary Language"
 - D. M. Korbutiak: "Taras Shevchenko and Ira Aldridge"
- May 8, 1965 Stepan Maksymiuk: "Solomiya Krushelnytska and her Recordings"; the lecture was illustrated by Krushelnytska's tapes.
- March 5, 1966 ● Olexa Powstenko: "Shevchenko's Design of his House"
 - Panteleymon Kovaliv: "Shevchenko in Memoirs"
- May 20, 1966 ● Petro Odarchenko: "Shevchenko and Franko"
 - D. M. Korbutiak: "Franko's Weltanschauung"
 - Natalka Kravets recited the prologue to Franko's "Moses"

- October 15, 1966 ● Panteleymon Kovaliv: "The Significance of Ivan Franko in the Development of Ukrainian Literary Language"
 ● Olexa Powstenko: "Ivan Franko in Fine Arts"
- November 25, 1966 Yaroslav Bilinsky: "Changes in the Central Committee of the CPSU Between Two Recent Party Congresses"
- December 10, 1966 ● A. P. Lutskiv: "Mykhaylo Hrushevsky as a Historian and Politician"
 ● Panteleymon Kovaliv: "Hrushevsky's Struggle for the Ukrainian Language"
- March 4, 1967 Shevchenko Conference sponsored by the Academy group and the group of Shevchenko Scientific Society
 ● Roman Smal-Stocki: "The Significance of *slava* in Shevchenko's *Kobzar*"
 ● Olexa Powstenko: "Chyhyryn and Subotiv in Poetical and Artistic Work of Shevchenko"
- May 4, 1967 Alexander Granovsky: "The Life of Aphids and Their Biological Cycles"

A NOTE ON TRANSLITERATION

The following transliteration system has been used in this work:

<i>Ukrainian</i>		<i>Russian</i>
а	а	а а
б	б	б б
в	в	в в
г	г	г г
д	д	д д
е	е	е е
є	ye	ё уо
ж	zh	ж zh
з	z	з z
и	у	и і
й	у	й і
ий	yi	к k
і	і	л l
ї	yi	м m
к	k	н n
л	l	о o
м	m	п p
н	n	р r
о	о	с s
п	р	т t
р	г	у u
с	с	ф f
т	т	х kh
у	у	ц ts
ф	f	ч ch
х	kh	ш sh
ц	ts	щ shch
ч	ch	ъ omitted
ш	sh	ы y
щ	shch	ь '
ь	'	э e
ю	yu	ю yu
я	ya	я ya

ERRATA

Page	Line	From	Printed	Should be
35	15	top	and Kharkiv	
35	18	top	and Sumy ¹²	Sumy and Kharkiv ¹²
37	11	bottom	he	the
45	13	top	Dest	Desf
54	11	top	Sagittatum	sagittatum
56	14	top	pea	peas
57	15	bottom	Kharkhiv	Kharkiv
59	3	top	themselves	that
73	8	bottom	Baarbagallo	Barbagallo
73	10	bottom	eolngated	elongated
74	15	top	bihser	bisher
79	11	top	orthomere	paramere
79	12	top	Figs. 5-9, Pl. II.	Figs. 5-6, Pl. III.
83	11	bottom	phothometric	photometric
86	5	bottom	len	les
90	2	bottom	embrioligiya	embriologiya

*THE ANNALS OF THE UKRAINIAN ACADEMY
OF ARTS AND SCIENCES IN THE UNITED STATES*

- Vol. I, No. 1, 1951. *Out of print.*
- Vol. I, No. 2, 1951. *One dollar and fifty cents.*
- Vol. II, No. 1 (3), 1952. Mykhaylo Drahomanov: A Symposium and Selected Writings. *Three dollars.*
- Vol. II, No. 2 (4), 1952. *One dollar and fifty cents.*
- Vol. II, No. 4 (6), 1952. *One dollar and fifty cents.*
- Vol. III, No. 1 (7), 1953. *One dollar and fifty cents.*
- Vol. III, No. 2 (8), 1953. *One dollar and fifty cents.*
- Vol. III, No. 3 (9), 1954. *One dollar and fifty cents.*
- Vol. III, No. 4 (10)/Vol. IV, No. 1-2 (11-12), 1954. Olexa Powstenko, The Cathedral of St. Sophia in Kiev. *Twelve dollars and fifty cents.*
- Vol. IV, No. 3 (13), 1955. *Three dollars.*
- Vol. IV, No. 4 (14)/Vol. V, No. 1 (15), 1955. N. Polons'ka-Vasylenko, The Settlement of the Southern Ukraine (1750-1775). *Six dollars.*
- Vol. V, No. 2-3 (16-17), 1956. *Three dollars.*
- Vol. V, No. 4 (18)/Vol. VI, No. 1-2 (19-20), 1957. Dmytro Doroshenko and Olexander Ohloblyn, A Survey of Ukrainian Historiography. *Six dollars.*
- Vol. VI, No. 3-4 (21-22), 1958. *Three dollars.*
- Vol. VII, No. 1-2 (23-24), 1959. Special Issue Devoted to the Memory of Arnold Margolin. *Three dollars.*
- Vol. VIII, No. 1-2 (25-26), 1960. Studies in Linguistics. *Six dollars.*
- Vol. IX, No. 1-2 (27-28), 1961. Studies in History of the Post-Revolutionary Ukraine and the Soviet Union. *Six dollars.*
- Vol. X, No. 1-2 (29-30), 1962-1963. Studies in Political Science and History, and Index to Volumes 1-X. *Six dollars.*

Orders may be placed with The Ukrainian Academy of Arts and Sciences in the United States, Inc., 206 West 100 Street, New York, New York 10025

