A study of science teaching in grades six through eight in selected ten-year schools of the U.S.S.R.

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Boston University
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John Millard Harmon, Jr.

1961
Dissertation

A STUDY OF SCIENCE TEACHING IN GRADES SIX THROUGH EIGHT IN SELECTED TEN-YEAR SCHOOLS OF THE U.S.S.R.

Submitted by

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Preface

It is important to indicate that this work is not a comparative education study. It is not designed to compare what was seen within the U.S.S.R. with what is currently in practice in any school system within the United States; nor is it the purpose of this writer to make any major comparisons among the Soviet schools visited.

This study was undertaken by a classroom teacher with ten years of teaching experience in public schools of the United States. Its purpose was to bring back to teachers in this country a report of those classrooms which were visited within the U.S.S.R. Photographs provide documentation, and may furnish additional information according to the particular interest of the reader.

It is important to realize that this study was undertaken at a time when Soviet and United States exchanges were just beginning. The two years of planning, preceding the trip, occurred when international conditions precluded any extensive movement of United States citizens within the Soviet Union. The visitation took place from October 6, 1958, to November 8, 1958.

The number of science classrooms visited in this study is limited, due to a scheduling difficulty within schools. However, included within the appendices are two additional
sections dealing with administrative interviews, and classroom visitations other than science. These may be of interest to teachers reading this work.

In gathering material for this study, the writer spent 374 hours within the Soviet Union engaged in classroom visitations, and interviews with administrators, educational leaders and students. The selection of schools visited was determined by INTOURIST. The writer was unaware of arrangements which INTOURIST may have had to make with educational officials in order to facilitate the type of visitations desired for this study.

The trip was made while major changes were underway in Soviet education. The reader should bear this in mind, for current methodology may continue as reported in this study or may be moving in unknown directions.

The writer would like to thank Commissioner Lawrence G. Derthick for valuable time spent with him prior to making this trip. Thanks also go to Professor Nicholas DeWitt of Harvard University, and Professor Alexander G. Korol of Massachusetts Institute of Technology who by conversations and through their books contributed greatly to the writer's understanding of the complex Soviet situation.

The writer hopes that this work is a small contribution to the growing knowledge of the schools of the U.S.S.R.
CHAPTER I
INTRODUCTION

Statement of the problem.-- This study seeks to examine the teaching of science in grades six through eight in ten-year schools accessible to the writer within the U.S.S.R.

Justification.-- Within the last few years, a great deal has been written about Soviet education. Those concerned with education all over the world are interested in the means by which Soviet educational practices seek to bring about the changes which have been stated by political and educational leaders in the U.S.S.R. 1/

It seemed likely that a teacher from the United States, sensitive to classroom methods and situations, could bring back a reasonably clear and undistorted picture of Soviet educational practices. As the essence of the problem was to present this overview to teachers, in terms which would be familiar to them, photographs of the classrooms were to be taken. This venture is a contribution to a larger picture, which must be built up from many such visitations.

Education within the Soviet Union has but one purpose: to provide adequately trained persons to carry out the

functions of the government. With this background, one might expect Soviet education to be extremely formalistic and subject-centered, with a very rigid discipline within the classroom. Some indication of what to expect might reasonably come from an examination of Soviet textbooks. The textbooks whose indices are listed in the appendix were a reference point from which to start observation.

It must be recognized that Soviet education is currently in the process of rapid change.

The Iron Curtain between the free and Communist nations has prevented first-hand observation of Soviet educational progress. How well trained are Soviet science teachers? How well equipped are Soviet science classrooms? What science teaching methods are currently used in the U.S.S.R.?

Answers to these questions have been derived from Soviet publications, but there has been a major lack of first-hand observation in these areas by United States educators. Often, what first-hand information is available has been gained in atypical classroom situations.

Since entry restrictions to the Soviet Union have been lifted, there have been very few classroom teachers who have visited Soviet classes during the regular school year.  

1/ See Appendix E.

2/ Small groups of teacher-tourists have made trips to the Soviet Union during the summer, but the ten-year schools (which correspond to our public schools) do not hold classes during the summer.
A classroom teacher's visit to Soviet schools during the regular Soviet school year would contribute to the ever-growing information being compiled within the United States relative to Soviet education. This study was undertaken by an experienced American teacher to gain first-hand information regarding science teaching in grades six through eight in Soviet schools.

**Scope.** Access to individual Soviet classrooms, while a function of INTOURIST, was, in the final analysis, the responsibility of the administrator of the school visited.  

A checklist was filled out while visiting science classrooms in grades six through eight. This checklist covered physical aspects of the classroom (including laboratory equipment present), teaching and evaluation techniques observed, and a section on teacher data.

Wherever possible, checklist information was verified by photographs.

**Delimitation.** The science classrooms visited for this study were restricted to grades six through eight. Selection of the schools visited was outside the jurisdiction of the writer.  

This study deals only with visitations to urban ten-

1/ See Appendix G for Administrative Data  
2/ See Appendix F
year schools, and does not involve investigation of the terminal seven-year schools, rural schools, or Young Pioneer activity centers.

The major purpose of this study was to gather information which could be observed by the writer. It was not the purpose of this study to translate current materials in use in Soviet classrooms due to the writer's limited facility with the Russian language and his dependence upon an interpreter.
CHAPTER II

REVIEW OF LITERATURE

This chapter is a representative sampling of references listed in the bibliography.

General background.— Soviet education is subject-matter centered, and formal in presentation. Students attend school six days a week. Schools are coeducational.

King notes that schools may be overcrowded when he reports that:

"Visitors in 1957 said all schools seen in Moscow, Leningrad, Baku, and elsewhere were on a two-shift system."1/

King also indicates that:

"A high standard of proficiency and diligence is demanded by the children's own 'collective will for advance' no less than by the teachers."2/

Hans states that schools differ within the Soviet Union:

"The curriculum of the first seven forms is identical with that of the incomplete secondary school, but the buildings, equipment and qualifications of the teachers are considerably better in large city secondary schools than in smaller provincial incomplete schools."3/


King points out the importance of the boarding schools:

"Much emphasis has been placed, since 1956, on the establishment of increased numbers of boarding schools, presumably for greater control and discipline."1/

Objectives.-- The writer has found very little regarding science education objectives in grades six through eight in the U.S.S.R. A review of the literature indicates a few general objectives which seem to be sufficient to cover broad areas of Soviet education. For this reason, the quotations here used are necessarily more broad in scope than the area under investigation.

The report of the International Institute of Education points out that:

"Marx has said that no politics should ever be taught in the schools. He suggested that only objective facts about the universe and science be taught to all youngsters until they reached the age of maturity."2/

Kandel indicates that:

"The basic aim of the school is to impart a general education in the same subjects as are found in the secondary schools of other countries."3/

King states that:

"...general education is administered by the several republics, and even then Communist party centralization makes for uniformity."4/

1/Edmund King, op. cit., p. 169.


4/Edmund King, op. cit., p. 146.
King also gives a view of an average classroom in 1957:

"A typical lesson observed in 1957 may be described as follows. The teacher gave an almost unbroken lecture for about 45 minutes, with hardly any feeling for his class. He was a purveyor of information, and a subsequent assessor of pupils' achievement....During the lesson a child was called on to show his homework. He wrote on the board for several minutes. The others watched....A mark was given on a five-point scale."

King mentions that:

"Methods officially approved at one time are changed at another....No experimentation in education is permitted at the school level."

Kandel points out that:

"Great attention is paid to educational work in the school. The lesson--the process of study--is the principle form of instruction."

The first official education mission to the U.S.S.R. says:

"Although the number of hours devoted to science indicates an important emphasis on it, the primary emphasis appears to be on the practical and technological aspects of science."

Kandel supports this viewpoint by stating:

"In mathematics and the sciences the practical applications are emphasized. Astronomy is taught in the highest class, and like natural science, physics and chemistry, this subject is of great importance in developing materialistic views among the youth."

1/Ibid., p. 162.
2/Ibid., pp. 160-161.
Tsvetkov, too, points out the general, overall objectives of science education:

"The study of chemistry along with other natural science subjects gives the possibility of properly perceiving a picture of the world, contributes to forming the foundations of the dialectical-materialist world outlook..."

"The conducting of a chemical experiment requires the ability to observe closely, to compare and analyze phenomena studied, to construct and verify hypotheses, to draw conclusions."/1/

Recent visitations.-- Victor Cohn reports that students of American government in the U.S.S.R. concede that Americans have a government more responsive to public will, yet have checks and balances to prevent a totalitarian state from developing. Tight, strong Soviet control was accepted in the U.S.S.R. on the basis that the Soviet Union has much progress to make in a short time, and therefore needs a strong dictatorial government./2/

John L. Kinloch, a Scottish educator who visited the U.S.S.R. in 1955, and George Z. F. Bereday, Associate Professor of Comparative Education, Teachers College, Columbia University, comment on uniformity found in Soviet schools. Kinloch indicated that the program he observed in Soviet schools was very similar to the program in his own school. He asks whether uniformity of the curricula is used to Russianize the other nations of the U.S.S.R. or, perhaps, to level out national cultures in an effort to reduce all


citizens in the Soviet Union to a "dead totalitarian level." A Soviet school administrator said that the uniformity of school curricula was justified because of the mobility of the Soviet population. It was also pointed out that textbooks were revised every three years.¹ (The same reason is put forth for the strict schedule followed by the American Dependents School Detachment responsible for the education of American children of government personnel stationed overseas.)²

Bereday points out that educational policy is usually established by the Ministry of the Russian Federation, the largest republic of the U.S.S.R., and the policy is copied by education ministries in the other republics. The top educational posts are often filled by party-oriented persons who may not be teachers. Bereday also points out that transferring educational practices in the Russian procedure, without relating them to the parent society or culture, often distorts their value. He says:³


²Fred L. Miller, Teachers' Guide for Elementary Schools, Headquarters, 7755 Dependents School Detachment, August 20, 1951.

"Many of the features which they now call strengths in foreign education are considered weaknesses by the very countries concerned. In reverse many of the weaknesses which are decried here are admiringly copied abroad as features that are worth teaching.

"It is not merely an accident that on visiting a new American school recently, I was proudly shown a chemistry laboratory 'which we are sure is as good as anything the Russians have.' While two weeks later in a Moscow ten-year school I was equally proudly taken for a ride in a driver education car, the pupil behind the wheel and the instructor beside him glowing: 'Now you can see that we are as advanced as you Americans.'"

Dr. Mark Raeff\(^1\) pointed out that Russian educators knew little about American education, and what they did know gave them a feeling of superiority.

Dr. Raeff found Soviet schools very formal with strict discipline, little noise and activity during recreation periods.

The class rises when a visitor enters or leaves. He indicated that he saw little creativity in the classroom.

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An official exchange group,\(^1\) during their visit to the Soviet Union, also noted a lack of creativity in the school program, and charges that Soviet education suffers from overdirection.\(^2\)

Dr. John Turkevich, professor of chemistry, Princeton University, also mentions the overplanning of the Soviet educational program in contrast to our dependence on individual initiative and effort.\(^3\)

United States Commissioner of Education Lawrence G. Derthick expressed surprise at the Soviet commitment to

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\(^1\)The delegation was composed of:
- Edward H. Litchfield, Chairman, Chancellor, University of Pittsburgh, Pittsburgh;
- H. Philip Mettger, Secretary, Vice-President, Governmental Affairs Institute, Washington;
- Harry D. Gideonse, President, Brooklyn College, New York;
- T. Keith Glennan, President, Case Institute of Technology, Cleveland;
- Gaylord P. Harnwell, President, University of Pennsylvania, Philadelphia;
- Deane W. Malott, President, Cornell University, Ithaca;
- Franklin D. Murphy, Chancellor, University of Kansas, Lawrence;
- Alan M. Scaife, President, Board of Trustees, University of Pittsburgh;
- Frank H. Sparks, President, Council for Financial Aid to Education, New York;
- Herman B. Wells, Indiana University, Bloomington.


education, and gave the following evidences of this commitment: 1/

"Classes are of reasonable size.

"Teachers are chosen on a highly selective basis - we saw no indication of any shortage.

"The educational process extends after school hours and during the summer under professional direction.

"Teachers and principals have an abundance of staff assistance: curriculum experts, doctors, nurses, laboratory assistants, and so forth.

"School money is available to do the job. We were told repeatedly, 'A child can be born healthy but he cannot be born educated.'

"Responsibility for the conduct and achievement of children rests with their parents, who participate regularly in school affairs."

The effectiveness of Soviet science training is held in high esteem by some Americans. General John E. Hull quoted Dr. Edward Teller regarding American science leadership: 2/

"Ten years from now the best scientists in the world will be found in Russia....nothing can be done to alter the situation because the scientific manpower of ten years from now is in school today and the supply (in America) is not sufficient."


Turkevich explains the method of Soviet competition we face as a new kind of leapfrog operation. The Russians catch up in technology to a certain point, then, profiting by our mistakes, jump ahead.¹/

Sir Ronald Gould²/ has visited the U.S.S.R. twice in recent years. Both visits were at the invitation of the Trade Union of Educational Workers of the U.S.S.R. He indicated that Soviet education is moving rapidly in many directions: boarding schools, teacher education, foreign languages.³/

Bereday mentions how dangerous it would be for American education to follow Soviet practices.⁴/ Oliver J. Caldwell also expresses this viewpoint.⁵/ Theodore Brameld is of the same opinion.⁶/ Turkevich expresses confidence in our educational system after observing the Russian system.⁷/

¹/Turkevich, op. cit., p. 76.
²/Secretary of the National Union of Teachers in England.
⁴/Bereday, op. cit., p. 216.
⁷/Turkevich, op. cit., p. 77.
Congressional publications.-- Considerable material on the Soviet Union is published by Congress. It is possible to keep abreast of such publications through the periodical list of government publications made available by the Superintendent of Documents, Washington 25, D. C.

In 1946, House Document No. 754\(^1\) covered a wide area of Soviet activity, such as labor, transportation and communication, finance, and education.

The chapter on education was written by Charles A. Quattlebaum, who indicated that educational policy within the Soviet Union is directed by the highest government authorities with very conscious efforts toward making education an instrument through which the Communist Party is able to achieve its purposes and aims. In 1928, Stalin became secure in his success over Trotsky and others. With this security came the first Five Year Plan with the slogan "To overtake and surpass....the most advanced capitalistic countries" -- words quite familiar to us today. Education had an active part in helping build the industrial state of the U.S.S.R. In its educational program, the Soviets made use of student grading, systematic curricula, and rigorous examinations.

The Soviets point to a major increase in number of pupils as strong evidence of the fact that illiteracy has been almost wiped out in their country. In 1914, Soviet

pupils numbered 5,551,600. They increased to 20,408,800 in 1939.\(^1\) In educating this large new group of pupils, the centrally-planned program became very formalized in terms of curricula, syllabi and textbooks. This plan was a very strong, standardized central program. It was pointed out that this was necessary due to population movement for industrial or agricultural reasons. A pupil moving from one town to another in such a system has no difficulty in terms of classroom sequence or content.\(^2\)

In 1951, House Document No. 136\(^3\) gave information regarding Communism in the United States, as well as Communism in the Soviet Union. The method employed utilized questions and answers. Subjects covered included Communism in the U. S. A., Communism and religion, education, labor, and government.

The chapter on education points out the Communist youth "will be trained but not educated."\(^4\) Lenin is quoted

\(^1\)Ibid., p. 113.
\(^2\)Ibid., p. 114.
\(^3\)100 Things You Should Know About Communism, House Document No. 136, Committee on Un-American Activities, United States House of Representatives, Washington, 1951.
\(^4\)Ibid., p. 47.
as saying, "Give us the child for eight years and it will be a Bolshevik forever."\footnote{1}{Ibid., p. 46.} Love of the Communist motherland and the Communist Party and its leaders is stressed throughout the school curriculum.

In 1956, the Committee on Un-American Activities prepared and released another document.\footnote{2}{Soviet Total War, Vol. I., Committee on Un-American Activities, United States House of Representatives, Washington, 1956.} In the section "The Soviet Drive for Technological Supremacy", it is pointed out that the large number of students in engineering and the sciences are attracted by liberal awards, bonuses and stipends, as well as by professional prestige and social position. The Soviet Union has achieved remarkable technical progress since World War II. The progress involves jet aircraft, metallurgy, and atomic energy devices. Not only has this progress been made, but there seems to be adequate indication that the lead time in development of these areas has been cut considerably.

This publication also devotes a section to education entitled "Scientific Education: A Study in Contrast", by John D. A. Morrow.\footnote{3}{Ibid., p. 411.} Morrow indicates that Soviet education's goal is to gain world supremacy through engineering and science. It is pointed out that the Soviet secondary
schools are probably not the equal of ours, but stress sciences a great deal more than is done in the United States. It is interesting to note that a major incentive for Soviet higher education is the fact that a Soviet youth has but two alternatives: further study, or work in a collective farm, factory, or mine. Any one of the latter three choices leads usually to a dull, monotonous existence.

Popular books.-- Impressions of the Soviet Union obtained by glimpses through the sporadic cracks in the Iron Curtain have led to numerous books published for popular consumption. A comprehensive review of material available on the Soviet today would not be complete without at least taking note of several of these popular books.

One which has been widely read is "Inside Russia Today".\(^1\) A great deal of material is presented in this account, although considerable of the educational information does not agree with this writer's observations of the Soviet school program.

Gunther does point out, however, that the Soviet educational program falls far short of producing a well-rounded human being. And, although the Soviets have one of the most formidable educational machines in the world, they are the most ignorant people in the world about affairs outside their own country.

Gunther feels that the expansion of the educational program within the Soviet carries with it certain dangers to the Communist philosophy. To teach a man to think, particularly in terms of scientific endeavors, may carry with it an interest and concern to other fields. In this way, a certain portion of the Soviet citizenry may demand broader freedom, and then, in obtaining it, gain more insight into the Western world's philosophy and practices. 1/

Irving R. Levine's work, "Main Street, U.S.S.R." 2/ is an extremely worthwhile documentary gained through several years as a Moscow news correspondent. Levine points out that the advent of Soviet Sputniks resulted in extensive visits of delegations of American educators to the Soviet Union. Many American educators saw a great deal of good in Soviet education. While their words of praise were echoing the length and breadth of the United States, the educational program being so praised was undergoing devastating criticism by Nikita Khrushchev, who indicated sweeping changes were needed. 3/

"The Big Red Schoolhouse" 4/ by Fred M. Hechinger, mentions the extreme authoritarian plasticity of the Soviet

1/ Ibid., p. 264.
educational system: an order from the top echelon can result in a 180° turn in educational policy.

Basic references.-- DeWitt\textsuperscript{1} looks at the whole scope of current Soviet education, dealing not only with ten-year schools, but with semi-professional education, and with higher education and research. In attempting to provide an understanding of the background of Soviet education, he points out that Soviet educational philosophy has three major premises. The first is that technology is best promoted through central planning of education and research. The second premise is an indication of Soviet scientific orientation; that scientific and educational efforts are the major means of advancing the political, social, economic and military aims of the nation. The third premise -- one which might make teaching in the Soviet Union a very secure type of work -- indicates that the basic truths of human life, of nature, of the universe, and of social, political, and economic reality have been discovered and proclaimed, and are beyond debate. In this kind of situation, the task of the teacher is simply to apply these truths. There is no need to question them or to seek alternative truths.\textsuperscript{2}

\textsuperscript{1} Soviet Professional Manpower, op. cit.
\textsuperscript{2} Ibid., pp. 3-4.
DeWitt feels that there is no question that the politics of the government filters through to the pupils, but the political content varies according to the subject. There seems to be some evidence that the use of politics as a catalyst in acquiring knowledge does not necessarily create a barrier to knowledge.¹

Political interference at one time originated with the Communist youth organizations, but interference of this type has almost completely disappeared during the last two decades. As a result, youth organizations within the schools emphasize sports, recreation, and creative pursuits rather than politics per se.²

Counts'³ long interest in, and first-hand knowledge of, Soviet education (first visit to the Soviet Union in 1927) enables him to provide background material for a look at Soviet education today. He points out that the Bolsheviks inherited an educational program.

Alexander Korol⁴ deals with the general philosophy of Soviet education, the ten-year school, engineering, and a number of areas of higher education. Korol points out that there is considerable repetition in the education program, particularly in the secondary science sequence.⁵

²/Ibid.
⁵/Ibid., p. 53.
Instructions regarding syllabi are passed down by the Central Committee of the party. Since these instructions are general, and details not spelled out, school syllabi are worked out by the Ministry of Education and are published by the Ministry's publishing establishment. Successive editions are generally reprints, except when major shifts in educational policy occur.

Statistics relative to Soviet education. -- It is necessary to rely upon what the Russians wish the non-Communist countries to know about their educational progress as substantiated by figures. One-fifth of the United States' population between the ages of 18 and 24 was enrolled in schools of higher education in 1956-1957, compared with one-twentieth of the comparable U.S.S.R. population.

Insight into the cost of education in the Soviet Union is indicated in "The Soviet Economy" where it is stated that 16,400,000,000 rubles were spent in 1958 for scientific research and development. It is possible that some educational costs are included in this scientific research and development figure.

1/There are 15 Ministers of Education, one for each republic of the U.S.S.R. However, the writer was told by Soviet School administrators that these ministers generally adopt policies of the Ministry of Education of the R.S.F.S.R.


Another source of statistical information regarding Soviet education is contained in a small booklet published by the Russians, entitled "Public Education in the Soviet Union, Report for 1957-1958". This booklet was given to the writer by Alexei Markushevich during a personal conference in Moscow.

The figures being discussed here may be distorted to give a more favorable picture of Soviet educational progress, but they do provide some indication of the magnitude of the Soviet educational picture. In 1957-58 the 214,162 general schools of all types enrolled a total of 30,624,900 pupils. The boarding school program very nearly doubled in 1957-1958. The extra-curricular program expanded. By 1957 there were 2,741 Young Pioneers' palaces and houses (where extra-curricular activities are maintained), as well as many technician, excursion, travel, and sport centers. The Soviet booklet also points out the tremendous extent of their textbook industry, where a total of 218,700,000 copies of 2,033 different textbooks were printed in 1957.

Trends indicated in Soviet education. There are two areas of Soviet education that warrant careful attention by those outside the Soviet Union. One is the boarding

1/Deputy Minister of Education of the Russian Federation.

school, which increased near 100 per cent in enrollment in 1957-1958. The only restriction upon the mushrooming of this program is the lack of facilities, which is fast being remedied.

The second area is the revision of education indicated by N. S. Khrushchev in his address to the 13th Congress of the Young Communist League (1958). Markushevich explains this change in the following way:

"While Soviet secondary education was mainly directed at training young people to enter higher educational establishments this fault could be tolerated to a degree. But as the economy and culture of the country developed and secondary education became accessible to ever wider circles of young people not all of whom, generally speaking, intended to enter higher educational institutions immediately after leaving school -- the problem of changing the nature of education and of bringing it much closer to life has become more and more pressing."

N. M. Semyonov, in reviewing Khrushchev's suggestion of educational reform, stated that there will be an attempt in the new program to discover aptitudes. This is of particular interest in view of the fact that earlier educational philosophy was based on the premise that aptitude

1/N. Kazmin, "The Boarding Schools Two Years Old," Pravda, October 9, 1958, pp. 9-11.


or outstanding ability was a function controlled by the environment, not by heredity.

In summary, according to first-hand observers of the Soviet educational system, we find that:

1. It is committed to a major program of education embracing virtually all children.

2. It does not admit to a crowding of schools or lack of teachers.

3. It makes use of non-academic subjects to strengthen the educational program.

4. Central control of education is evident, although the extent of such control has not been investigated.

5. Textbooks seem to originate from a central source.

6. Central control has the power to bring about rapid changes in Soviet education.

7. The training of Soviet science teachers has not been examined first-hand by visitors from outside the Soviet Union.

8. Class size in secondary schools has not been readily available.

9. The very strictest formalism is followed within Soviet classrooms.
CHAPTER III
PROCEDURE

Cities selected.-- Because many areas within the Soviet Union are restricted to United States citizens (Appendix B), the itinerary for carrying out this study was not completed until contact was made with INTOURIST upon the writer’s arrival in Moscow. At that time, the cities of Moscow, Leningrad, and Kiev were selected to represent European Russia. Irkutsk, capital of Siberia, was chosen as an eastern city to be visited. These cities were accessible by train, plane, and jet TU 104.

Interpreter.-- One of the paid services provided by INTOURIST for the visitor within the Soviet Union was that of an interpreter for six hours daily. A different interpreter was provided the writer in each city visited.

Development of the Science Class Checklist
Classrooms visited were identified by school number, city, grade, and subject.

Number of pupils was necessary to give class size.

Classroom size and light meter readings were included

1/INTOURIST is the government agency responsible for travel of foreigners within the Soviet Union. See Appendix F for additional information on INTOURIST.

2/Appendix A

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because they were readily available, objective classroom information. It was felt that such information should not be omitted because the trip was not likely to be repeated by the writer.

Laboratory equipment commonly used in science classrooms, which might be readily observed, was included in the checklist: demonstration table, student laboratory tables, water, gas, hood, exhaust fan, or other equipment.

Teaching techniques that might be observed were listed: lecture-demonstration which refers to the formal presentation of material by the teacher in front of the class; memory assignment which refers to a review by the class based upon previously assigned homework; question and answer which refers to a recitation-type activity on current class material; discussion which refers to an informal, not necessarily teacher-centered exchange of ideas; project work which refers to groups of students working independently in the classroom; other techniques which might be observed.

Evaluation techniques which might be observed were listed: board recitation which refers to home work mastery; written work which refers to assigned homework; formal testing which refers to written tests given during the writer's visit; observation which refers to evaluation that might be carried on by the teacher's simply observing the student.
Under organization of classwork, several possible techniques were listed, such as daily lesson plans, unit topics, and problems.

For teacher data, age, place and length of training, and number of years of teaching were asked for. The sex of the teacher was indicated on the checklist. Experiences outside of teaching were asked for. The names of teachers observed were not deemed necessary for the study.

The original checklist, or instrument, was more extensive than the one finally used. In retrospect, however, it appears that the instrument used, in conjunction with photographic documentation, did seek out the information for which this study was designed.

Visitation technique.-- A carefully-planned procedure was set up by the writer to facilitate obtaining the desired information in the schools visited. A prepared letter of introduction was given to the administrator of the school being visited.1

Then, the administrator was interviewed in the main office. The letter of introduction always provided a good basis from which to begin the research questions. Following the formal interview using the questionnaire, the administrator was asked if he had questions about the United States that he would like answered. The question period was usually an

1/Appendix C; Russian translation by J. T. Baer, Graduate Center, Harvard University.
equal exchange.

**Classroom procedures.**-- In the classroom a copy of the introductory letter was given to the teacher. Often the teacher would introduce the writer to the class.

It was then possible to remain in the rear of the classroom and watch the progress of the teaching. At this time, observations were checked off on the Science Classroom Checklist.1/

Polaroid prints, usually duplicates of photographs used for documentation of this study, were given to the teacher before leaving the classroom. The length of time spent in classrooms varied between 15 and 45 minutes. Administrators were anxious to show other parts of their schools to the writer: libraries, Pioneer rooms, playgrounds.

While it cannot be documented, and in spite of the fact that schools visited were probably commonly used for visitations, those classrooms observed by the writer seemed to be engaged in usual activities. As far as the writer knows, special class programs were not planned in anticipation of visitations reported in this study.

The number of science classrooms visited was a function of the scheduling program within each school. At times only one science class in grades six through eight was scheduled during the total visit of the writer. In three instances, no science classes in grades six through eight were in session during the school visit. When this happened, other classrooms were observed.

1/Appendix A
Introduction to Table 1.-- Table 1 provides a survey of the total science classrooms visited during the writer's trip to the Soviet Union.

Table 1. Summary of Science Classrooms Visited

<table>
<thead>
<tr>
<th>School Number (1)</th>
<th>City (2)</th>
<th>Science Classes (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>315</td>
<td>Moscow</td>
<td>4</td>
</tr>
<tr>
<td>29</td>
<td>Moscow</td>
<td>3</td>
</tr>
<tr>
<td>204</td>
<td>Moscow</td>
<td>2</td>
</tr>
<tr>
<td>717</td>
<td>Moscow</td>
<td>0</td>
</tr>
<tr>
<td>153</td>
<td>Leningrad</td>
<td>2</td>
</tr>
<tr>
<td>33</td>
<td>Leningrad</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>Leningrad</td>
<td>0</td>
</tr>
<tr>
<td>51</td>
<td>Kiev</td>
<td>1</td>
</tr>
<tr>
<td>82</td>
<td>Kiev</td>
<td>1</td>
</tr>
<tr>
<td>87</td>
<td>Kiev</td>
<td>0</td>
</tr>
<tr>
<td>64</td>
<td>Irkutsk</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Irkutsk</td>
<td>1</td>
</tr>
</tbody>
</table>

Totals 12 schools 16 science classes

Comments on Table 1.-- The 16 science classrooms observed were dependent upon the science class schedule of each school visited. In schools 717 (Moscow) and 29 (Leningrad), only upper science classes were scheduled during the writer's visitation. School 87 (Kiev) was visited in the afternoon and, because it was not on double session, all students had been dismissed.
CHAPTER IV
PRESENTATION OF DATA.

1. Data Obtained by Science Class Checklist

Science Classroom Checklist.— While in the 12 schools listed on Table 1, the writer visited 16 science classrooms. In each of the classrooms visited, three light meter readings were taken.¹/

Laboratory equipment.— The standard pupil station in schools visited included a sizable table utilized by two students. While this type of desk or table will lend itself rather well to laboratory use by students in science classes, these units were not considered actual student laboratory tables unless there was some modification making them unusual, such as the installation of water facilities, gas outlets, or electrical outlets.

Additional equipment seen while within the individual classrooms is listed with the general report of the classroom, and will not appear upon the chart at the end of this section.

The writer listed major items of equipment within the classrooms, but plates will indicate additional equipment present. It must be realized that classrooms visited were also used for ninth and tenth grade science classes.²/

Teaching and evaluation techniques.— A great deal of homework assigned science pupils involved memory work. Under "teaching techniques" in the checklist, memory

¹/Data summarized in Table 2, p. 70.
²/Data summarized in Table 3, p. 72.
assignment was checked if, in the belief of the writer, a part of the lecture or demonstration took advantage of previous student assignments as an integral part of the teaching situation. Question and answer was checked if questions were asked relative to the immediate teaching.

Blackboard recitation was a technique used often within the classrooms. There was never any project work being done in the presence of the writer.

Written work was almost always present in the form of the copy book which each student kept up-to-date with notes of current class lectures, demonstrations, and homework. These copy books were periodically picked up for correction, and the accuracy and neatness with which these copy books were kept contributed to the mark given to the student.1/

Organization of classwork.-- Organization of the classwork always followed the suggestion of the Ministry of Education and, as a result, that section of the questionnaire breaking classwork organization into several sections was deleted.

Teacher Data.-- In situations where it was difficult to obtain the exact age of the teacher, the writer made an estimate.

1/Data summarized in Table 4, page 74.
There was little opportunity to inquire about the additional work experience of the individual teachers whose classes were visited. As a result, this question was not pursued following the first few classroom visitations and was dropped from consideration. 1/

1/ Data Summarized in Table 5, page 76.
School 29, Moscow, Grade 7, Physics.— Forty-two students were present in the classroom. Classroom size was 60 square meters. Light meter readings were 9, 10, 9.

1. Laboratory equipment included a demonstration table, water, and gas. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. There was evidence of a memory assignment being made, and blackboard work was being done. There was neither discussion nor project work carried on.

3. Evaluation techniques included board recitation during the class period, and copy books of written work kept by the student. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 50 years of age. Length of training, and number of years of teaching were not available.
Plate 1. School 29, Moscow, Grade 7, Physics. This student teacher was serving an apprenticeship which included setting up laboratory equipment for classes.

Plate 2. School 29, Moscow, Grade 7, Physics. Students at work with copy books.
School 204, Moscow, Grade 7, Physics.-- Thirty-two students were present in the classroom. Classroom size was 80 square meters. Light readings were 8±10, 8±.

1. Laboratory equipment included a demonstration table, gas, alcohol lamp, balance, and other equipment stored within the room. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. There was neither discussion nor project work carried on.

3. Evaluation techniques observed were the copy books of written work kept by the students. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman 49 years old. She had four years of training and 27 years of teaching experience.
Plate 18. School 204, Moscow, Grade 7, Physics.
Teacher giving actual demonstration

Plate 17. School 204, Moscow, Grade 7, Physics.
Students and laboratory storage area
School 204, Moscow, Grade 6, Biology.-- Thirty-one students were present in the classroom. Classroom size was 67 square meters. Light meter readings were 8+, 10+, 8+.

1. Laboratory equipment included a demonstration table, water, a hot house for plants, and samples of plants. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. A memory assignment had been made, and time was allowed for a formal question and answer period. There was neither discussion nor project work carried on.

3. Evaluation techniques included board recitation during the class period, and copy books of written work kept by the students. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 30 years of age. She had four years of training at the Institute, and 14 years of teaching experience.
Plate 15. School 204, Moscow, Grade 6, Biology. Teacher and pupils during class period

Plate 16. School 204, Moscow, Grade 6, Biology. Pupils during lecture-demonstration
School 315, Moscow, Grade 7, Physics.-- Thirty students were present in the classroom. Classroom size was 65 square meters. Light meter readings were 8+, 8+, 8+.

1. Laboratory equipment included a demonstration table, water, gas, an electric furnace, an electrical board, and a metal waste basket. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. There was neither discussion nor project work carried on.

3. Evaluation techniques included copy books of written work kept by the student. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 25 years of age. She had five years of training at the University, and two years of teaching experience.
Plate 7. School 315, Moscow, Grade 7, Physics.
Teacher and pupils during lecture-demonstration

Plate 8. School 315, Moscow, Grade 7, Physics.
Pupils in classroom
School 315, Moscow, Grade 7, Physics.-- Twenty-seven students were present in the classroom. Classroom size was 65 square meters. Light meter readings were 8+, 8+, 8+. 

1. Laboratory equipment included a demonstration table, water, gas, an electric furnace, and electrical board, and a metal wastebasket. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. There was neither discussion nor project work carried on.

3. Evaluation techniques included copy books of written work kept by the students. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 25 years of age. She had five years of training at the University, and two years of teaching experience.
Plate 19. School 315, Moscow, Grade 7, Physics.
Science teacher with class

Plate 20. School 315, Moscow, Grade 7, Physics.
Second class viewed with above teacher (Plate 22)
School 315, Moscow, Grade 6, Physical Geography.—

Twenty-five students were present in the classroom. Classroom size was 65 square meters. Light meter readings were 8, 8½, 8.

1. Laboratory equipment included geological displays, samples, globes, and maps. There were no demonstration tables, or student laboratory tables.

2. Teaching techniques included lecture and demonstration. There was evidence that a memory assignment had been made, and a question and answer period was provided. There was neither discussion nor project work carried on.

3. Evaluation techniques were not observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a man about 30 years of age. He had five years of training through a Correspondence School, and six years of teaching experience.
Plate 11. School 315, Moscow, Grade 6, Physical Geography. Teacher lecturing
School 315, Moscow, Grade 8, Chemistry.-- Twenty-two students were present in the classroom. Classroom size was 65 square meters. Light meter readings were 84, 84, 8.

1. Laboratory equipment included a demonstration table, water, gas, and glassware. The student laboratory tables had water and gas.

2. Teaching techniques included lecture and demonstration. A question and answer period was provided. There was neither discussion nor project work carried on.

3. Evaluation techniques included board recitation during the class period, and copy books of written work kept by the student. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 40 years of age. She had four years of University training, and 22 years of teaching experience.
Plate 18. School 315, Moscow, Grade 8, Chemistry. Teacher with view of glassware.

Plate 19. School 315, Moscow, Grade 8, Chemistry. Students working with copy books during a lecture.
School 153, Leningrad, Grade 6, Physics.-- Thirty-three students were present in the classroom. Classroom size was 65 square meters. Light meter readings were 10, 8, 7.

1. Laboratory equipment included a demonstration table, water, gas, and an electric panel. The student laboratory tables were each fitted with electricity.

2. Teaching techniques included lecture and demonstration. A question and answer period was also provided. There was neither discussion nor project work carried on.

3. Evaluation techniques included board recitation during the class period, and copy books of written work kept by the students. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 25 years of age. She had five years of training at the Institute, and was starting her first year of teaching.

6. It was pointed out that children did all janitor work within the classroom, such as sweeping and taking care of waste baskets.
Plate 14. School 153, Leningrad, Grade 6, Physics. 
Teacher at front of class

Plate 15. School 153, Leningrad, Grade 6, Physics. 
Students listening to lecture
School 153, Leningrad, Grade 8, Anatomy.-- Twenty-six students were present in the classroom. Classroom size was 65 square meters. Light meter readings were 9, 8, 10.

1. Laboratory equipment included a demonstration table, water, gas, 20 microscopes, terrarium aquarium, human skeleton, stuffed samples of ducks and other wild life, and hot house. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. A memory assignment had been made, and time was allowed for a formal question and answer period. There was neither discussion nor project work carried on.

3. Evaluation technique observed was the naming of parts of the skeleton. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 35 years of age. She had five years of training at the Institute, and 12 years of teaching experience.
Teacher and students

Plate 17. School 153, Leningrad, Grade 8, Anatomy.
Hot house
Plate 18. School 153, Leningrad, Grade 8, Anatomy. Storage area with stuffed animals in classroom

Plate 19. School 153, Leningrad, Grade 8, Anatomy. View of storage area with microscopes in classroom
Aquarium and terrarium
Twenty-three students were present in the classroom. Classroom size was 50 square meters. Light meter readings were 7, 8, 7.

1. Laboratory equipment included a demonstration table, water, hood, and exhaust fan. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. A memory assignment had been made, and time was allowed for a formal question and answer period. There was neither discussion nor project work carried on.

3. Evaluation techniques included board recitation during the class period, and copy books of written work kept by the students. No formal testing was observed, although it was indicated that two tests a month were given.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 30 years of age. She had five years of training at the University, and six years of teaching experience.
Plate 21. Evening School 33, Leningrad, Grade 8, Chemistry. Teacher and pupils

Plate 22. Evening School 33, Leningrad, Grade 8, Chemistry. Class
Evening School 33, Leningrad, Grade 8, Physics.--

Seventeen students were present in the classroom. Classroom size was 40 square meters. Light meter readings were 7t, 7t, 7t.

1. Laboratory equipment included a demonstration table, water, wiring boards, and street wiring samples. Student tables had electricity.

2. Teaching techniques included lecture and demonstration. A memory assignment had been made, and time was allowed for a formal question and answer period. There was neither discussion nor project work carried on.

3. Evaluation techniques included board recitation during the class period, and copy books of written work kept by the students. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a man about 45 years of age. He had five years of training at the University, and 24 years of teaching experience.
Plate 23. Evening School 33, Leningrad, Grade 8, Physics. Teacher and blackboard recitation.

Plate 24. Evening School 33, Leningrad, Grade 8, Physics. Student electrical facilities and wiring diagram mock-ups.
School 29, Leningrad, Grade 7, Chemistry.-- Thirty-seven students were present in the classroom. Classroom size was 50 square meters. Light meter readings were off scale, high.

1. Laboratory equipment included a demonstration table, water, three hoods and three exhaust fans at the rear and front of room. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. A memory assignment had been made, and time was allowed for a formal question and answer period. There was neither discussion nor project work carried on.

3. Evaluation techniques included board recitation during the class period, and copy books of written work kept by the students. No formal testing was observed, although tests were given once a month.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 45 years of age. She had five years of training at the Institute, and 24 years of teaching experience.
Plate 35. School 29, Leningrad, Grade 7, Chemistry.
Teacher and pupil at front of room

Plate 36. School 29, Leningrad, Grade 7, Chemistry.
Hoods at rear of room
School 29, Leningrad, Grade 6, Biology.— Twenty-nine students were present in the classroom. Classroom size was 50 square meters. Light meter readings were 8, 11, 9.

1. Laboratory equipment included a demonstration table, water, extensive wall charts, and individual magnifying glasses. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. There was neither discussion nor project work carried on.

3. No evaluation techniques were observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 40 years of age. She had five years of training at the Institute, and 15 years of teaching experience.

6. The writer was told that the students grew their own seeds.
Plate 20. School 29, Leningrad, Grade 6, Biology. Teacher with wall charts

Plate 28. School 29, Leningrad, Grade 5, Biology. Students during lecture
School 51, Kiev, Grade 7, Zoology.-- Thirty-nine students were present in the classroom. Classroom size was 49 ½ square meters. Light meter readings were 8½, 11, 6½.

1. This was a regular classroom, and had no laboratory equipment.

2. Teaching techniques included lecture and demonstration. A memory assignment had been made, and time was allowed for a formal question and answer period. There was neither discussion nor project work carried on.

3. Evaluation techniques included board recitation during the class period, and copy books of written work kept by the students. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about 25 years of age. She had four years of training at the Institute, and four years of teaching experience.
Plate 29. School 51, Kiev, Grade 7, Zoology
Teacher and pupil at front of room

Plate 30. School 51, Kiev, Grade 7, Zoology
Class during lecture
School 82, Kiev, Grade 7, Biology.-- Twenty-eight students were present in the classroom. Classroom size was 62 square meters. Light meter readings were off scale, low.  

1. Laboratory equipment included a demonstration table, water, models, skeleton, many wall charts, plants. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. A memory assignment had been made, and time was allowed for a formal question and answer period. There was neither discussion nor project work carried on.

3. The evaluation technique observed involved the grading of oral answers.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a woman about thirty years of age. She had four years of training at the Institute, and seven years of teaching experience.

1/It was a cloudy day, and the lights did not operate properly.
Plate 51. School 82, Kiev, Grade 7, Biology Teacher with grade book during question and answer period

Plate 53. School 82, Kiev, Grade 7, Biology Rear of room where models were kept
School 64, Irkutsk, Grade 8, Chemistry.-- Twenty-six students were present in the classroom. Classroom size was 62 square meters. Light meter readings were 7, 8, 7.

1. Laboratory equipment included a demonstration table, water, gas, and chemicals. Student tables were standard, not being of special design for science laboratory work.

2. Teaching techniques included lecture and demonstration. A memory assignment had been made, and time was allowed for a formal question and answer period. There was neither discussion nor project work carried on.

3. Evaluation techniques included board recitation during the class period, and copy books of written work kept by the students. No formal testing was observed.

4. Organization of class work followed the directory of the Ministry of Education.

5. The teacher was a man about 50 years of age. He had four years of training at the Institute, and 23 years of teaching experience.
Plate 63. School 64, Irkutsk, Grade 8, Chemistry Teacher and partial view of chemicals at laboratory demonstration table

Plate 64. School 64, Irkutsk, Grade 8, Chemistry Class at work with copy books
Plate 35. School 64, Irkutsk, Grade 8, Chemistry Writer at front of school with students
2. Discussion of Plates

Plates have been included for validation of each science classroom visited, as well as to verify checklist information where possible.

The plates used for documentation in this study seem to bear out the objectives of Soviet education stated in Chapter II. Although there was a noticeable lack of group activity work in classes visited, such work may well be carried on in the Komsomol, Pioneer Palaces, or other youth activity centers. No plates show students involved in group activity to solve science problems.

The plates indicate that considerable science equipment was available, although the classes observed were not involved in more than a perfunctory teacher use of such equipment. Because the laboratory equipment seemed clean -- lack of dust might indicate relatively recent use -- two explanations might be considered. Perhaps the writer's visitations were made too early in the year for classes to be orientated toward pupil experimentation with equipment. Another possibility might be that equipment available was primarily for the use of upper science classes meeting in the same room. Some of the science equipment available in the rooms visited is shown in Plates 4, 17, 18, 19, 20, 24, and 32.

The presence of many plants in the plates indicates
considerable interest and knowledge of their care, although these factors were not obvious during the visitations made.

All classrooms photographed were neat -- equipment well placed, no papers on the floor -- which might well support the objective of rigid discipline as expressed in Chapter II. The teachers seemed indifferent to the mechanical aspects of the classroom, such as lighting and ventilation. On cloudy days it was necessary to request that the lights be turned on in order to take photographs.

It will be noted that pictures of Communist leaders are conspicuous in most of the classrooms.

As confirmed by the plates, the students appeared to be well-fed, well-dressed, happy but not exuberant. The attentiveness of science students is shown in Plates 2, 6, 8, 10, 13, 15, 19, 22, 26, 28, 30, and 34.

Science teachers involved in lecture-demonstration are shown in Plates 3, 7, 9, 11, 14, 27, and 31.

Students involved in recitation before the class are shown in Plates 5, 12, 16, 21, 23, 25, 29, and 33.
Introduction to Table 2. -- Table 2 presents a description of science classes and classrooms compiled from the Science Class Checklists.

Table 2. Summary of Science Class and Classroom Data Obtained by Science Class Checklist

<table>
<thead>
<tr>
<th>School No.</th>
<th>City</th>
<th>Grade</th>
<th>Subject</th>
<th>Size (school)</th>
<th>Subject Size (classroom)</th>
<th>Light Readings I</th>
<th>Light Readings II</th>
<th>Light Readings III</th>
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</thead>
<tbody>
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<td>Physics</td>
<td>42</td>
<td>60</td>
<td>9</td>
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<td>9</td>
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<td>7</td>
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<td>7</td>
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</tbody>
</table>

a/See Appendix A

Comments on Table 2. -- Four sixth grade science classes were visited; seven seventh grade science classes were visited;
five eighth grade science classes were visited.

The range of class size was 17 to 42 students, with a mean of 29 students.

Classroom size is expressed as square meters of floor space. Light meter readings were taken as objective information that might have future value.
Introduction to Table 3. - Table 3 presents a description of science laboratory equipment compiled from the Science Class Checklists.

Table 3. Summary of Laboratory Equipment Obtained by Science Class Checklist

<table>
<thead>
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<th>School No.</th>
<th>City</th>
<th>Grade</th>
<th>Subject</th>
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<td>no</td>
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<td>no</td>
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</tbody>
</table>

a/M - Moscow; L - Leningrad; K - Kiev; I - Irkutsk

Comments on Table 3. - Laboratory demonstration tables were found in 14, or 88 per cent, of the classrooms. Student laboratory tables were found in three, or 19 per cent, of the classrooms.
Water was available in 13, or 81 per cent, of the classrooms. Gas was available in eight, or 50 per cent, of the classrooms. Hoods and exhaust fans were available in two, or 13 per cent, of the classrooms.
Introduction to Table A.—Table A presents information regarding observed teaching and evaluation techniques compiled from the Science Class Checklists.

Table A: Summary of Observed Teaching and Evaluation Techniques Obtained by Science Class Checklist

<table>
<thead>
<tr>
<th>School No.</th>
<th>City</th>
<th>Grade</th>
<th>Subject</th>
<th>Lecture</th>
<th>Memory Questions</th>
<th>Demonstration</th>
<th>Assignment &amp; Recitation</th>
<th>Evaluation</th>
<th>Work</th>
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<td>yes</td>
<td>yes</td>
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<td>no</td>
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<td>204</td>
<td>M</td>
<td>7</td>
<td>Phys.</td>
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<td>no</td>
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<td>no</td>
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<td>Phys.</td>
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<td>Phys.</td>
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<td>yes</td>
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<tr>
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</tbody>
</table>

a/M - Moscow; L - Leningrad; K - Kiev; I - Irkutsk
Comments on Table 4.-- The lecture-demonstration method was observed in all, or 100 per cent, of the science classes visited. Teaching based on memory assignment was observed in 10, or 63 per cent, of the classes. Teaching based on questions and answers relative to immediate classroom work was observed in 12, or 75 per cent, of the classes. Evaluation by board recitation was observed in nine, or 56 per cent, of the classes. Evaluation of written work (copybooks) was done in 11, or 69 per cent, of the classes. No formal testing was observed. The writer did not witness other observation evaluation techniques used by the teachers.
Introduction to Table 5:-- Table 5 presents information regarding teacher training and teaching experience compiled from the Science Class Checklists.

Table 5. Summary of Teacher Training and Experience Obtained by Science Class Checklist

<table>
<thead>
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<th>Teacher Age</th>
<th>Sex</th>
<th>School No.</th>
<th>City</th>
<th>Subject</th>
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<th>Training Place</th>
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<tr>
<td>50†</td>
<td>M</td>
<td>64</td>
<td>I</td>
<td>Chemistry</td>
<td>8 Institute</td>
<td></td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>

*\(a/M\) - Moscow; \(L\) - Leningrad; \(K\) - Kiev; \(I\) - Irkutsk

Comments on Table 5:-- Three, or 19 per cent, of the 16 science teachers observed were men.

Five, or 31 per cent of the teachers had university training; eight, or 50 per cent of the teachers had institute.
training; one teacher, or 6 per cent, trained through correspondence school. Information regarding the training of two teachers, or 13 per cent, was not available.

Nine teachers observed, or 56 per cent, had five years of training; six teachers observed, or 38 per cent, had four years of training. Information on length of training of one teacher, or 6 per cent, was not available.

The range of teaching experience of teachers observed was from first year to 27 years.
3. Summary of Data

1. The average number of pupils in science classes visited was 29.

2. Of the 16 science classrooms visited, only two, or 13 per cent, did not have a laboratory demonstration table.

3. Of the 16 science classrooms visited, three, or 19 per cent, had student tables adapted for laboratory use.

4. Thirteen, or 81 per cent, of the 16 science classrooms visited had running water available.

5. Eight, or 50 per cent, of the 16 science classrooms visited had gas available.

6. Electricity was available in all classrooms.

7. A hood and exhaust fan were available in two, or 13 per cent, of the 16 science classrooms visited.

8. Lecture-demonstrations was observed as a teaching method in all of the science classes visited.

9. Reciting on a memory assignment was used as a teaching method in 10, or 63 per cent, of the 16 science classrooms visited.

10. Questioning was used as a teaching technique in 12, or 75 per cent, of the 16 science classrooms visited.
11. Blackboard recitation was used as an evaluation technique in nine, or 56 per cent, of the 16 science classrooms visited.

12. Written work in copybooks was observed in 11, or 69 per cent, of the 16 science classrooms visited.

13. No formal testing was observed.\(^1\)

14. Observation of pupil action as an evaluation technique of mastery of science principles was not observed.

15. Of the teachers observed in the 16 science classes visited, three, or 19 per cent, were men.

16. With one possible exception, all science teachers observed had four or more years of professional training.

17. The teaching experience of science teachers visited ranged from one beginning teacher to one in her 27th year of teaching.

\(^1\)For copies of tests, use Appendix D.
CHAPTER V

RESULTS OF THE STUDY

1. Summary

This study seeks to examine the teaching of science in grades six through eight in selected ten-year schools of the U.S.S.R. Schools were visited in Moscow, Leningrad, Kiev, and Irkutsk. Visitations were arranged by INTOURIST, probably with direction from the Ministry of Education. A checklist was completed for each science classroom visited in grades six through eight. Classroom visitations were documented by photographs.

2. Major Conclusions

The following conclusions are based upon visitations to 16 science classrooms in 12 schools of the U.S.S.R.

1. No horizontal correlation of science material in the Soviet curriculum was observed. This may indicate strong departmentalization of subject matter.

2. There was no indication that the lecture-demonstration method of science teaching often observed was accompanied by any individual project work.

3. The extensive use of board recitation based on homework was seen in the science classrooms visited. None showed provision for thought-
provoking student science projects. This type of activity may be carried on at Communist youth activity centers.

4. The extensive use of copybooks was suggestive of rote teaching and memory work.

5. The teaching methods observed in the science classes visited in this study are consistent with stated objectives of the U.S.S.R. as indicated in Chapter II.

6. Science classrooms visited were well equipped.

7. The presence of gymnasium and playground facilities at all schools visited indicates that interest in science has not resulted in the exclusion of other curricula in Soviet schools.

8. The predominance of schools on double session may indicate a shortage of school buildings, but may also indicate a practical desire to take fuller advantage of the capital investment in expensive science laboratories and equipment.

9. The 18 hours per week taught by science teachers in grades six through eight in the Soviet Union is an indication of a light teaching load.

10. Science teachers observed were well-trained, if length of training is the criterion.\footnote{See Table 5, page 76.}
11. The science program as observed in Irkutsk, Siberia, indicates that distance from Moscow does not diminish central control.

12. Discipline seemed to be strict in science classrooms visited.

13. Although the writer did not observe full use of available equipment in science classrooms visited, full use might be carried on in other science classes. (These rooms were also used for upper science classes).

14. Plants in the classrooms were not observed being cared for, but their excellent appearance indicated proper attention.

15. Mechanical aspects of education, such as lighting and ventilation of rooms, seemed to be of minor concern to Soviet teachers.

16. Children observed in science classrooms seemed to be happy, well-fed, and well-clothed.

17. The general excellence of science classrooms visited would tend to indicate that the Soviet Union is carrying out a major science educational commitment.
3. Limitations

1. Conclusions of this study are based upon a limited number of class visitations.

2. Time spent in each science classroom was limited.

3. The instrument used in this study was not validated by a jury or by a comparison with other instruments.

4. There is no evidence of the reliability of the instrument used.

5. Observations were limited to a single observer.

6. INTOURIST was the sole apparent control for the selection of schools visited for this study.

7. Only urban schools were visited.

8. A limited number of republics in the U.S.S.R. were visited.

9. The writer did not have personal facility with the Russian language. (An interpreter was present during all school visitations.)

10. Russian documents, information and conversations channeled through interpreters are not primary sources of information.
4. Suggestions for Further Research

Examination of Soviet classrooms opened new and interesting leads. The following suggestions describe further research that might provide fruitful exploration.

1. An extensive study of the science curriculum at the eighth grade level, as well as student interviews, might indicate the relative amount of information to be gained by the Soviet student as compared with a similar student in the United States.

2. Additional study might provide for the administration of a battery of tests to matched (in terms of science subject matter) groups of Soviet and American students.

3. The examination of a selected number of Soviet students relative to their knowledge of industries within their society would provide information regarding their practical science background. For example, what knowledge has the Russian physics student of the making of a watch or an automobile, or the mining of coal?
4. Further study might examine the facilities available to the young child who is "trainable" but not "educable". There was no visible evidence in science classes visited of "trainable" students being present.

5. A study of adult science education within the Soviet Union should reveal the extent of the program. The ardor with which the young adults entered into their science classwork in School 33 in Leningrad would seem to indicate that a graduate of the adult secondary program might be well advanced when compared with youth graduating from the regular program.

6. A thorough examination of the science curricula of Soviet boarding schools might indicate whether they differ from the science curricula of the regular
7. An extensive evaluation of the current science textbooks used in the middle grades within the Soviet Union would be valuable.

8. A study might be directed toward the method used to develop new science educational aids. For example, this study touches upon the Experimental School No. 204 of Moscow, where new textbooks are first used before being validated for use throughout the Soviet Union. It would be valuable to follow the progress of a science textbook through its original writing, the extent of its testing in School 204, and then its final printing, noting the kinds of changes made.

9. A study devoted to the science teacher-training program might reveal some valuable information. Insight might be gained regarding the Soviet interest in science teaching methods. How varied are the possible techniques one may use when entering a science classroom as a beginning teacher? How much stress is laid on method as compared with subject matter?

10. This study involved only urban schools. A similar study of rural schools might allow a comparison of the quality of science teachers, materials, and methods.

11. A further study might concern science programs in metropolitan areas not covered by the present study.
12. An extensive study in one school might present a more valid picture of what transpires within a school upon the arrival of a visitor. This might entail an American exchange teacher remaining within one school for perhaps six to ten months.
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APPENDIX A

SCIENCE CLASSROOM CHECKLIST AND ADMINISTRATIVE QUESTIONNAIRE

LIGHT METER EXPLANATION
SCIENCE CLASS CHECKLIST

School Number _______________ City _______________
Grade ______________________ Subject _______________
Number of Pupils _____________ Size of Classroom ________
Light Readings ____________, ________, ________

Laboratory Equipment
________ Demonstration Table
________ Student Lab. Tables
________ Water
________ Gas
________ Hood
________ Exhaust Fan
________ Other

Teaching Techniques Observed
________ Lecture-Demonstration
________ Memory Assignment
________ Question and Answer
________ Discussion
________ Project Work
________ Other

Evaluation Techniques
________ Board Recitation
________ Written Work
________ Formal Testing
________ Observation
________ Other

Organization of Class Work
________ Daily Lesson Plan
________ Unit
________ Topic
________ Problems
________ Other

Teacher Age _______________
Training ________________
Number of Years Teaching ___

Sex ________________
Number of years _________
Other Work Experience ____
ADMINISTRATIVE QUESTIONNAIRE

School
Number ___________________ City _________________________
Age of Building _______________________
Number of Pupils ____________ Cost/Pupil (if available)_____ 
Number of Sessions ___________________
Size of Library _______________________
Playground or Gymnasium Available ______________________

Teachers
Sex ____________________________
Salary _________________________

Curriculum
Science Correlation: Horizontal _______ Vertical ______
Driver Education Classes ________________________________
Typing Classes ____________________________

Miscellaneous
Sources of Teaching Material

Methods of Handling Discipline

Left-handed Pupils

Placement of Graduates (if readily available)
## Conversion of Light Meter Readings to Candles per Square Foot

<table>
<thead>
<tr>
<th>Exposure Value</th>
<th>Scale Numerals</th>
<th>Candles per Square Foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
<td>1.6</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>3.2</td>
</tr>
<tr>
<td>11</td>
<td>5</td>
<td>6.4</td>
</tr>
<tr>
<td>12</td>
<td>6</td>
<td>12.8</td>
</tr>
<tr>
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<td>7</td>
<td>26.0</td>
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<tr>
<td>14</td>
<td>8</td>
<td>52.0</td>
</tr>
<tr>
<td>15</td>
<td>9</td>
<td>104.0</td>
</tr>
</tbody>
</table>

*Assistance in preparing this table was obtained from E. R. Harrison, Manager - Product Planning, Electric and Industrial Instruments, General Electric Company, West Lynn, Massachusetts.*

*Low range setting*

*Better Pictures with Your Golden Crown Exposure Meter, Type PR-3, Instrument Department, General Electric Company, West Lynn, Massachusetts, p. 27.*
APPENDIX B

ROUTE FOLLOWED
AREAS CLOSED TO FOREIGNERS
28 August 1957

- Closed area
- Closed city
- Open city within a closed area

USSR
APPENDIX G

INTRODUCTORY LETTER IN RUSSIAN WITH TRANSLATION
Дорогой Коллега!

Моё имя Миллард Гармон; я учителю в США. Я преподаю математику и другие науки на уровне седьмого класса.

Учителя в моей стране относятся с большим уважением к огромным успехам, которые вы здесь достигли за последние сорок лет. Я хотел бы присутствовать на ваших уроках и рассказать вам о наших учениках и о курсах которые мы преподаем. Я очень бы был благодарен за возможность снять вас и ваших учеников, чтобы показать эти снимки моим ученикам дома.

Американцы и русские имеют много общего. Оба народы имеют своё начало в революциях; мы оба являются честолюбивыми и стараемся достойно донести до конца начатое дело. Я пришел с собой сердечный привет от американского народа и надеюсь, что моё пребывание оближит нас и улучшит отношения между нашими народами.

Искренне ваш,

Миллард Гармон
Dear Friend:

My name is Millard Harmon and I am a classroom teacher from America. I teach math and science at the seventh grade level.

Teachers in my country greatly respect the tremendous progress you teachers have made here in the last forty years. It is my hope to visit your classroom, tell you and your students about my students and the classroom in which I teach. Perhaps you will allow me to take pictures of you and your students to take home to show to my pupils.

Americans and Russians have a great deal in common - we both have our beginnings in revolutions - we are both ambitious and eager to get things done. I bring friendly greetings from the people of my country to the people of your country with the hope that this visit will promote better understanding between us.

Most cordially,

Millard Harmon
Sample 7th Grade Arithmetic Graduation Test*

*Translation by J. T. Baer, Graduate Center, Harvard University.
Examination in algebra
by Natasha Kharitonova,
a pupil of class 7b in
high-school No. 204
called "Gorkij".

Form No. 2

(grade:) 5

Head of examination committee:
Teacher: (signature) Shcharlov
Assistant: (signature unreadable)

Problem 1: A group of pupils leaves the dock in a motor boat going upstream. They agreed to come back five hours after they left. The speed of the motor boat in standing water is 12.5 kilometers an hour, the speed of the current is 2.5 kilometers an hour. By how much greater is the distance which the pupils can move away from the dock if they spend three hours on shore before going back?
x Km—the increased distance by which the pupils can move away from the dock.

\[ \frac{x}{10} \] hours—the time in which the pupils move the increased distance against the current of the river.

\[ \frac{x}{15} \] hours—the time in which the pupils will cover the increased distance with the current of the river.

(12.5 + 2.5 = 15) Km/hour—-speed of the motor boat with the current of the river

(12.5 - 2.5 = 10) Km/hour—speed of the motor boat against the current of the river

\[ x = 12 \text{ (Km)} \]

**Verification**

\[ \frac{12}{10} + \frac{12}{15} + 3 = 5 \]

\[ 36 + 24 + 90 = 150 \]

\[ 150 = 150 \]

2. Solve the system of equations:

3. Dissolve the parentheses:
Sample Seventh Grade Russian Language Test*

*Translation by J. T. Baer, Graduate Center, Harvard University.
The Head Administrative Office of Schools of the Ministry for Instruction of the U.S.S.R.

Examination Problems
for the Final Examinations in Russian Language
for the Study Program of the 7-year Schools
in the Academic Year 1957/58.


Explanatory Note

The Head Administrative Office of Schools of the Ministry for Information of the U.S.S.R. publishes obligatory examination problems for the examination of seventh year classes in the Russian language.

In the current academic year (1957/58) examinations in Russian in the seventh grade are held primarily with regard to the general study program of that class plus the more important sections (of topics) and questions from the study programs of previous years (in abbreviated form).

In Russian language each examination problems consists of:

(1) a question in grammar
(2) a sentence for grammatical analysis.
Students answering the question on grammar must show a clear mastery of the studied material; be able to compile or independently select examples for the memorized rules and apply the rule to the example given by the teacher.

When answering questions on grammar, the students must be made to show their knowledge of the material in the textbook on Russian language by S. G. Barkhudarov and S. E. Krjuchkov, part II, and the textbook on grammar by L. V. Shcherba, part I, or the textbook on Russian language by S. G. Barkhudarov and S. E. Krjuchkov, part I, giving consideration to the "Directions about the Use of Textbooks in the Academic Year 1954/55" and the "Directions about the Supplementary Abbreviation of Study Materials and Textbooks" for 1956.

Page 4

For grammatical analysis sentences are chosen which are fairly complicated in their structure, as, e.g.: "Now touching the waves with its wings, now swinging up like an arrow to the clouds, it cries, and the clouds hear the joy in the bold cry of the bird." Problems for grammatical analysis must be selected by the teacher in such a way as to show in their combination all the phases of the academic course in grammar.

There is a syntactical, morphological and phonetical sentence analysis. When giving the phonetical or structural analysis of the word, it is not necessary to analyze absolutely all the words of a sentence; the analysis must be limited to
single words that offer themselves to a testing of the knowledge in grammar of the pupils. What concerns the parts of speech, one sentence must be selected which is complicated in composition.

When sentences are analyzed, there must also be a check on the knowledge of the rules of orthography and punctuation.

If there is no question on morphology in the examination problems, it is necessary to test the knowledge in this field of grammar on the analysis of an example given in the second question of the examination problems. The procedure should be the same if there is no question on syntax in the examination problem.

Upon receipt of the examination problems, the teachers may familiarize the students with their content. There should not be a repetition of the study material by way of mechanical memorization on the basis of the problems, but a review must be in harmony with the program, having in mind to prepare the pupils as to the complexity and importance of the material.

Ten days before the beginnings of the examinations the teachers copy the content of the published examination problems on single cards. At the same time the teacher must have prepared sentences for the grammatical analysis which are not communicated to the students. They must be confirmed by the principal.

Page 5.

There may also be use of printed booklets with examination
problems on the examination. In that case the content of the problem is not transferred on cards. The pupil, when he goes to the table, takes a card which has been marked with the number of the problem and uses the printed booklet with examination problems given to him by the examination committee, to think over his answers. The sentences for grammatical analysis (after having been confirmed by the principal of the school) are entered by the teachers on the same cards on which appear the number of the examination problems.

Examination Problem No. 1.

1. Unaccented stem vowels and their orthography. Orthography of the voiced and voiceless consonants and orthography of the consonants that cannot be pronounced. Structure of the word. Partitive soft and hard signs (6 and 6).

2. A sentence for analysis.

Examination Problem No. 2.

1. Bring examples of cases of the alternation of vowels in the stem of words. The orthography of the prefixes pre- and pri- and the prefixes in V-. Rules about the carrying over of words.

Examination Problem No. 3.

1. The noun; its definition. Three types of declension orthography of the case endings of nouns of the first and third declension in the nominative, dative and locative of the singular.
2. A sentence for analysis.

Examination Problem No. 4

1. The orthography of nouns of the first and second declension with a stem ending on a sibilant in the instrumental case of the singular. The declension of nouns in -mja. The spelling of the noun suffixes: -ik, -ek, -chik, -shchik; o, e, after sibilants in the suffixes.

2. A sentence for analysis.

Examination Problem No. 5

1. The adjective; its definition. Analitative, relative and possessive adjectives. Degrees of comparison of adjectives. Declension of the full adjectives (on examples).

2. A sentence for analysis.

Examination Problem No. 6

1. The orthography of the case endings of the masculine and neuter adjectives of the singular in the instrumental and locative case and of the feminine gender in the instrumental and accusative case. Spelling of the adjectival suffixes: -н, -ом, -ем, -ан, -ан.

2. A sentence for analysis
Examination Problem No. 7
1. The numeral; its definition. Cardinal and ordinal numbers. Decline the structural numeral in combination with the noun (by direction of the teacher). The orthography of cardinal numbers.
2. A sentence for analysis.

Examination Problem No. 8
1. The pronoun; its definition. The declension of the personal pronouns and of the pronoun "whose". The orthography of prepositions with pronouns, the declension of indefinite and negative pronouns.
2. Sentence for analysis.

Examination Problem No. 9
1. The verb; its definition. Indefinite form of the verb. The aspects of the verb.
2. A sentence for analysis.

Examination Problem No. 10
1. The indicative mood. The tenses of the verb. The spelling of the endings of verbs of the first and second conjugation.
2. A sentence for analysis.

Examination Problem No. 11
1. The conditional mood and its orthography. Spelling of the imperative.
2. A sentence for analysis.

Examination Problem No. 12

1. The participle; its definition. Orthography of the active and passive suffixes of present participles. Orthography of the short passive participles.

2. A sentence for analysis.

Examination Problem No. 13

1. The declension of participles and their spelling in case endings. Decline an active participle of the present tense with the particle -sja (by direction of the teacher). The transition of participles into adjectives and nouns. Orthography of nc with participles.

2. A sentence for analysis.
Sample of Pupil Card Regulations Carried by Russian Students

*Translation by J. T. Baer, Graduate Center, Harvard University.
(Inside of cover)

Ministry of Education of the U.S.S.R.

A pupil's card No. ______

______________________

Last Name

First Name ______ Middle Name

Date of birth ____________ ______________

Class ________________ School No. ______

______________________

Town, Village

District, Province

Approved ____________ _______________ 195

Valid till ____________ _______________ 195

The Principal
Rules for Pupils

Each pupil is obliged:

1. To master with will and persistence theoretical knowledge and practical habits in order to become an enlightened and cultured citizen and to bring the highest possible good to his Soviet mother country.

2. To study assiduously, attend his lessons regularly, not be late for his classes, to do all his homework independently and at the proper time.

3. To execute faithfully the directions of the Principal (superior in charge) and the teachers of the school.

4. To come to school with all the necessary school books and writing materials, and not to take along unnecessary things.

5. To appear in school clean, with combed hair and neatly dressed; at the entrance to the school buildings to take off his headdress.

6. To take his permanent seat in the classroom immediately after the bell and to get ready all that is needed for the lesson; to come in and go out of class during the lesson only with permission of the teacher.

7. To sit straight during the lesson, to listen carefully to the explanations and answers, not to speak and be busy with other things.

8. When the teacher enters the classroom or any of the superiors in charge and when they leave it, he is to greet them by getting up from his seat.
9. When answering the teacher, he must get up, stand straight and sit down only after the teacher has given permission. When he wishes to answer or to ask something, he must silently raise his hand and wait for permission.

Page 3 of Card.

10. He must write down into his study booklet, or into a separate exercise book everything the teacher assigns. These notes must be shown to the parents.

11. He must be courteous and well mannered to the principal (the superior in charge), the teachers and all those working at the school. When meeting them on the street, he must greet them politely with a bow, and boys in such case must take off their caps.

12. He is required to be courteous with his elders, to conduct himself modestly and properly in school, at home, on the street and in public places.

13. He must not swear, smoke, play with money or whatever else.

14. He is required to take care of the school property, to handle his own and his fellows' belongings carefully, to keep his place in order and to observe cleanliness on the school grounds.

15. He must be courteous and respectful to the old, the weak, and the sick and to small children, let them have the road, give them the seat and help them.

16. He must obey his parents, be polite to them and help them; show respect and love toward younger brothers and sisters.
17. He is obliged to keep cleanliness in his room and to have his clothes, shoes, bed, and working place in order.

18. He must always have this pupil's card with him, not give it to anyone else and show it upon request to principal (superior in charge), the teachers and representatives of the Soviet authorities.

19. He should carry with pride the name of a pupil of a Soviet school and value the honor of his school as highly as his own.

For violation of these rules, a pupil is subject to punishment including expulsion from the school.

Inside cover (back)

Continued

up to _______ ___________________________ 195___

class _______

Principal of the school __________________________

up to _______ ___________________________ 195___

class _______

Principal of the school __________________________

up to _______ ___________________________ 195___

class _______

Principal of the school __________________________
Учнівський білет № 

(прізвище)

(ім'я, по батькові)

народження — р. є уч. 

клас — школа № 

(міста, села)

(району, області)

Видано — 195 — р.

Дійсний до — 195 — р.

м. п.

Директор школи

5. З'являтися до школи чистим, засеченним і одягнути в лялечках. При вході в школу припинячись синчати громою убір.

6. Нагадується рідна дзвінка вийняти своє постійне місце в класі і при- готувати все потрібне для уроку. Заходять до класу і виходять з нього під час уроку тільки з дозволу вчителя.

7. Після часу уроку сидять прямо, уважно слухаючи пояснення і відпо- віді, не розмовляючи і не займаясь сторонніми справами.

8. Коли до класу входити вчителя або хтось із відвідувачів і хохонь виходять з нього, — витягти їх відповідно до правил і правил.

9. Відвідувачі вчителів, вистав- ти, стоять прямо і сидять тільки після дозволу вчителя. При важали відповідності або відпо- відності руку і жадати дозволу.

10. Точне записувати в зошиті або в окремий зошит все те, що за- дане вчителем. Записи показувати батькам.

11. Бути чесними і відповідними в директором (завідувачем), учителями і відповідально з самого відвідування школи. Зауваження на вимоги ніхто не повертається.

12. Бути чесними і відповідними з відповідною місцем, визначеної в школі, але на вулиці та в громадських місцях.

13. Не латись, не курити, не грати на грошу і на будь-які речі.

14. Берегти шкільне майно. Береж- но походять з речами товариців і своїми. Тримати в порядку своє місце, держати чистоту в шкіль- них приміщеннях.

15. Бути відповідними та уважними до старших, слабких, хворих і до майбутніх

ПРЯМОВЗЕМНО

до — 195 — р.

м. п.

Клас ————

Директор школи

до — 195 — р.

м. п.

Клас ————

Директор школи

до — 195 — р.

м. п.

Клас ————

Директор школи

Д/з 11008. Друк. Вид-во АМ УРСР, Київ, 10. VI-54 р. з. № 106—300.000.
APPENDIX E

TRANSLATION OF TEXTBOOK INDICES
Introduction
1. The Multiplicity of the Animal World
2. Importance of Zoology

Chapter I - Protozoa
3. Infusoria
4. The Common Amoeba
5. The Malarial Parasite

Chapter II - Coelenterata
6. The Hydra - Predatory Animal of Fresh Waters
7. The Hydra - Multicellular Animal
8. The Coelenterate Animals

Chapter III - The Worms
9. The Outer Form and Type of Life of the Rain Worm
10. The Inner Organs of the Rain Worm
11. Ascarid and the Oyster
12. Trichinosis
13. The Fight with Worm-Parasites

Chapter IV - Mollusks
14. Shell Snail
15. The Vine Snail
16. The Mucous Snail

Chapter V - Arthropodes
17. Outer Structure and Type of Life of the River Crayfish
18. The Inner Organs of the River Crayfish
19. Dafnia and Cyclop
20. The Garden Spider
21. The Taiga Pincers - Carriers of Encephalitis
22. The Outer Structure and Type of Life of the June Bug
23. The Inner Organs of the June Bug
24. The Development of the June Bug and the Fight with It
25. The Cabbage Worm
26. The Bed Bug
27. The Asiatic or Migrant Locust
28. The Potato Bug

Chapter V - Arthropodes (cont.)
29. The Fight with Agricultural Pests
30. Insects - Carriers of Agents of Diseases
31. The Silk Worm
32. The Life of the Bee Family
33. Apiculture

Chapter VI - Fish
34. The Type of Life and Outer Form of the River Perch
35. The Muscles, Skeleton and Nerve System of the Perch
36. The Organs of the Body Cavity of the Perch
37. The Reproduction and Development of Perch
38. The Diversity of the Fish
39. Fishery in the U.S.S.R.
40. Pisciculture

Chapter VII - Amphibians
41. The Type of Life and the Outer Form of the Green Frog
42. The Muscles, the Skeleton and Nerve System of the Frog
43. The Organs of the Body Cavity of the Frog
44. Reproduction and Development of the Frog
45. The Toad and the Triton

Chapter VIII - Reptiles
46. The Nimble Lizard
47. Snakes
48. The Age of Reptiles

Chapter IX - Birds
49. The Type of Life and Outer Form of the Rook
50. The Muscles, Skeleton and Nerve System of the Rook
51. The Organs of the Body Cavity of the Rook
52. Reproduction and Development of Birds
53. The Origin of Birds
54. The Variety of Birds
55. The Nesting and Migration of Birds
56. The Use of Birds and Their Preservation
57. Domestic Birds
58. The Keeping and Feeding of Chickens
59. Geese, Ducks, and Turkeys
60. Poultry Raising in the U.S.S.R.

Chapter X - Mammals
61. The Type of Life and Outer Form of the Rabbit
62. The Muscles, Skeleton and Nerve System of the Rabbit
63. The Organs of the Body Cavity of the Rabbit
Chapter X - Mammals

64. Reproduction and Development of the Rabbit
65. The Ovipositor Mammals
66. The Marsupial Mammals
67. The Insect Eaters
68. Cheiroptera
69. Rodents
70. Predatory Animals
71. The Groups of Pinnipeds and Cetaceans
72. The Groups of Artiodactyla and Non-Artiodactyla
73. The Group of Proboscis
74. The Group of Primates
75. The Furbearing Trade

Chapter XI - Agricultural Animals

76. The Large Horned Cattle
77. Breeds of the Large Horned Cattle
78. The Keeping of Large Horned Cattle
79. The Feeding of Large Horned Cattle
80. The Care of Large Horned Cattle and the Fight against its Diseases
81. How the Kostrom was Developed
82. Hogs
83. Sheep
84. Horses
85. Development of Socialist Stock Raising

Conclusion

86. Survey of the Animal World
87. Development of the Animal World
88. Likenesses and Differences between Man and Animals
89. Origin of Man
90. The Change of the Animal World by Man

Chemistry Text Book for the Seventh Grade of the Seven-Year and Middle School

Introduction

Chapter I - Matter and its Properties. The Molecular Theory

1. Matter and its Changes
2. Properties of Matter
3. Pure Matter and Mixtures
4. Purification of Matter
5. Molecular Structure of Matter
6. The Various Physical States of Matter from the Point of View of the Molecular Hypothesis

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Chapter I - Matter and its Properties (Cont.)

7. Pure Matter and Mixtures from the Point of View of the Molecular Theory
8. Size of Molecules
   Questions for Review
   Exercises and Problems

Chapter II - Chemical Reactions. Atoms. Chemical Symbols and Formulae
1. The Reaction of Decomposition
2. Atoms
3. M. V. Lomonosov
4. The Reaction of Composition
5. The Reaction of Substitution
6. Atomic Weight
7. Chemical Elements
8. Chemical Symbols and Formulae
   Questions for Review
   Exercises and Problems

1. Properties of Oxygen
2. Oxygen in Nature
3. Use and Manufacture of Oxygen
4. Air
5. Oxidation
6. Law of Lomonosov, or the Preservation of Weight of Matter
7. Chemical Equalizations
   Questions for Review
   Exercises and Problems

Chapter IV - Hydrogen. The Law of Constancy of Composition.
1. The properties of Hydrogen
3. Use of Hydrogen
4. Law of Constancy of Composition
5. Computations According to Formula
6. Valency
   Questions for Review
   Exercises and Problems

Chapter V - Water and Solutions
1. Properties of Water
2. The Solubility in Water of Hard Matter
3. The Solubility at Different Temperatures
4. The Solubility in Water of Liquids and Gases
5. The Concentration of Solution
6. Water in Nature
7. Water at the Service of Man
   Questions for Review
   Exercises and Problems
Chapter VI - Bases. Acids. Oxides and Salts

Bases
1. Caustic Soda and Caustic Potassium
2. Caustic Calcium
3. Composition and Properties of Alkalines
4. Non-Soluble Bases

Acids
1. Hydrochloric Acid
2. Sulfuric Acid
3. Other Acids
4. Composition and General Properties of Acids

Oxides
1. The Base Oxides
2. The Acid Oxides

Salts
1. Composition of Salts
2. Chemical Properties of Salts
3. Reactions of Exchange
4. How One Can Foresee the Results of the Reaction of Change
5. The Most Important Salts

Classification of Inorganic Matter
Interactions between Oxides, Acids, Bases and Salts

Conclusions
Questions for Review
Exercises and Problems

Laboratory Experiments (Directions to students for fulfilling laboratory exercises)
Project 1 - The Purification of Boiled Salt
Project 2 - Manufacture of Oxygen and the Study of its Properties
Project 3 - Manufacture of Hydrogen and the Study of its Properties
Project 4 - Solubility of Hard Matter in Water
Project 5 - The Change in Solubility of Hard Matter with the Change of Temperature of the solution.
Project 6 - Bases
Project 7 - Properties of Hydrochloric Acid
Project 8 - Properties of Sulfuric Acid
Project 9 - Oxides
Project 10 - Salts

Physics. Part I. Text Book for the Sixth Grade of the Seven-Year and Middle School

Introduction

1/Translation by J. T. Baer, Graduate Center, Harvard University

Elements of Mechanics

Chapter I
Simplest Measurements
1. The Need of Measurements
2. The Measurement of Length
3. The Scale Ruler
4. The Tape-Measure
5. Errors in Measurement of Length
6. Laboratory Project No. 1
7. Information from the History of Measures
8. Measurement of Areas
9. Measurement of Volumes
10. Laboratory Project No. 2.
11. Vertical Direction
12. Horizontal Direction
13. Weight of Bodies
14. Metrical Measures of Weight
15. Weights
16. Sets of Weights
17. Forms of Weights
18. Rules for Weighing on Scales
19. Laboratory Project No. 3
20. Specific Weight
21. Laboratory Project No. 4
22. Table of Specific Weights
23. What Measure to Use When Solving Problems

Chapter II
Some Properties of Hard Bodies
24. Basic Properties of a Hard Body
25. Force
26. Measurement of Force in Dynes
27. Gradations of Spring Force
28. The Graphic Illustration of Force
29. Pressure

Chapter III
Liquids and Gases
30. Transmission of Pressure in Liquids and Gases
31. Pressure of a Liquid against the Bottom and Walls of a Container
32. Pressure Gauge
33. Pressure in Liquid
34. The Calculation of Pressure of Liquid
35. Communicating Vessels
36. Arrangement of a Water Pipe
37. The Weight of Gases
38. Atmospheric Pressure
39. How the Water Pump Works
40. The Quantity of Atmospheric Pressure
41. The Barometer
42. The Anaroid
43. Atmospheric Pressure at Different Altitudes
Chapter III (Cont.)

44. The Volume and Pressure of Gas
45. The Force Air Pump
46. The Vacuum Pump
47. Pressure of Liquid and Gas on Bodies
    Submerged in Them
48. The Law of Archimedes
49. The Floating of Bodies
50. Laboratory Project No. 5
51. The Submarine
52. The Raising of Submerged Vessels
53. Aeronautics
54. Soviet Stratospheric Balloons

Chapter IV

Motion and Force

55. Mechanical Motion
56. Rectilinear and Curvilinear Motion
57. Uniform Motion
58. Speed of Uniform Motion
59. Inertia
60. Friction
61. The Measurement of the Force of Friction
62. Laboratory Project No. 6
63. Significance of Friction in Practice
64. Ball Bearings

Chapter V

Work and Energy

65. Work
66. Power
67. Stationary Pulleys
68. Movable Pulleys
69. Polyspast
70. Levers
71. Condition of Balance of a Lever
72. Gain in Work with Use of Levers
73. Examples of Levers in Technics and Life
74. Windlass
75. Basic Rule of Mechanics
76. Inclined Plane
77. Coefficient of Useful Action
78. Laboratory Project No. 7
79. Energy
80. The Law of Transformation and Conservation
    of Energy
81. Perpetual Motion

An examination of the paragraph leads of the three
Russian science texts given above indicates a wide range of

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material is covered through the year in the science classes using these texts. However, it is important to recognize that the listings under the chapter headings are little more than paragraph leads. The few paragraphs devoted to each topic do not allow for a mastery of the subject. It is simply an exposure of the student to these concepts at an early age.
APPENDIX F

INFORMATION RELATIVE TO SOVIET VISIT
In 1956, this writer sent a letter to the Premier of the U.S.S.R. requesting permission to visit the schools of the Soviet Union. It was the hope of the writer to study science teaching in Russian schools.

Soviet permission.-- A long wait followed. It was nearly eight months before a reply was received. This reply was affirmative, but did not refer to the specific question of film being taken in the classroom. Because it seemed impossible to do as effective a job without film, a follow-up letter was immediately dispatched making further inquiry into the possibility of using film during classroom visitations. A reply to this inquiry came within two months, and assurance was given that film could be used in schools at any time.

School visitation.-- INTOURIST allowed only urban school visitations. Although permission to visit schools had been received far in advance of the writer's arrival, there was a major misunderstanding as to what constituted "school visitation". The visits had been arranged to fit the needs of the tourist guests of INTOURIST, and the members of these large groups often had only a casual interest in education. Such visitations precluded viewing classes under normal conditions, and did not allow sufficient time for effective questioning periods because of the planned schedule. Observing classes under normal conditions was of major importance to this study. The trip had been deliberately delayed beyond September so as to avoid the other-than-normal conditions prevalent during the first month of any school year.
The inadequacy of these visits for educational research purposes was stressed with INTOURIST. The reply was, "School visitations were requested; Russian school visitations have been provided."

With the aid of Professor Alexei Markushevich, first assistant to Mr. P. Zeemin, Deputy Minister of Education, Russian S. F. S. R.¹, an acceptable method of classroom visitation was arranged. No pre-arranged schedule was adhered to while within the schools. Classes were visited only by the writer and his interpreter so that fairly close-to-normal operation could be observed and filmed.

¹Russian Socialist Federated Soviet Republic
INTOURIST Service.-- INTOURIST was a good host. There have been suggestions that INTOURIST is the Soviet way of keeping tabs on travelers - security-wise. It is true that INTOURIST keeps watch on all foreigners within the Soviet Union. The INTOURIST guides must know in advance where the visitor wishes to go. Anytime the visitor takes advantage of the car and chauffeur provided by INTOURIST for three to five hours per day, an address must be given.

There is no question but what, through the interpreter and the addresses given the driver of the visitor's car, INTOURIST does have a good idea as to where all foreigners are or have been. However, the writer would have been able to make use of public taxicabs and was not obliged to use the interpreter every day. Furthermore, the interpreters the writer worked with were not security-orientated. Thus, it seemed the help provided by INTOURIST was simply a genuine attempt to look after the wants and desires of foreigners within the Soviet Union. Embassy personnel are not afforded the extensive freedom that average foreign visitors are given within the U.S.S.R. 1/

Travel means.-- Travel within the Soviet Union was relatively good. Moscow to Leningrad was traveled by a night train. This train is similar to most first-class trains of Europe.

1/Private communication with Embassy personnel.
Travel from Leningrad to Kiev was by IL-14. This is an aircraft of similar characteristics to our Convair. The ship carries 24 passengers ordinarily, but on this particular flight departure from Leningrad was around midnight and, as a result, there were few passengers. As the plane gained altitude, five of us were more interested in talking than sleeping - the stewardess, a second-mate from a merchant mariner who was returning from six months at sea, a navy jet pilot, and an aircraft engineer. Visiting with these four passengers made the time pass quickly. Travel from Kiev to Moscow was also by IL-14.

Travel to Siberia is only by Russian jet, TU-104. This aircraft carries 70 passengers, is powered by two jets, and has rather short range.\(^1\) Extreme caution was used in flying the Irkutsk run, as the week before one such aircraft had been lost with all hands because of bad weather. As a result, the flight was held over for a day, waiting for weather at Omsk to improve.

Interior appointments of the TU-104 are poor when compared with the Boeing 707. However, the TU-104 is an effective piece of equipment and has been used on scheduled airlines for two years.\(^2\) Flight was made at 29,000 feet at 850 klm per hour.

Reception at schools.— At every school visited during


\(^2\)"Cities to Which Russia's TU-104 Has Flown," *Aviation Week* (December 8, 1958), p. 45.
this study, reception was extremely cordial. Typical was the comment from the teacher at a school in Moscow, "We like you and your people. Please tell your people that we want to be friends!" Similar comments were received throughout the Soviet Union.

The writer had expected to see a "Moment", the Russian copy of the Polaroid Land Camera, while in the U.S.S.R. Apparently none of the staff or students visited had seen a Polaroid or a "Moment", for there was always great amazement when the Polaroid print was taken from the camera in 60 seconds and given to the administrator, teacher, or pupil.

Before leaving Moscow, an attempt was made to purchase a "Moment" from GUM. None was found, and the interpreter explained, "Not too long ago we had a shipment of 'Moments'. They sold for 130 rubles. They went rather fast. Next time we get a shipment, they will probably cost 500 rubles, and then they will last a little longer!" The writer was surprised to find such an acceptance on the part of an average citizen of the Soviet Union to the forced government adherence to the scanty supply of consumer goods.

American children's questions.— Before leaving for the Soviet Union, the author was given questions by his students at Weeks Junior High School in Newton, Massachusetts, to be

1/Russian state department store
asked of Russian students of similar age. This was done, not without some difficulty, at School 717 in Moscow.

School 717 is an excellent school, and an interesting trip had been made throughout the building. As the visit was about to close, the writer asked, "I have questions that my students in America requested that I ask of Russian students. Would it be possible for me to visit with two or three seventh graders for a little while?"

"What are the questions?" asked the administrator.

Several were read, such as, "Do you intend to go on to college? Do you think American students study as hard as you study?"

"Seventh graders are still children. They do not know their own minds. You do not want to ask such questions of seventh graders, but I will have three tenth graders here for you to question."

With this, the writer turned to his interpreter and said, "I guess this is the answer. I can't ask these questions of the seventh graders."

Upon hearing this, the administrator realized that he was not following his promise made upon the writer's arrival. "The place is yours," he had said. "Go where you wish, do what you want, take all the pictures that you want."

The administrator realized that he was not being the perfect host as he had promised and, within a few minutes, three charming seventh grade youngsters were brought into the
teachers' room to be interviewed.

The three girls wore black school uniforms, and bright red scarves which indicated they were members of the Young Pioneers. Tania, Anna, and Irene were each thirteen years old, had entered the first grade when they were seven years of age, and would graduate at seventeen.

Their schedule totaled 32 periods per week, each being 45 minutes long. They attended school on Saturday. Their schedule:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Periods Per Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russian</td>
<td>4</td>
</tr>
<tr>
<td>Algebra</td>
<td>4</td>
</tr>
<tr>
<td>Geometry</td>
<td>2</td>
</tr>
<tr>
<td>Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>Physics</td>
<td>3</td>
</tr>
<tr>
<td>French</td>
<td>3</td>
</tr>
<tr>
<td>History</td>
<td>2</td>
</tr>
<tr>
<td>Zoology</td>
<td>3</td>
</tr>
<tr>
<td>Mechanical Drawing</td>
<td>1</td>
</tr>
<tr>
<td>Home Economics (Labor)</td>
<td>2</td>
</tr>
<tr>
<td>Physical Education</td>
<td>2</td>
</tr>
<tr>
<td>Literature</td>
<td>2</td>
</tr>
<tr>
<td>Geography</td>
<td>2</td>
</tr>
</tbody>
</table>

With this background, the interview proceeded:

Question: What subjects do you like best?

Tania - Literature; Anna - Russian; Irene - History

Question: How much time do you spend on homework?

Tania - 3 hours; Anna - 1 1/2 to 2 hours, but she explained she also studied music and this cut her homework time; Irene - 3 to 3 1/2 hours (about 20 minutes per subject).

Question: What kind of chores and home responsibilities do you have?

1/The Young Pioneers is a Communist organization for youths between 10 and 16 years of age.
Tania - I help my mother around the house - set the table.
Anna - I do the shopping and do the dishes. I do this more right now because a new baby brother arrived at my house yesterday.
Irene - I clean rooms, babysit, and things like that.

Question: When do you have graduation tests?
At the end of the seventh and tenth grades.

Question: Are you preparing for the institute or college?
Our present education is general - for everyone.

Question: Can you enter the college of your choice?
Yes, if we're good students.

Question: Where do you hope to study after secondary school?
Tania - singing school; Anna - conservatory; Irene-historical university.

Question: What kind of examination will you take to enter college?
Russian language, History, and Language.

Question: What kind of special activities do you have?
Last Saturday evening, a Pioneer Fire was held. This was a party held in the country under the auspices of the Young Pioneers. A picnic was enjoyed, and in the evening, stories of revolutionary days were told around the bonfire. Sometimes assemblies are held at the school as well.

Question: Do you have extra-curricular, non-academic subjects?
Some of the boys study about cinerama. We do not have time for extra subjects.

Question: Do you have spare time for recreation?
Yes, reading, playing, television, theatre, museum, ballet, and special trips.

Question: Do you like music?
Tania - formal music; Anna - classical music; Irene-light music as well as classical music.
Question: Do you like 'Rock and Roll'?

No! Some of their friends like it, however, they looked upon it as musical satire.

Question: Who is your favorite entertainer?

Too many to name, just one; we all like Van Cliborn.

Question: Do you go to the movies?

Yes. (Only Tania could venture a guess as to how many, and said perhaps 50 per year).

Question: Do you like television? How often do you watch it?

We all enjoy television. It's on from 6:00 P. M. to 11:00 P. M. Sometimes we're too busy to watch it. Recently we've been seeing old American films.

Question: At what age do you begin dating?

We don't date yet, but go out in large mixed groups. Some girls start dating in the eighth grade, but most of us wait until the ninth grade.

Question: What do you do during vacations?

During our two-week vacation in January, we skate, ski, make cultural visits. In the summer, everyone has his own activity, perhaps Pioneer Camp.

Question: Do you have an allowance?

(This question produced only blank looks, and it was here that the writer realized that an allowance, and how to plan for its use, is a strong point in the early teaching of the capitalistic system. The three Russian children each said that they simply asked their parents for money when they needed it, and it was given to them.)

Question: What does your father do for a living?

Tania - My father had no higher education, but he is a foreman in a boiler plant.
Anna - My father is the director of the editorial offices of historical literature.
Irene - My father is an engineer, but my mother was an English translator for Pravda.
Question: Where do you live? How large is your home?

Tania - We all live in the same apartment house, a relatively new one with 14 stories. My family has one room.

Anna - My family has one room too, but we'll have to find more room with the new baby.

Irene - We have two rooms.

Question: Do you believe American children your own age are as studious as you are?

Tania - It is pleasant for everyone to get good marks. I believe American youngsters study as hard as we do.

Anna - Everyone tries to study well. This must be true in America, too.

Irene - Everyone wants to become an educated person. To become educated, you must study. I'm sure American children study as hard as we do.

Question: Do you have any questions about American schools?

Tania - Do you have Home Economics?

Anna - I want to visit America to see it for myself.

Irene - I want to know all about America -- what are the dreams of American children my age? I want to be friends with Americans, to correspond.

(The girls wanted to know if Russian was taught in American schools. The writer explained that Russian was being offered for the first time this year in his high school.)

Question: What do you think of the United States?

Tania - People in America must be like people in other places.

Anna - Civilization in America is very high.

Irene - America has progressive technique; is one of the most developed countries in the world; is the foremost or leading country in modern industrial technique.

The interview ended with the children telling the writer how much they enjoyed meeting an American for the first time. They hoped that American pupils would come and visit them.

It seems appropriate at this time to recount the
difficulty experienced at the first part of this study in arranging proper classroom visitation. During the first seven days in Moscow, only two schools were visited. The inadequacy of both the number and type of visit was explained over and over to the interpreter. The writer asked, "Is there any reason why I, as an average classroom teacher, cannot get into more schools -- and by myself, without the INTOURIST group?"

The interpreter's reply was a slip and revealed the root of the difficulty.

"You cannot be an average school teacher with all the equipment you are carrying. We have never had anyone visit our country alone with so much equipment. My superiors believe you are an undercover writer for an American newspaper. Not long ago we had two men visit us from America. One was interested in schools and took many pictures. He talked very nice, as you do, and then he went home to America and wrote many untrue things about the schools he visited."

The writer provided his interpreter with three recent references, all making mention of the writer as a school teacher, and asked that they be checked by INTOURIST officials.

The following morning, no equipment was taken to the planned school visitation. The interpreter was visibly upset by the lack of equipment, and asked, "Where are all of your cameras, film, and tape recorder?"

The writer replied, "The school visitations up to now have not been the type needed for my doctorate dissertation study. My equipment will remain in my hotel room until your director verifies the fact that I am what I represent myself to be. Furthermore, if this verification is not established by tomorrow, I will be on a plane day after tomorrow headed for America. I don't intend to remain here for the next 30 days hoping I'll get to visit schools as I had planned."

The following morning, the visit with Professor Alexei Markushevich, which had been requested the day of arrival, took place. Following this meeting, the writer had no problem in visiting schools.
APPENDIX G

SUMMARY OF TOTAL CLASSROOM VISITATIONS

ADMINISTRATIVE DATA
Introduction to Table 6.-- Table 6 provides a summary of the total schools and classrooms visited during the writer's trip to the Soviet Union.

Table 6. Summary of Total Classroom Visitations

<table>
<thead>
<tr>
<th>School Number</th>
<th>City</th>
<th>Science Classes</th>
<th>Other Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Regular</td>
<td></td>
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<tr>
<td>315</td>
<td>Moscow</td>
<td>4</td>
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</tr>
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<td>29</td>
<td>Moscow</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>204</td>
<td>Moscow</td>
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</tr>
<tr>
<td>717</td>
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</tr>
<tr>
<td>153</td>
<td>Leningrad</td>
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<td>33</td>
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<tr>
<td>29</td>
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<td>0</td>
<td>2</td>
</tr>
<tr>
<td>51</td>
<td>Kiev</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>82</td>
<td>Kiev</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>87</td>
<td>Kiev</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>64</td>
<td>Irkutsk</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Irkutsk</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Special</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English-Speaking</td>
<td>Moscow</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Boarding School</td>
<td>Moscow</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total 14 Schools</td>
<td></td>
<td>16</td>
<td>26</td>
</tr>
</tbody>
</table>

Grand total of classes 42

Additional visitations
Moscow University
Moscow Research Institute of Pedagogy
Leningrad Pioneer Palace

Comments on Table 6.-- The 16 science classrooms observed were dependent upon the classroom schedule of each school visited. School 87 in Kiev was visited in the afternoon and found to be on single session. No classes were observed because students had been dismissed.
Administration questionnaire.-- The information included in this section was gained through personal interview of administrators of 12 schools visited within the U.S.S.R.1/

A gymnasium and playground were available at each school.

Teachers.-- The writer found teacher salary to be determined by the grade taught. There are three levels: grades one through four the first level (receiving lowest salary); five through seven the second (receiving slightly more than level one); eight through ten the third (receiving slightly more than level two). In all cases, salaries quoted are for the beginning teacher. The usual full teaching load per week in level one is 24 hours, and in levels two and three.

1/Checklist and questionnaire used in this study will be found in Appendix A.
is 18 hours. Many schools give extra pay to the teacher who periodically corrects copy books kept by the pupils.

An attempt was made to find the proportion of men and women on the staffs.¹/¹

Source of teaching material.-- An examination of the textbooks used in the classes visited by the writer indicated that they came from a central source, as they were all printed by "The State Pedagogical Publishing House of the Ministry of Education of the RSFSR".¹:

The writer visited the library in each school visited. However, the stated size and actual size of the libraries did not seem, in the writer's opinion, to coincide. This discrepancy is most likely explained by the Russian practice of counting each individual item (often including many pamphlets) rather than bound volumes.

Curriculum.-- No horizontal correlation of science work was seen in visiting the various classes. However, the vertical correlation of the classwork was obvious from both the visiting of successive grades within the sciences, and also from examining the science textbooks which often carried more than one year's work within a single book.

Typing was not included in the curriculum of any school visited.

Some form of driver education was witnessed in every

¹/Data summarized in Table B, page 164.
school visited. Investigation brought out the fact that the 20th Congress of 1955 passed a law requiring that all ten-year schools offer driver education.\(^1\)

It was also learned that there are few pupils in Russian schools who are left-handed. Pupils with a left-handed tendency are sent to a remedial school before entering the first grade. This tendency is treated as a disability, and the child learns to become right-handed.\(^2\)

Placement.-- An attempt was made to learn the placement of the 1958 graduates of the schools visited.\(^2\)

\(^1\)Data summarized in Table 3, page 164.
\(^2\)Data summarized in Table 4, page 166.
School 29, Moscow.-- The building is more than 40 years old. Eight hundred and fifty students attend in two shifts. Cost per pupil was not available. Basic salary for group two is 700 rubles.\(^1\) (Salaries for groups one and three were not given.) If more than 18 hours a week are taught, the salary is increased 10 rubles per hour.

Women predominate on the staff.

Twenty thousand items are listed in the school library. Driver education is given at the school. Both playground and gymnasium facilities are available.

Of the 89 graduates in 1958, 28 went on to further study at the Institutes.\(^2\)

---

\(^1\) Official exchange is four rubles for one U. S. dollar. However, a more realistic rate would be ten to one, and visitors to the Soviet Union are given the official four rubles plus a bonus of six rubles.

\(^2\) In this study, "Institutes" refers to higher academic education.
School 717, Moscow.-- The building is six years old. Twelve hundred and fifty pupils attend in two shifts. Cost per pupil was not available. Basic monthly salary for group one is 600 rubles, for group two is 700 rubles, and for group three is 800 rubles.

Women predominate on the staff.

The library lists 32,000 items. Driver education is given at the school. Both playground and gymnasium facilities are available. Information on the placement of graduates was not available.

Plate 27. Driver Education Class of School 717, Moscow
School 204, Moscow.-- The building is 40 years old. Eleven hundred students attend in two shifts. Cost per pupil is more than 1000 rubles. Basic monthly salary for group one is 650 rubles, for group two is 700 rubles, and for group three is 800 rubles.

Men represent 20 per cent of the staff.

The library lists 25,000 items. Driver education includes 66 classroom hours, and 10 hours in the car. Both playground and gymnasium facilities are available.

Information on the placement of graduates was not available.

Plate 38. Administrator of School 204, Moscow
School 315, Moscow.-- The building is 30 years old. Fifteen hundred students attend in two shifts. Cost per pupil is 1500 rubles. Teachers' salary scale was not available.

Women predominate on the staff.

The library lists 30,000 items. Driver education is given at the school. Both playground and gymnasium facilities are available. Information on the placement of graduates was not available.

Plate 39. Administrator of School 315, Moscow
School 153, Leningrad. -- The building is three years old. Twelve hundred and nineteen students attend in two shifts. Cost per pupil was not available. Basic monthly salary for group one is 750 rubles, for group two is 850 rubles, and for group three is 900 rubles.

Men teachers account for 22 per cent of the staff.

The library lists 5,000 items. Driver education is given at the school. Both playground and gymnasium facilities are available.

Of 28 graduates in 1958, 3 went to the Institutes, 5 went into government work, and 20 went to work in factories.

Plate 40. Administrator of School 153, Leningrad.
Night School 33, Leningrad.—The building is more than 50 years old. Six hundred and forty students attend the sessions. Cost per pupil was not available. Teachers' salaries are on a special scale. Women predominate on the staff. The library lists 7,800 items. No driver education classes are offered. There are no playground or gymnasium facilities. Information on the placement of graduates was not available.

Plate 41. Administrator of Evening School 33, Leningrad
School 29, Leningrad.-- The building is two years old. Twelve hundred students attend in two sessions. Cost per pupil was not available. Basic monthly salary for group one is about 700 rubles, for group two is about 800 rubles, and for group three is about 900 rubles.

Men represent 19 per cent of the staff.

The library lists only 5,000 items because it is a new school. Driver education is offered. Both playground and gymnasium facilities are available. The first class had one left-handed student.

Information on the placement of graduates was not available.

Plate 72. Administrator of School 29, Leningrad
School 51, Kiev.-- The building is nine years old. Eleven hundred students attend in two sessions. Cost per pupil was not available. Basic monthly salary for group one is 700 rubles, for group two is 780 rubles, and for group three is 820 rubles. The teacher who checks copy books receives an additional 75 rubles.

Men represent 9 per cent of the staff.

The library lists 12,000 items. Driver education is given at the school. Both playground and gymnasium facilities are available.

Information on the placement of graduates was not available.
School 82, Kiev.-- The building is two years old. Eight hundred students attend in two sessions. Cost per pupil was not available. Basic monthly salary for group one is 700 rubles, for group two is 700-800 rubles, and for group three 800-900 rubles. An additional 75 rubles is paid to the teacher responsible for checking the copy books.

Men account for 2 to 1 per cent of the staff.

The library lists 3,500 items. Driver education is not given at the school, but there is close cooperation with a local automobile manufacturing plant instead. The students work part-time at the plant. Both playground and gymnasium facilities are available.

Of the 97 graduates in 1958, 15 went on to further study at the Institutes.

Plate 64. Administrator of School 82, Kiev
School 87, Kiev.-- The building is three years old. Five hundred students attend the school. Cost per pupil was not available. Basic monthly salary for group one is 750 rubles, for group two is 850 rubles, and for group three is 950 rubles.

Men represent 14 per cent of the staff.

The library lists 12,800 items. Driver education is given to the boys only; the girls take bookkeeping. Both playground and gymnasium facilities are available.

Of the 35 graduates in 1958, 10 went on to study at the Institutes.

Plate 45. Administrator of School 87, Kiev
School 64, Irkutsk.—The building is three years old. Seven hundred students attend in two shifts. Cost per pupil was not available. Basic monthly salary for group one is 625, for group two is 750, and for group three is 850 rubles. One hundred rubles additional is given to the teacher responsible for the copy books.

Women predominate on the staff.

The library lists 7,000 items. Driver education is given at the school. Both playground and gymnasium facilities are available.

Of the 95 graduates in 1958, 50 went on to study at the Institutes.

- Plate 46. Administrator of School 64, Irkutsk
School 11, Irkutsk.-- The building is 43 years old. Twelve hundred students attend in two sessions. Cost per pupil was not available. Basic monthly salary for group one is 575 rubles, for group two is 690 rubles, and for group three is 710 rubles. The teacher responsible for copy books receives 100 rubles in addition.

Men account for 31 per cent of the staff.

The library lists 20,000 items. Driver education is given at the school. Both playground and gymnasium facilities are available.

One girl was left-handed because of a withered right hand.

Of the 117 graduates in 1958, 51 went on to higher education, 15 went to special schools, and 51 went to work.

Plate 47. Administrator of School 11, Irkutsk
Unusual Comments by Administrators

1. School 204, Moscow

"Generally, 15 minutes of homework is given per subject, per day. However, the classwork is much more important than the homework."

2. School 315, Moscow

"I am delighted with the objectivity with which you are carrying on your study. Your film will be a great help."

3. Evening School 33, Leningrad

"There are 268 evening schools in Leningrad. This means we have 30,000 evening school students out of the 4,000,000 population here in Leningrad. In the district of this school there are 7,000 adults, and 4,300 of them are attending evening schools."

4. School 29, Leningrad

"Our class size averages 42."

5. School 51, Kiev

"Seventy-five rubles extra is given to department heads. Our maximum teaching pay is 1500 rubles per month."

"Our parents have led the struggle to change youngsters who have a left-handed tendency to being right-handed."

6. School 82, Kiev

"The Ukranian Minister of Education agrees with the federal educational 'policies'."
7. School 64, Irkutsk

"There are 36,000 pupils in Irkutsk. They attend 64 schools. In addition, we also have eight institutes, 25 technical schools, and 20,000 higher learning students."

8. School 11, Irkutsk

"I have a budget of 9,000 rubles to carry on our extra-curricular educational activities here at school. We call each interest group a 'circle,' and we have 40 such circles in our program."

Plate 48. Television set in School 153, Leningrad

This television set, with a nine inch screen, diagonal measurement, was in the office of the school administrator. A test pattern was being transmitted.
Introduction to Table 7.-- Table 7 presents a description of the school plants compiled from the Administrative Checklists.

Table 7. Summary of General School Data Obtained by Administrative Checklist

<table>
<thead>
<tr>
<th>No.</th>
<th>City</th>
<th>Bldg. Age</th>
<th>No. of Pupils</th>
<th>Cost per Pupil Session</th>
<th>Library</th>
<th>Playground</th>
<th>Gymnasium</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
</tr>
<tr>
<td>29</td>
<td>Moscow</td>
<td>40+</td>
<td>850</td>
<td>-</td>
<td>Double 20,000</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>717</td>
<td>Moscow</td>
<td>6</td>
<td>1250</td>
<td>-</td>
<td>Double 32,000</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>204</td>
<td>Moscow</td>
<td>40</td>
<td>1100 1000+</td>
<td>-</td>
<td>Double 25,000</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>315</td>
<td>Moscow</td>
<td>30</td>
<td>1500 1500</td>
<td>-</td>
<td>Double 30,000</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>153</td>
<td>Leningrad</td>
<td>3</td>
<td>1219</td>
<td>-</td>
<td>Double 5,000</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>33</td>
<td>Leningrad</td>
<td>50+</td>
<td>640</td>
<td>-</td>
<td>Evening 7,800</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>29</td>
<td>Leningrad</td>
<td>2</td>
<td>1200</td>
<td>-</td>
<td>Double 5,000</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>51</td>
<td>Kiev</td>
<td>9</td>
<td>1100</td>
<td>-</td>
<td>Double 12,000</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>82</td>
<td>Kiev</td>
<td>2</td>
<td>800</td>
<td>-</td>
<td>Double 3,500</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>87</td>
<td>Kiev</td>
<td>3</td>
<td>500</td>
<td>-</td>
<td>Single 12,800</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>64</td>
<td>Irkutsk</td>
<td>3</td>
<td>700</td>
<td>-</td>
<td>Double 7,000</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>11</td>
<td>Irkutsk</td>
<td>43</td>
<td>1200</td>
<td>-</td>
<td>Double 20,000</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Comments on Table 7.-- Building age ranged from those two years old to those over 50 years old. Pupil enrollment of schools ranged from 500 to 1500. All schools but one were making use of their facilities through double sessions.

The two figures that are listed in the Cost per Pupil column were given to the writer by Soviet administrators in an off-handed manner. It is possible that these figures
were given to avoid disappointing the writer.

The library count in schools visited ranged from 3,500 to 32,000. It should be kept in mind that these figures represent number of items, including pamphlets, rather than bound volumes exclusively.

The Soviet interest in science teaching has not eliminated other subject matter areas as represented by the fact that every school visited had playground and gymnasium facilities available.
Introduction to Table 8.—Table 8 presents information regarding teachers and curricula compiled from the Administrative Checklists.

Table 8. Summary of Teacher and Curriculum Data Obtained by Administrative Checklist

<table>
<thead>
<tr>
<th>School No.</th>
<th>City</th>
<th>Sex</th>
<th>Teachers Salaries</th>
<th>Copybook Science</th>
<th>Driver Typing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>F</td>
<td>PII/III/IIIH</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>no</td>
<td>no</td>
<td>rubles/mo.</td>
<td></td>
</tr>
<tr>
<td>29 Moscow</td>
<td>Mos</td>
<td>d/</td>
<td>d/</td>
<td>700</td>
<td>vertical yes</td>
</tr>
<tr>
<td>717 Moscow</td>
<td>Mos</td>
<td>-</td>
<td>-</td>
<td>600 700 800</td>
<td>vertical yes</td>
</tr>
<tr>
<td>204 Moscow</td>
<td>Mos</td>
<td>-/</td>
<td>-</td>
<td>650 700 800</td>
<td>vertical yes</td>
</tr>
<tr>
<td>315 Moscow</td>
<td>Mos</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>vertical yes</td>
</tr>
<tr>
<td>153 Leningrad</td>
<td>10</td>
<td>37</td>
<td>750 850 900</td>
<td>vertical yes</td>
<td></td>
</tr>
<tr>
<td>33 Leningrad</td>
<td>-</td>
<td>special</td>
<td>-</td>
<td>vertical no</td>
<td></td>
</tr>
<tr>
<td>29 Leningrad</td>
<td>9</td>
<td>38</td>
<td>700 800 900</td>
<td>vertical yes</td>
<td></td>
</tr>
<tr>
<td>51 Kiev</td>
<td></td>
<td>5</td>
<td>49</td>
<td>700 780 820 75</td>
<td>vertical yes</td>
</tr>
<tr>
<td>82 Kiev</td>
<td></td>
<td>5</td>
<td>19</td>
<td>700 700-800 75</td>
<td>vertical no</td>
</tr>
<tr>
<td>87 Kiev</td>
<td></td>
<td>4</td>
<td>24</td>
<td>750 850 950</td>
<td>vertical yes</td>
</tr>
<tr>
<td>64 Irkutsk</td>
<td></td>
<td>-</td>
<td>-</td>
<td>625 750 850 100</td>
<td>vertical yes</td>
</tr>
<tr>
<td>11 Irkutsk</td>
<td></td>
<td>16</td>
<td>36</td>
<td>575 690 710 100</td>
<td>vertical yes</td>
</tr>
</tbody>
</table>

a/Grades 1 - 4
b/Grades 5 - 7
c/Grades 8 - 10
d/Predominately women
e/20 per cent of staff
f/Factory affiliation
g/Only boys; girls take bookkeeping
Comments on Table 8.-- Some administrators did not have the numbers of male and female teachers readily available. When this information was given, women teachers predominated.

The pay scale listed is for the beginning teacher. Teacher pay is based on grade taught. Teachers of grades one through four have the lowest pay scale, while teachers of grades seven through ten have the highest pay scale. Four administrators, when discussing teacher salaries, indicated teachers are also paid for correcting classroom sets of copybooks.

Science correlation in all schools was vertical.

With the exception of the evening school, driver education was taught in all schools in compliance with the law passed by the Twentieth Congress of 1955.

Typing was not taught in any of the schools visited.
Introduction to Table 9.-- Table 9 presents student and graduate information compiled from the Administrative Checklists.

Table 9. Summary of Student Data Obtained by Administrative Checklist

<table>
<thead>
<tr>
<th>No.</th>
<th>City</th>
<th>Left-handed Students</th>
<th>Graduate Placement Institutes</th>
<th>Graduate Placement Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3) no.</td>
<td>(4) no.</td>
<td>(5) no.</td>
</tr>
<tr>
<td>29</td>
<td>Moscow</td>
<td>0</td>
<td>28</td>
<td>-</td>
</tr>
<tr>
<td>717</td>
<td>Moscow</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>204</td>
<td>Moscow</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>315</td>
<td>Leningrad</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>153</td>
<td>Leningrad</td>
<td>0</td>
<td>33</td>
<td>25</td>
</tr>
<tr>
<td>33</td>
<td>Leningrad</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>29</td>
<td>Leningrad</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>51</td>
<td>Kiev</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>82</td>
<td>Kiev</td>
<td>0</td>
<td>15</td>
<td>82</td>
</tr>
<tr>
<td>87</td>
<td>Kiev</td>
<td>0</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>64</td>
<td>Irkutsk</td>
<td>0</td>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>11</td>
<td>Irkutsk</td>
<td>1(^a)/</td>
<td>51</td>
<td>51</td>
</tr>
</tbody>
</table>

\(^a\)/Girl with withered right hand

Comments on Table 9.-- There was a general absence of left-handed students. Children with left-handed tendencies are sent to remedial schools prior to the first grade.

Graduate placement data from the schools visited was not readily available.
Administration data summarized:

1. Fourteen urban schools were visited in the Soviet Union.

2. The total number of classrooms reported in this study is 42. Sixteen of these were science classrooms of grades six through eight. Twenty-two were additional general classrooms visited to provide background. Four classrooms visited were not included in the data because of the unique type of school of which they were a part.1/

3. The number of pupils under the direction of the administrators in this study totalled 12,059.

4. Only two administrators were able to provide cost per pupil figures.

5. Ten of the 12 schools visited were on double session with two separate sets of classes.

6. Playground and gymnasium facilities were available at each school visited.

7. Women teachers predominated in the schools visited.

8. Teacher salaries showed little variation in all the schools visited. They are determined by grade taught, with grades one through four bringing the lowest salary, and grades eight through ten bringing the highest salary.

---

1/Classroom visitations are summarized in Table 6, page 144
9. Correction of student copybooks often carried an additional payment for the teacher.

10. Science correlation was vertical, often with more than one year's work in a single text.

11. Teaching materials, such as textbooks, were provided from a central source.

12. Compliance to some degree was found, in every school visited, to the 1955 Politburo decree that driver education be given at all ten-year schools.

13. No typing classes were offered in schools visited.

14. With few exceptions, all children entering the first grade of the schools visited were right-handed.

15. The standard teaching load in schools visited was 24 hours for grades one through four, 18 hours for grades five through ten.

16. Administration conditions and policies in Irkutsk, Siberia, were similar to those witnessed in schools in European Russia.

1/ Most students were observed writing in their copybooks. Copybooks are generally checked once a month.
APPENDIX H

GENERAL CLASSROOM DATA
General Class Checklist.-- Information carried in this section was obtained by the same checklist used for science classes. That part of the questionnaire referring to laboratory equipment, however, was deleted.¹/

In the lower grade classrooms, there is no departmentalization.

¹/ Data summarized in Tables 9, 10, and 11, pages 166, 194, 196.
School 29, Moscow, Grade 3, Reading.-- Twenty-nine students were present in the classroom. Classroom size was 50 square meters. Light readings were 8, 9, 8.

1. Teaching techniques included lecture and a question and answer period.

2. Evaluation technique observed was oral reply.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 40 years old. She had four years of training at the Institute, and the writer did not learn how many years she had previously taught.

Plate 49. School 29, Moscow, Grade 3, Reading
Teacher at front of class
School 29, Moscow, Grade 1, Reading.-- Thirty-three students were present in the classroom. Classroom size was 60 square meters. Light readings were 10, 12, 10-. 

1. Teaching techniques included a question and answer period, and reading.

2. No evaluation techniques were observed.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 25 years old. She had four years of training at the Red Institute, and one year of teaching experience.

Plate 50. School 29, Moscow, Grade 1, Reading
First grade pupils reading
School 29, Moscow, Grade 7, Mathematics.-- Thirty-five were present in the classroom. Classroom size was 50 square meters. Light readings were 9, 10, 9.

1. Teaching techniques included lecture, and questions and answers dealing with a memory assignment.

2. Evaluation techniques observed were board recitation and written work in copy books.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 30 years old. She had five years of training at the Institute, and the writer was unable to learn how many years she had taught.

Plate 51. School 29, Moscow, Grade 7, Mathematics Teacher grading a board recitation
School 717, Moscow, Grade 7, Mathematics. — Thirty-eight students were present in the classroom. Classroom size was 60 square meters. Light readings were 9-, 11-, 10-.

1. Teaching techniques included lecture, and questions and answers dealing with a memory assignment.

2. Evaluation techniques included board recitation, written work in copy books, and observation. It was indicated that there was daily recitation, and testing every two months.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman 60 years old. She had four years of training, and 42 years of teaching.

Plate 52. School 717, Moscow, Grade 7, Mathematics. Pupils and teacher.
School 717, Moscow, Grade 7, English.—Thirty students were present in the classroom. Classroom size was 50 square meters. Light readings were 9-, 11+, 10-.

1. Teaching techniques included a question and answer period.

2. Evaluation technique observed was written work in copy books.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman of 28 years. She had four years of training at the Institute, and six years of teaching experience.

Plate 53, School 717, Moscow, Grade 7, English
Pupil reading
School 717, Moscow, Grade 10, Driver Education.-- Ten students were present in the classroom. Classroom size was 52 square meters. Light readings were 97, 10, 8.

1. Teaching techniques included lecture, and questions and answers dealing with the memory assignment.

2. No. evaluation techniques were observed.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a man of 26. He had three years of training at the Technical School, and had three years of teaching experience. He also worked in a factory.

Plate 54. School 717, Moscow, Grade 10, Driver Education. Class view with equipment.
School 717, Moscow, Grade 9, Machine Tool Class.---

Fourteen students were present in the classroom. Classroom size was 54 square meters. Only one light reading taken because of crowded conditions, 10.

1. Teaching technique involved was demonstration.
2. Evaluation technique observed was on items in class.
3. Organization of class work followed the directory of the Ministry of Education.
4. The teacher was a man of 40 years. He had four years of training at the Institute, and four years of teaching experience.
5. There were nine pieces of heavy equipment in the shop and double periods only.

Plate 55. School 717, Moscow, Grade 9, Machine Tool Class. Teacher instructing students in use of lathe
School 204, Moscow, Grade 9, Mathematics.—Nineteen students were present in the classroom. Classroom size was 50 square meters. Light readings were 8½, 11½, 9½.

1. Teaching techniques included lecture, and a question and answer period dealing with a memory assignment.

2. Evaluation techniques observed were board recitation, and written work in copy books.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 30 years old. She had four years of training at the Institute, and four years of teaching experience.

Plate 57. School 204, Moscow, Grade 9, Mathematics Class with same teacher as in Plate 56.
School 153, Leningrad, Grade 1, Labor (Construction).--Fifty students were present in the classroom. Classroom size was 52 square meters. Light readings were 8, 10, 8.

1. Teaching technique observed was demonstration.
2. Evaluation technique observed was the teacher's viewing construction work.
3. Organization of class work followed the directory of the Ministry of Education.
4. The teacher was a woman of 30 years. She had three years of training at the Institute, and eight years of teaching experience.

Plate 58. School 153, Leningrad, Grade 1, Labor (Construction) Class doing "labor"
School 153, Leningrad, Grade 7, Mathematics.-- Forty-two students were present in the classroom. Classroom size was 52 square meters. Light readings were 8, 10, 8.

1. Teaching techniques included lecture, and questions and answers dealing with a memory assignment.

2. Evaluation techniques observed were board recitation, and written work in copy books. The class had had seven tests in two months.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 45 years old. She had five years of training at the Institute, and 20 years of teaching experience.

Plate 59. School 153, Leningrad, Grade 7, Mathematics Progress record chart
Sixteen students were present in the classroom. Classroom size was 50 square meters. Light readings were 8, 8, 8.

1. Teaching techniques included lecture, and questions and answers dealing with a memory assignment.

2. Evaluation techniques observed were board recitation, and written work in copy books.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman 40 years old. She had five years of training at the Institute, and 15 years of teaching experience.

Plate 60. Evening School 33, Leningrad, Grade 7, Mathematics
Student standing is making speech welcoming writer
School 29, Leningrad, Grade 7, Mathematics.-- Thirty-seven students were present in the classroom. Classroom size was 50 square meters. Light readings were 10, 14, 10.

1. Teaching techniques included lecture, and questions and answers based on a memory assignment.

2. Evaluation techniques observed were board recitation, and written work in copy books.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 30 years of age. She had five years of training at the Institute, and seven years of teaching experience.

5. In new construction, the width of the building is the classroom plus the hall.

Plate 61. School 29, Leningrad, Grade 7, Mathematics Pupil reciting for teacher
School 29, Leningrad, Grade 7, Physical Education.

Thirty-two students were present in the classroom. Classroom size was 120 square meters. Light readings were 10, 12, 10.

1. Teaching technique involved instruction on horizontal bar.
2. No evaluation techniques were observed.
3. Organization of class work followed the directory of the Ministry of Education.
4. The teacher was a man 30 years old. He had five years of training at the Institute, and six years of teaching experience.

Plate 62. School 29, Leningrad, Grade 7, Physical Education
Exercise at beginning of class period
School 51, Kiev, Grade 7, Mathematics.-- Twenty-eight students were present in the classroom. Classroom size was 49½ square meters. Light readings were 9, 12, 10.

1. Teaching techniques included lecture, and questions and answers dealing with a memory assignment.

2. Evaluation techniques observed were board recitation, and written work in copy books.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 60 years old. She had two years of training at the Institute, and 38 years of teaching experience.

Plate 63. School 51, Kiev, Grade 7, Mathematics Teacher with class outside classroom
School 51, Kiev, Grade 3, Arithmetic.—Thirty-one students were present in the classroom. Classroom size was 49 1/2 square meters. Light readings were 9, 11, 9.

1. Teaching techniques included demonstration with an abacus, and a question and answer period.

2. Evaluation techniques observed were board recitation, and written work in copy books.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 50 years old. She had two years of training at the Institute, and 25 years of teaching experience.

Plate 64. School 51, Kiev, Grade 3, Arithmetic. Student following instruction at her desk.
School 82, Kiev, Grade 7, Mathematics. -- Twenty-seven students were present in the classroom. Classroom size was 49 square meters. Light readings were off scale, low.

1. Teaching techniques included lecture, and questions and answers dealing with a memory assignment.

2. Evaluation techniques observed were board recitation, and written work in copy books.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 25 years old.
   She had four years of training at the Institute, and three years of teaching experience.

Plate 65. School 82, Kiev, Grade 7, Mathematics
Copy book work
School 82, Kiev, Grade 1, Reading.-- Thirty-eight students were present in the classroom. Classroom size was 52 square meters. Light readings were 7, 10, 7.

1. Teaching techniques included reading practice.
2. No evaluation techniques were observed.
3. Organization of class work followed the directory of the Ministry of Education.
4. The teacher was a woman 30 years old. She had four years of training at the Institute, and eight years of teaching experience.

Plate 66. School 82, Kiev, Grade 1, Reading Class ready to read
School 82, Kiev, Grade 10, Physical Education.-- Fifteen students were present in the gymnasium. The gymnasium size was 150 square meters. Light readings were 8, 10, 8.

1. Teaching technique was demonstration.
2. Evaluation technique was performance.
3. Organization of class work followed the directory of the Ministry of Education.
4. The teacher was a man about 35 years old. He had four years of training at the Institute, and eight years of teaching experience.

Plate 67. School 82, Kiev, Grade 10, Physical Education
Two tenth grade physical education students
School 82, Kiev, Grade 10, Physics.-- Twenty-two students were present in the classroom. Classroom size was 52 square meters. Light readings were 8, 9, 8.

1. Teaching techniques included lecture, and questions and answers dealing with a memory assignment.

2. Evaluation techniques observed were board recitation, and written work in copy books.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 30 years old. She had five years of training at the Institute, and seven years of teaching experience.

Plate 68. School 82, Kiev, Grade 10, Physics
Electrical outlets at student laboratory tables
School 87, Kiev, Grade 7, Physical Education. -- Five students were present in the gymnasium. Gymnasium size was 110 square meters. Light readings were 10, 12, 10.

1. No teaching techniques were observed.

2. Evaluation technique observed was a performance test in basketball.¹/²

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a man about 35 years old. He had four years of training at the Institute, and eight years of teaching experience.

Plate 69. School 87, Kiev, Grade 7, Physical Education
Basketball test

¹/²The performance test involved taking 10 shots at the basket from the foul line. Four baskets equaled a mark of 5 (the highest mark or "A"), 3 baskets - 4, 2 baskets - 3, 1 basket - 2, 0 basket - 1.
School 64, Irkutsk, Grade 7, Mathematics.-- Thirty-five students were present in the classroom. Classroom size was 52 square meters. Light readings were 8, 11, 8.

1. Teaching techniques included lecture, and questions and answers dealing with a memory assignment.

2. Evaluation techniques observed were board recitation, and written work in copy books.

3. Organization of class work followed the directory of the Ministry of Education.

4. The teacher was a woman about 25 years old. She had five years of training at the Institute, and three years of teaching experience.

Plate 70. School 64, Irkutsk, Grade 7, Mathematics. Pupils with writer outside of school.
Comments on Plates 49 - 70.— Plates have been included for validation of each classroom visited, as well as to verify checklist information.

The following are major points of information presented by the plates:

1. A primary teacher involved in lecture-demonstration is shown in Plate 49. A secondary teacher involved in lecture-demonstration is shown in Plate 56.

2. Students involved in recitation before the class are shown in Plates 52, 53, 60, 61, and 65.

3. Unusual equipment present in some of the rooms visited is shown in Plates 54, 55, 59, 62, and 68.

4. The attentiveness of students is shown in Plates 50, 57, 64, and 66.

5. Evaluation of students by the teacher is shown in Plates 51, 58, and 69.
Introduction to Table 10. -- Table 10 presents a description of classes and classrooms compiled from the General Class Checklists.

Table 10. Summary of Class and Classroom Data Obtained by General Class Checklist

<table>
<thead>
<tr>
<th>School No.</th>
<th>City</th>
<th>Grade</th>
<th>Subject</th>
<th>Size</th>
<th>Light Readings</th>
<th>Classroom Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(8)</td>
<td>(9)</td>
</tr>
</tbody>
</table>

sq. meters

- 29 M 3 Reading 29 50 8 9 8
- 29 M 1 Reading 33 60 10 12 10
- 29 M 7 Mathematics 35 50 9 10 9
- 717 M 7 Mathematics 38 60 9 11+ 10
- 717 M 7 English 30 50 9 11+ 10
- 717 M 10 Driver education 10 52 9+ 10 8
- 717 M 9 Machine tools 14 54 - 10 -
- 204 M 8 Mathematics 27 50 8+ 11+ 9
- 204 M 9 Mathematics 19 50 8+ 11+ 9
- 153 L 1 Labor (construction) 40 52 8 10 8
- 153 L 7 Mathematics 42 52 8 10 8
- 33 L 7 Mathematics 16 50 8 8 8
- 29 L 7 Mathematics 37 50 10 14 10
- 29 L 7 Physical Ed. 32 120 10 12 10
- 51 K 7 Mathematics 28 49 9 12 10
- 51 K 3 Arithmetic 31 49 9 11 9
- 82 K 7 Mathematics 27 49 Off Scale Low
- 82 K 1 Reading 38 52 7 10 7
- 82 K 10 Physical Ed. 15 150 8 10 8
- 82 K 10 Physics 22 52 8 9 8
- 87 K 7 Physical Ed. 5 110 10 12 10
- 64 I 7 Mathematics 35 52 8 11 8
Comments on Table 10. -- Three first grade classes were visited; two third grade classes were visited; 11 seventh grade classes were visited; one eighth grade class was visited; two ninth grade classes were visited; three tenth grade classes were visited.

The range of class size was 5 to 42 students, with a mean of 27.

Classroom size is expressed as square meters of floor space. Light meter readings were taken as objective information that might have future value.
Introduction to Table II. -- Table II presents information regarding observed teaching and evaluation techniques compiled from the General Class Checklists.

Table II. Summary of Observed Teaching and Evaluation Techniques Obtained by General Class Checklist

<table>
<thead>
<tr>
<th>School No.</th>
<th>City/Grade</th>
<th>Teaching</th>
<th>Evaluation</th>
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<td>Lecture</td>
<td>Memory</td>
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<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
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<td>M 3</td>
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<td>no</td>
</tr>
<tr>
<td>29</td>
<td>M 1</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>29</td>
<td>M 7</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>717</td>
<td>M 7</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>717</td>
<td>M 7</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>717</td>
<td>M 10</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>717</td>
<td>M 9</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>204</td>
<td>M 8</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>204</td>
<td>M 9</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
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<td>L 1</td>
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<td>no</td>
</tr>
<tr>
<td>153</td>
<td>L 7</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
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<td>L 7</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>29</td>
<td>L 7</td>
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<td>L 7</td>
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<td>no</td>
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<td>yes</td>
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<td>51</td>
<td>K 3</td>
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<td>no</td>
</tr>
<tr>
<td>82</td>
<td>K 7</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>82</td>
<td>K 1</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>82</td>
<td>K 10</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>82</td>
<td>K 10</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>87</td>
<td>K 7</td>
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<td>no</td>
</tr>
<tr>
<td>64</td>
<td>I 7</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

/M - Moscow; L - Leningrad; K - Kiev; I - Irkutsk
Comments on Table 10. -- The lecture-demonstration method was observed in 16, or 73 per cent, of the 22 general classes observed.

Teaching based on memory assignment was observed in 12, or 55 per cent, of the classes. Teaching based on questions and answers relative to immediate classroom work was observed in 16, or 73 per cent, of the classes.

Evaluation by board recitation was observed in 12, or 55 per cent, of the classes. Evaluation of written work (copybooks) was done in 13, or 59 per cent, of the classes. No formal testing was observed. Evaluation by teacher observation was observed in one class, or 5 per cent.
Introduction to Table 12.—Table 12 presents information regarding teacher training and teacher experience compiled from the General Class Checklists.

Table 12. Summary of Teacher Training and Experience Obtained by General Class Checklist

<table>
<thead>
<tr>
<th>Teacher Age</th>
<th>School Sex</th>
<th>Subject No. City</th>
<th>Grade</th>
<th>Training Year</th>
<th>Length Year</th>
<th>Experience Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>40+ F</td>
<td>29 M</td>
<td>Reading</td>
<td>3</td>
<td>Institute</td>
<td>4</td>
<td>not known</td>
</tr>
<tr>
<td>25+ F</td>
<td>29 M</td>
<td>Reading</td>
<td>1</td>
<td>Red Institute</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>30+ F</td>
<td>29 M</td>
<td>Mathematics</td>
<td>7</td>
<td>Institute</td>
<td>5</td>
<td>not known</td>
</tr>
<tr>
<td>60 F</td>
<td>717 M</td>
<td>Mathematics</td>
<td>7</td>
<td>not known</td>
<td>4</td>
<td>42</td>
</tr>
<tr>
<td>28 F</td>
<td>717 M</td>
<td>English</td>
<td>7</td>
<td>Institute</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>26 M</td>
<td>717 M</td>
<td>Driver Education</td>
<td>10</td>
<td>Technical School</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>40 M</td>
<td>717 M</td>
<td>Machine tools</td>
<td>9</td>
<td>Institute</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>30+ F</td>
<td>204 M</td>
<td>Mathematics</td>
<td>8</td>
<td>Institute</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>30+ F</td>
<td>204 M</td>
<td>Mathematics</td>
<td>9</td>
<td>Institute</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>30 F</td>
<td>153 L</td>
<td>Labor (construction)</td>
<td>1</td>
<td>Institute</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>45+ F</td>
<td>153 L</td>
<td>Mathematics</td>
<td>7</td>
<td>Institute</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>40 F</td>
<td>33 L</td>
<td>Mathematics</td>
<td>7</td>
<td>Institute</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>30+ F</td>
<td>29 L</td>
<td>Mathematics</td>
<td>7</td>
<td>Institute</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>30 M</td>
<td>29 L</td>
<td>Physical Education</td>
<td>7</td>
<td>Institute</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>60+ F</td>
<td>51 K</td>
<td>Mathematics</td>
<td>7</td>
<td>Institute</td>
<td>2</td>
<td>38</td>
</tr>
<tr>
<td>50+ F</td>
<td>51 K</td>
<td>Arithmetic</td>
<td>3</td>
<td>Institute</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>25+ F</td>
<td>82 K</td>
<td>Mathematics</td>
<td>7</td>
<td>Institute</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>30 F</td>
<td>82 K</td>
<td>Reading</td>
<td>1</td>
<td>Institute</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>35+ M</td>
<td>82 K</td>
<td>Physical Education</td>
<td>10</td>
<td>Institute</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>30+ F</td>
<td>82 K</td>
<td>Physics</td>
<td>10</td>
<td>Institute</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>35+ M</td>
<td>87 K</td>
<td>Physical Education</td>
<td>7</td>
<td>Institute</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>25+ F</td>
<td>64 K</td>
<td>Mathematics</td>
<td>7</td>
<td>Institute</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

a/M - Moscow; L - Leningrad; K - Kiev; T - Irkutsk
Comments on Table 12. -- In five, or 23 per cent, of the general classrooms visited, the teachers were men.

Twenty, or 91 per cent, of the teachers had institute training. One teacher, or 5 per cent, had technical school training. Information regarding the training of one teacher, or 5 per cent, was not available.

Seven teachers observed, or 32 per cent, had five years of training. Eleven teachers observed, or 50 per cent, had four years of training. Two teachers observed, or 9 per cent, had three years of training. Two teachers observed, or 9 per cent, had two years of training.

The range of teaching experience of teachers observed was from first year to 42 years.
General classroom data summarized

1. The average size of the general classes visited was 27. Included are a number of skill courses which required small classes.

2. Lecture-demonstration was observed as a teaching technique in 16, or 72 per cent, of the 22 general classes visited.

3. Memory assignment was used as a teaching technique in 12, or 55 per cent, of the 22 general classes visited.

4. Questioning was used as a teaching technique in 16, or 73 per cent, of the 22 general classes visited.

5. Board recitation was used as an evaluation technique in 12, or 55 per cent, of the 22 general classes visited.

6. Written work in copybooks was observed in 13, or 59 per cent, of the 22 general classes visited.

7. In five, or 23 per cent, of the 22 general classrooms visited, the teachers were men: three taught physical education, one taught driver education, and one taught machine shop.

8. Eighty-two per cent or eighteen teachers of the 22 general classes observed had four or more years of training.

9. Teaching experience of general class teachers ranged from one year to 42 years.
APPENDIX I

SPECIAL REPORTS
English-Speaking School of Moscow.-- Upon arrival at School 1, the writer learned that his visit was unexpected. The administrator was not in, and a teacher left her class momentarily to offer a welcome. Her class, a history class, was then visited. The upper classes were not carried on in English. In fact, the only difference the writer saw between School 1 and the other schools visited was that English as a subject was introduced at the second grade rather than at the fifth. The two classes visited were conducted in the same formal manner as classes in other Soviet schools.
In regard to foreign language facility, the following is quoted from the Modern Language Journal:\(^1\)

"Travellers returning from Russia frequently give the impression that they have met on the streets, in the organizations they visited, everywhere at large, a number of people speaking English well enough so that they could establish with them friendly or fruitful relationships. As a result the American public tends to believe that a practical knowledge of a foreign language is a much more common achievement in Russia than with us.

"During the month I spent there last Fall my impression was entirely different. Professionals, whose job it is to know a foreign language: interpreters, guides, teachers, etc., were on the whole excellent, but as to the people at large, I found about as many capable of speaking a foreign language as I would on the streets of an average American city. The same is true of highly educated people: officials, administrators, doctors, scientists, etc. If their profession does not call for the use of a foreign language, they rarely speak any with ease...."

Boarding School in Moscow.-- The writer visited Boarding School No. 10, which is in Moscow. This was the first school visited, and the growing importance of this type of school is indicated by the following quote:

"At present there are 456 boarding schools in the Soviet Union, attended by 104,500 children as against 56,000 children in the previous school year."\(^1\)

An increase of nearly 100 per cent during only one year would indicate that the government is pressing this kind of education forward at a rapid rate. The enrollment at Boarding School No. 10 was 133. Classrooms were as well-outfitted as other schools visited. A library of 4,000 items was seen. Pupils lived in converted classrooms with 16 beds to the room. Running water was seen in each of the dormitory rooms visited.

Two classes were observed, and the conduct seemed similar to other classes visited later in the trip. The teachers seemed anxious that the ballroom dancing class be witnessed. This dancing class might well have occurred in any seventh grade classroom in the United States if it were not for the uniforms worn by the students.

The teachers of Board School No. 10 were friendly and expressed a desire to be friends with America. They hoped that correspondence might be arranged between their students and American students.

Experimental School in Moscow.-- School 204 in Moscow is an experimental school where new text books are developed. It was pointed out by the administrator that a cross section of students is enrolled in this school. Due to this, the classrooms visited were used in the body of this study.

The administrator pointed out that the new text books are tried in this school for a period long enough to determine their value. Following this experimental stage, the text book is revised as usage indicates, published, and used throughout the Soviet Union.

Moscow University.-- Moscow University was visited briefly. The building is massive: 37 stories high, houses 10,000 students. The library contains 5,000,000 items. There is one assembly hall that seats 1,500 students, two that seat 600, and 40 that seat 150. The gymnasium and swimming
pool were full of activity although it was late in the day. The building was constructed between 1949 and 1953.

Student quarters were exceptionally adequate with small private rooms. Men and women students were housed on the same floor. No liquor was allowed in the dormitory.

The writer became very familiar with the elevators in the University building. They traveled at high speed with rather abrupt acceleration and deceleration. There seemed to be no load safety factor: following dismissal of a class 18 persons pressed into a cab that might have been designed for 12.

Research Institute of Pedagogy.-- The writer spent one afternoon visiting with the director of the Research Institute of Pedagogy and three of his staff members. The following are comments made by the director:

"There are nine research institutes that make up the Academy of Sciences."

"Literature majors are about 90% women, while math or science majors are split evenly between the sexes."

"There are two ways of becoming a primary teacher, or teacher of the first, second, third, or fourth grade. A few complete the 10 years of the secondary schools and then study two more years. Most leave secondary school at the seventh year and then study for four years."

"Seventy per cent of the teachers are trained at the teacher training schools or Institutes."

"In grades 1 - 7 we prefer to have graduates of the pedagogical schools. From grades 8 - 10, we prefer to have subject matter specialists trained at the University."
"After a teacher teaches for three years he may return for advanced training in the graduate school. After completing post-graduate work, it is possible to teach at the Institute."

"If the primary teacher has five years of training, pay is 50 rubles per month less than the secondary teacher. The law says that teachers of grades 7 - 10 will receive more pay than the elementary teacher."

"The elementary teacher will receive about 650 rubles for 24 hours per week of work. The secondary school teacher will receive about 850 rubles, for 18 hours per week of work. Some work more than 18 hours, some work less."

"The Ministry of Education of each of the 15 republics makes the rules for education."

Plate 72. Research Institute of Pedagogy, Moscow Director and three staff members
Pioneer Palace in Leningrad.-- The pioneer Palace in Leningrad is a showplace of Young Pioneer activity. Few visitors to Leningrad will leave without seeing this beehive of happy, intent youngsters under very careful direction.

By way of background, it might be well to point out that there was a Pioneer Room in every school visited. This room is standard in all schools and becomes a center of Young Pioneer activity. Each Pioneer Room has a set of drums, a bugle, flags, and all of the trappings that go with nationalism in a Communist society. The palace at Leningrad is the epitome of an active Communist Youth Center.

The Pioneer Palace was beautiful with wide staircases, crystal chandeliers, and is, in reality, a palace turned over to the youth of the city.

In speaking with the director, it was learned that 10,000 youngsters take advantage of the program offered. There are between 6,000 and 8,000 children attending per day. The building covers four acres and has a library of 100,000 items with three reading rooms. Each child averages two hours a day, twice a week, in the activities offered. A list is kept of the work done by each child for the year.

There are about 100 different subjects of interest. Each group of children is called a "circle", and there are about 700 circles. Each one is different, and the teacher tries to take into account the individual interests of the
Teachers in the palace work six hours a day for six days per week. Their pay is 800 rubles per month.

The writer visited many circles. One game circle had 10 pinball-type games set up in one room. There was also a singing circle, a geology circle, a chess circle, a dramatic circle, and a puppet circle, and many practice rooms for musical instruments with instruction being given as well as practicing.

It was while at the Pioneer Palace that the writer gained his only glimpse of individual activities carried on by Russian youth. Youngsters of the geology circle had assembled a display of minerals and built a sizable electric board showing locations within the Soviet Union where the particular minerals are found. The puppet circle designed and made their own puppets and did so with a great deal of originality. At the rear entrance of the building, a number of models were displayed which had been made by members attending the palace.

The Pioneer Palace was the one place visited which seemed to indicate that learning was done on a project basis which was fun. It was also the only place observed where individuality seemed to be allowed in work by the children.
Plate 73. Director of Pioneer Palace in Leningrad

Plate 74. Pioneer Room in School 29, Leningrad