Medical Education in Soviet Russia

ARNOLD STARR, M.D.*
Department of Neurology, Boston City Hospital, Boston, Mass.

INTRODUCTION

The Western medical profession's knowledge concerning the development of Soviet medicine during the preceding two decades is most meager. This situation may be attributed to several factors. First, there was a paucity of pertinent material available for study during this period due to the restrictions imposed upon the exchange of scientific data between Russia and Western Nations. In addition, as a result of the exigencies of war and politics, the interchange of competent and interested observers was reduced to an insignificant number. Furthermore, the lack of Western scientific personnel familiar with the Russian language limited the significance of the few Russian scientific journals which were available. And finally, the deficiencies of Russian medicine evident during the initial years of Soviet rule may have minimized the value of any further exchange.

Within recent years, particularly since the death of Stalin, an increasing fund of information concerning the status of Soviet medicine has been made available through the exchange of medical missions between the Soviet Union and Western nations and through the encouragement of tourist travel in Russia. In addition, the translation and distribution of many Russian scientific journals by the National Institutes of Health, Bethesda, Maryland, have enabled scientists in this country to become acquainted with Russian scientific progress. And finally, the recent demonstrations of the proficiency and accomplishments of Soviet Science have illustrated the need for a careful appraisal of Russian medical progress.

Despite this improvement, however, and the recent publication of several articles on Soviet medicine (1,4,6,9,10), the current status of medical education in the Soviet Union has not received sufficient attention. The last complete analysis of the program of medical education was made by Michael B. Shimkin (12) in 1943 and contains, in detail, the 6-year curriculum then in use. Since this last article there have been many changes instituted in this curriculum as well as modifications of other aspects of the system of medical education. A review of the current trends in Soviet medical education is needed if we are to familiarize ourselves with present-day Russian medicine.

During the summer of 1956 I visited the Soviet Union for 3 weeks and attended a seminar in Leningrad and Moscow devoted to a discussion of medical education. This conference was sponsored by the International Union of Students (IUS), whose headquarters are in Prague, Czechoslovakia, and was attended by medical students from 35 countries. The political implications associated with this gathering may have discouraged others from attending, since I was the only United States citizen present. At the time I obtained the Russian visa I clearly stated that the trip was at my own initiative and that I was not a representative of any medical group. An informal account of my experiences while in the Soviet Union may be found in the *Medical Quarterly of the New York University College of Medicine* (13).

During my brief stay I visited medical schools, hospitals, and research centers in

* Teaching Fellow in Neurology, Harvard University, Boston, Mass.

both Leningrad and Moscow and conversed at some length with Russian medical students. This article is not only a record of my observations while in the Soviet Union, but also contains pertinent material supplied by Professor E. G. Ostroverkhov, Director of Medical Education in the Health Ministry of the USSR, who was most kind in response to my many questions. Thanks to his efforts the section devoted to the Russian medical curriculum may be considered current and accurate.

This paper presents new and detailed material relating to the Russian medical student, to the Student Scientific Circles, and to the most recent medical curriculum, which may help clarify and extend our knowledge of Soviet medical education.

Soviet medical institutes.[1]—The 77 medical schools in the Soviet Union are under the jurisdiction and guidance of the Government's Ministry of Health and have no official association with the nation's universities. The advantage of this arrangement resides in the facility by which the emphasis of medical training may be correlated with the varying medical needs of the Soviet nation. On the other hand, this approach has imposed a rigidity of thinking and purpose in medical education by insistence upon "a single consitution, a single curriculum, and a single program for each subject" (11) in the different medical schools.

The medical institutes contain either a "single-faculty" or "many-faculties." The latter offer instruction in as many as five distinct disciplines (medicine, pediatrics, public health, dentistry, and pharmacology), while the former may offer courses in only one of these fields. The majority of the institutes are "many-facultied" (medicine, pediatrics, and public health), and their advantage resides in an economy of space and labor by providing facilities that may be shared by the various disciplines. On the other hand, the "single-faculty" institutes are regarded as the educational leaders of their respective fields. Of the 77 institutes, 66 contain faculties of Medicine. There are also single-faculty institutes of pediatrics (1), public health (1), dentistry (2), and pharmacology (7).

TABLE 1

THE ENROLLMENT, ADMISSIONS, AND GRADUATIONS OF THE SOVIET MEDICAL INSTITUTES (7)

Faculty	No. in 1956	Enrollment Sept. 15, 1956	Admitted 1950	Graduated 1956*
Medicine	66	95,442	12,550	11,059
Pediatrics	25	23,364	2,840	2,513
Public health	22	18,438	2,763	2,228
Total	113	137,244	18,153	15,800
Dentistry	12	5,675	904	841
Pharmacology	6	9,848	1,343	1,103
Grand total	131	152,767	20,400	17,744

* The statistics quoted for the Faculties of Dentistry and Pharmacology refer to the year 1955 due to their shorter 5-year program.

At present there are 152,000 students, 70 per cent of whom are females, enrolled in the medical institutes, where they receive instruction from 16,411 professors and instructors. The distribution of the medical institutes' student enrollment among the various Faculties is outlined in Table 1. Each of these institutes trains approximately 1500–3000 students, a much larger number than in comparable American institutions. Furthermore, about 16,000 physicans are graduated each year in the Soviet Union

[1] The statistical data employed in this section were quoted from a recent official Soviet Publication (7). All subsequent statistical notations in this paper, unless otherwise specified, were obtained from material distributed at the I.U.S. Seminar or from personal communications with Dr. G. E. Ostroverkhov.

as compared with 7,000 in the United States. This remarkable quantitative growth of Russian medicine under the Soviet regime is also reflected in the following statistics: In the Soviet Union in 1917 there were sixteen medical institutes and 19,800 physicians, while in early 1956 these figures were quoted as being 77 medical institutes and 329,442 physicians.

The Armed Forces maintain several institutes of medicine, distinct from those under the jurisdiction of the Ministry of Health. This arrangement facilitates the coordinated development of military strength and its dependent medical care. Information as to the number and location of these institutes could not be obtained, but they apparently fulfill the requirements of the Armed Services, as military duty is not required of physicians graduating from the regular medical institutes.

The Russian medical student.—The Russian students present at the seminar were the representatives of several of the Soviet medical institutes, and their characteristic physiognomies and costumes were pictorial evidence of the USSR's physical and cultural diversity. Their alertness, interest in their fields of study, and contagious enthusiasm were typical of students anywhere. Their knowledge of both practical and theoretical medical problems appeared to be of high calibre. They were familiar with Western scientific workers and expressed interest in possessing textbooks by such authors as Goodman and Gilman, Blalock, and Wangensteen.

The student's life at medical school appears well organized. He (perhaps "she" is more appropriate) attends compulsory lectures, laboratories, and seminars, participates in a well developed system of physical culture, and spends the summer holidays harvesting, working in the mills with a group of fellow students, or relaxing in one of the inexpensive rest homes maintained by the Trade Unions.

All Russian students receive not only free tuition, but also monthly stipends which vary according to their field of study and the proficiency of the individual student. Thus, engineering students receive a greater stipend than medical students, and, similarly, the better students receive more than the average ones. Medical students' stipends, which average 300 rubles per month,[2] are continued during the summer holiday, even though no medical work is performed. Hostels are provided at a minimal cost (15 rubles/month), and my accommodations at the new Moscow University were clean, neat, and ample. Furthermore, the expenses incurred by the students while traveling and living in the rural hospitals during their fourth year in the course of completing their practical work are also absorbed by the medical institutes. This financial arrangement is appreciated by the students, and they speak of their stipends with pride. On the other hand, they are impressed with the ability of American students to obtain a medical education by their own initiative.

Entrance requirements.—Articles discussing the entrance requirements of Soviet medical institutes have been well documented, and the information I obtained is similar to these reports. In brief, a student seeking admission to any medical institute must be a graduate of a 10-year school (the equivalent of our secondary schools) or of a secondary medical faculty (a 3-year school which trains medical assistants). Competitive examinations in the Russian language and literature, mathematics, physics, chemistry, and one foreign language, as well as a consideration of their personal character and references, form the basis for the selection of students.

Up to 1936 preference was afforded to those students of proletarian background, and DeWitt (3) states that, although the stress upon social background was legally abolished in that year, the character references presently required may serve to eliminate those individuals considered politically undesirable.

Even though no limitation is placed upon

[2] At the present rate of exchange in the Soviet Union 4 rubles are equivalent to 1 United States dollar, but 10 rubles to a United States dollar would be a more realistic evaluation.

the prospective students as to their choice of institute they apparently must study within their respective Republic's medical schools, as I did not encounter students whose homes and institutes were in different Republics.

Medical curriculum.[3]—The Soviet medical curriculum consists of 6 academic years,[4] each extending from the 1st of September to the 1st of July. During these years 36–38 hours each week are devoted to academic or formal instruction. In addition to 2 months of summer vacation, the students receive a 2-week winter holiday.

The first 2 years (I and II) are concerned with the basic sciences (anatomy, histology, chemistry, physics), philosophy and politics, and languages (Latin and one modern foreign language). In the third (III) year the students commence their clinical training (3 hours twice a week) on the medical and surgical wards and also continue their lectures and laboratory work in microbiology, pharmacology, and pathological physiology. The fourth (IV) and fifth (V) years are devoted almost entirely to instruction in the various clinical disciplines, and not less than 3 hours per day are spent in the hospitals. The students also become familiar with the district polyclinics (the equivalent of our out-patient departments) which are the fundamental units of Russian medical care. Practical work predominates during the sixth (VI) year, and experience is obtained in the medical institutes' affiliated hospitals. The block system of instruction is used, whereby 2½ months are spent in medicine, 2 months in surgery, 1½ months in obstetrics and gynecology, and 1 month in infectious diseases. During this final year the medical students are designated as "sub-ordinators" while in the hospitals, but continue to remain under the jurisdiction of the medical institute. Didactic lectures are reduced to only four per week, providing ample time for the students to develop their practical acumen. In fact, throughout the 6 years of training only 35 per cent of the curriculum is apportioned to lectures, while the remainder is spent in hospital and laboratory work.

The present curriculum is quite similar to the one in effect between 1944 and 1955 (Table 2), (see Shimkin, 1946 [12]), but certain subtle changes and new emphases are apparent. The course formerly entitled "Principles of Marxism-Leninism" has now the less pedantic designation of "Philosophical Disciplines." Also, a course of similar character, "Political Economy," has been introduced into the curriculum during the first 2 years. "Military Medicine" which had great pragmatic significance during the war years has been discontinued and its time allotted to "Physical Culture." The current emphasis on practical work is apparent when one considers that, though the present curriculum has been decreased 300 hours, the time assigned to the clinical fields of obstetrics and gynecology and to hospital therapy has been considerably augmented.

The basic instructional unit, a group of nine or ten students, is organized in the first (I) year and maintained intact throughout the medical training. Theoretically, one instructor is assigned to a group in each discipline.

At the completion of the fourth (IV) year the students live for 2 months in a rural hospital where they strive to develop broad clinical experience. During this period they are responsible for ambulance duty, minor surgical procedures, obstetrical deliveries, and the innumerable other services connected with a general hospital. These rural hospitals are staffed by physicians designated by the institutes of medicine. This is the only period during the student's training when he actually lives in a hospital and functions as an intern.

Following each semester (except after the eleventh) 4 weeks are designated as examination periods, at which time "current progress" is ascertained. In addition, there are examinations scheduled after the comple-

[3] The curriculum to be presented applies only to the faculty of medicine. The faculties of pediatrics, public health, stomatology, and pharmacology have different curricula beginning in the third (III) year which emphasize their special subjects.

[4] Dental and pharmacology students study 5 years.

tion of each particular course: philosophical disciplines, anatomy, etc. Finally, there are State examinations administered by special commissions which evaluate students in oral sessions after the second (II) year in anatomy, histology, physiology, and biochemistry, and also after the sixth (VI) year in medicine, surgery, obstetrics, and gynecology, and organization of medical care and hygiene. The successful completion of these State examinations qualifies the students for the title and responsi-

TABLE 2

THE SIX-YEAR RUSSIAN MEDICAL CURRICULUM—1955

No.	Course	Seminar examined	Total hours 1945*	Total hours 1955	Distribution of hours: Lectures	Lab.	Seminars	Seminar studied
1.	Philosophical Disciplines (principles of Marxism-Leninism—'45)	2, 4	250	250	160		90	1–4
2.	Latin and Foreign Language	4	298	220			220	1–4
3.	Physical Culture	1, 3, 4		166	16	16	134	1–4
4.	Physics	2	144	136	68	40	28	1–2
5.	Biology	2	216	190	86	104		1–2
6.	Anatomy of the Human Body	1, 2, 3	397	392	118	274		1–3
7.	Histology and Embryology	3	250	182	66	116		2–3
8.	Inorganic and Analytical Chemistry	1, 2	162	140	54	86		1–2
9.	Biological Chemistry, including Organic and Colloidal	2, 4	374	295	131	164		2–4
10.	Physiology	4	278	247	132	115		2–4
11.	Microbiology	5	255	207	70	137		4–5
12.	Political Economy			90	60	30		4–7
	Military Medicine	5, 7	180					
13.	Pathological Physiology	6	162	155	68	87		4–6
14.	Pharmacology	6	219	170	68	102		5–6
15.	Pathological Anatomy	6	264	184	87	97		5–6
16.	Diagnosis of Internal Disease with Radiology	6	332	274	133	141		5–6
17.	General Surgery	6	213	189	87	102		5–6
18.	Operational surgery, including Topographical Anatomy	7	127	117	33	84		5–7
19.	Hygiene	7	254	162	81	81		5–7
20.	History of Medicine and Organization of Health	9	119	125	51		74	8–9
21.	Clinical Therapy, including course on tuberculosis	8	276	253	111	142		7–8
22.	Clinical Surgery and a course of Neurology	8	246	200	98	102		7–8
23.	Neuropathology	9	138	106	44	62		8–9
24.	Skin and Venereal Disease	9	124	101	44	57		8–9
25.	Obstetrics and Gynecology	8, 10	279	379	83	96	200 H	7–12
26.	Otorhinolaryngology	9	96	88	31	57		8–9
27.	Pediatrics	10	212	166	66	100		9–10
28.	Ophthalmology	10	96	80	32	48		10
29.	Psychiatry	9	100	90	36	54		9
30.	Forensic Medicine	10	100	100	34	66		9–10
31.	Hospital Therapy with the Polyclinics		304	486	68	68	350 H	9–12
32.	Infectious Diseases and Epidemiology	11	184	214	32	32	150 H	10–12
33.	Hospital Surgery, Traumatology, and Stomatology		332	544	102	102	340 H	9–12
	Total hours		6981	6698	2350	2762	1586	

H = Hours spent in hospital during sixth year.

* Reference 12.

bilities of "Vrach" (Physician). Failure to pass these examinations was reported to be extremely rare. The few students who do fail, however, are re-examined and usually pass at this time. This outstanding record was felt to be the result of the careful techniques used to select students for medical studies.[5]

Table 3 contains the current medical curricula of the Soviet Union and of three American Medical Schools. In the preparation of this table several courses of the 6-year Russian program were excluded to facilitate its comparison with the 4-year American curricula.

TABLE 3

THE CURRENT MEDICAL CURRICULA OF THE SOVIET UNION AND OF THREE AMERICAN MEDICAL SCHOOLS

	Distribution of Hours			
Course	Soviet*	Columbia (2)	Washington (14)	Harvard (8)
Anatomy	574	595	618	487
Biochemistry	295	181	312	220
Physiology	247	226	306	220
Microbiology	207	192	264	169
Pharmacology	170	137	216	146
Pathology	339	498	504	331
Medicine	1227	1050	980	798
Surgery	1050	722	804	660
Pediatrics	166	348	327	216
Psychiatry	90	182	143	248
Neurology	106	88	53	39
Public Health	387	139	84	165
Obstetrics and Gynecology	379	336	387	309
Medical Specialties				
Dermatology	101	62	18	37
ENT	88	40	30	40
Ophthalmology	80	42	30	32
	269	144	78	109
Elective		665	198	144
Total	5506	5503	5274	4261

*Abridged from Table 2.

Student research activities.—The Student Scientific Circles are integral parts of almost every medical institute. They are the official organization of those students interested in scientific research and medical problems.

In each medical school the scientific circles are attached to particular chairs (radiology, microbiology, etc.). These circles are organized into sections: (*a*) medical-biological (concerned with the basic sciences) (*b*) therapeutic; and (*c*) surgical. Each circle elects a secretary, but the administration of the circle resides with a council elected by the students from the various sections. The institute's academic staff assumes the scientific guidance and encouragement of these scientific circles, but, in general, these students administer their respective societies.

The first medical institute of Leningrad has 4800 students, 1170 of whom participate in these scientific circles. There is a definite hierarchy of function as younger students perform literature surveys, learn experimental technique, and, only later, are allowed to conduct scientific experimentation. The students who carry out an experimental program are guided by a faculty member, and their expenses are borne by the responsible chair.

It is noteworthy that group experimen-

[5] The figures in Table I may contradict these statements, as 13 per cent of the entering class of 1950 did not complete their course of study.

tation was considered to be more effective and popular. For example, it was reported that 22 students are currently engaged in a single project under the direction of the Chairs of biochemistry and hospital therapy on "Biological Indices of Blood and Tissues under Physiological, Soporific, and Hypnotic Sleep, a Pavlovian Doctrine."

The scientific circles hold regular meetings where specific topics are discussed. Also, once a year, in the Spring, there is an annual conference of the various Student Research Societies at which the best papers are read. Some of these students receive awards from the Ministry of Higher Education, and often their works are published in the nation's scientific journals. Furthermore, a book is published each year containing the completed projects of many of the students.

The graduate physician and post-graduate training.—Upon graduating from medical school the Russian physician is offered a position, usually in a rural community, by the Ministry of Health. Since private medical practice has been virtually eliminated by prohibitive taxation, the young physician has no alternative but to accept the proffered post if he wishes to earn a living and practice his art. As incentives the new graduate is granted a month's vacation while continuing to receive his scholastic stipend, free transportation for his family and possessions to the site of his employment, and 50 rubles per month more salary than in a comparable post in the city. These financial benefits, as well as the awareness of the rural physician's importance to Soviet planning and ideals have not proved entirely effective in convincing students to assume their expected role in the nation's medical system. Field (5) has illustrated the devious means employed to avoid this rural service by drawing from the pages of the *Meditsinski Rabolnik* (The Medical Worker), the official publication of the trade union of medical workers. (This union includes physicians, nurses, technicians, medical assistants, midwives.) The major reason for this dissatisfaction is that the cultural and housing opportunities of the rural community are totally inadequate when compared with the urban amenities which the student experienced while at work in the medical institutes. Also, the facilities and technical help placed at his disposal in the rural post are often vastly inferior to the equipment employed in the medical centers. Finally, the young physician, though well grounded in theory, often is unprepared for the surgical and medical demands that will be made upon him.

A certain small percentage (Field [4] estimates 10 per cent) of the graduating physicians may be relieved of their rural obligations and are offered the opportunity of continuing their medical education. Each year 2500 physicians, some of them from the ranks of the new graduates, are permitted to pursue a 2-year course in a medical institute's hospital leading to a specialty designation in medicine or surgery. During this time they assume the title of "ordinator" and receive a stipend befitting their advanced rank.

There are also 700 students, chosen on the basis of their work in the medical institutes and in the scientific circles, who, during a 3-year period in either a medical or research institute, develop their skill and proficiency in experimental research. At the completion of this study, they present their theses in both written and oral dissertations for consideration of the degree "Candidate of Medical Science." These candidates form the core of the Soviet Union's investigators and instructors in the Medical Disciplines. The title "Doctor of Medical Science" is reserved for investigators of merit who have achieved original and outstanding experimental work and is usually not conferred before 40 years of age.

A course of postgraduate medical education is also required for rural physicians, every 3 years, and for urban physicians, every 4 years. There are eleven postgraduate medical institutes specifically designed "to improve the professional standards of doctors," and 16,000 physicians prepare

themselves at these institutes for 4–6 months each year, while 8,000 additional physicians take a similar course of instruction in local community centers.

DISCUSSION

All aspects of Russian medicine, including the education and training of physicians are regulated by the Soviet government through the Ministry of Health. The sociological implications of this relationship have received thoughtful consideration from Dr. Mark Field, and I refer the interested reader to his recently published book (4). I shall limit my comments to several facets of the Russian system of medical education which I found of particular interest.

The majority of the courses which comprise the initial 2 years of the 6-year Russian medical curriculum represents material (biology, chemistry, physics, mathematics, language) which American students prepare prior to commencing medical studies. This distinction is of no consequence and reflects merely variations in the arrangement of the two educational systems. There are, however, two differences which are of significance, and merit comment. First, Russian medical students devote more time to the study of public health and of various medical specialities (otorhinolaryngology, dermatology, ophthalmology) than their American counterparts. These emphases enable the students to become familiar with the management of a wide variety of medical and surgical problems which they will encounter, after graduation, in their medical practice in a rural community. Second, the inclusion of courses of political significance (philosophical disciplines, i.e., Marxism-Leninism, political economy) in the medical curriculum is peculiar to the Russian system of education and is an example of the ideological indoctrination associated with medical training. The time allocated for the requisite attainment of scholastic proficiency in Marxist political and economic theory is inordinate (250 hours compared with 138 hours for neuropathology, 212 hours for pediatrics, 219 hours for pharmacology) and does not contribute to the development of the students' medical acumen.

The payment of monthly stipends (300 rubles equivalent to $75, United States) to students during their years of university training is an intriguing feature of the Soviet's educational system. These stipends may be conceived as a financial compensation offered to the students in anticipation of their future contributions to the growth and development of the Soviet Union. However, the student's conception of his national responsibility often conflicts with the designs of the government, and the resultant attempts at evasion of "duty," as well as the use of arbitrary decisions have been commented upon in this paper, and in a more detailed form by Field (5).

It is of interest that these stipends have an additional significance. For instance, academic achievement is recognized not only by awards of medals and certificates, but also by an increase in the monthly stipends. Furthermore, stipend values vary according to the field of study. Thus, students of engineering, mathematics, and physics receive a more substantial allowance than their counterparts in medicine. This variation may reflect the importance attached to these various disciplines by the current Soviet Government and is an indication of the secondary status of medicine in Russia today.

The widespread student interest in scientific inquiry, indicated in personal conversations with Russian medical students, is further attested to by the great popularity of the scientific circles. Their structure permits students to participate in research projects in capacities which vary according to their particular skills. The students are exposed to the problems of experimental investigation in an orderly fashion: first, familiarizing themselves with the pertinent literature, then developing competence with various experimental techniques, and, finally, directing a research project. Proficiency is

rewarded by advancement within the framework of the scientific circle. The design of these scientific circles is conducive for the development of achievement in research endeavors. Although it is true that "chance favors the prepared mind," it is also essential that the successful experimenter be endowed with resourcefulness and initiative. Whether the regimented design of the scientific circles can be conducive to the development and expression of these aforementioned qualities will be revealed by observing the progress of Russian medicine in the subsequent years.

It is apparent, therefore, that many aspects of the Russian system of medical education bear a direct imprint of Soviet governmental policy. In many respects it would appear that the Soviet's attempts to integrate medical education with the needs of the Russian nation, be they medical, military, political, or economic, have compromised the high standards of intellectual freedom and motivation which have characterized the training of physicians in the Western world.

SUMMARY

The growth of Russian medicine under the Soviet's guidance is formidable. The number of medical schools has more than quadrupled in the brief span of 40 years, and the current number of students graduating each year (16,000) almost equals the total number of physicians in the USSR in 1917 (19,800). This remarkable development has been attained by including the profession of medicine and the training of its members in the goals of the Five Year Plans.

The benefits of this arrangement are apparent when one considers the statistics quoted above, but the detrimental effects imposed by governmental control of medical education are commented upon in this article.

I was impressed by the many similarities between Russian and Western medical curricula, by the alertness and intelligence of the students, and by the encouragement of student scientific research.

Unfortunately, in a brief visit only glimpses of Soviet medicine are possible, and, while one may be stimulated by this exposure, definitive statements and evaluations cannot be made. Statistical data, a printed curriculum program, and brief social encounters are poor substitutes for the actual participation in an educational scheme. It is hoped that in the near future opportunities for a period of exchange study may be afforded to both Soviet and American students.

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