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/Following is a translation of an article written by A. M. Sidorkov in Aptechnoye Delo (Pharmacy), Vol. VIII, No. 6, Moscow, Nov/Dec 1959, pages 44-47./

By the end of the Great Patriotic War, higher pharmaceutical education expanded considerably as compared to its state in 1940. The higher pharmaceutical educational institutions were restored in the Ukraine in 1944, and in Leningrad in 1945, a pharmaceutical institute was newly established in Pyatigorsk, while in January 1943, and even earlier, in 1941, pharmaceutical faculties were newly established in Tomsk and Irkutsk. The success achieved in the field of higher pharmaceutical education served as a basis for the further strengthening and development of higher pharmaceutical schools in the postwar period, when a number of important measures were taken to improve and expand the training of pharmaceutical personnel.

The activity of the pharmaceutical institutes and faculties during the early years of the postwar period was described in detail by the Ministry of Health USSR in Order No. 475 of 27 January 1947, "On the State of Pharmaceutical Education in the USSR and on Measures for its Improvement."

The following years brought about many substantial changes in the system of higher pharmaceutical education. The admittance to the pharmaceutical faculties at Kaunas and Riga Medical Institutes was resumed in 1950, and the pharmaceutical faculty at Kazakh Medical Institute (Alma-Ata) began to function in 1951. Today, in the USSR, there are six pharmaceutical institutes: in Leningrad, Perm', Pyatigorsk, Zaporozh'ye (formerly Odessa Institute), Khar'kov, and Tashkent, 10 pharmaceutical faculties in medical institutes (in Alma-Ata, Baku, Irkutsk, Dnepropertrovsk, Kaunas, Riga, L'vov, Moscow, Tbilisi, and Tomsk, and a pharmaceutical department in the medical faculty of Tartu State University.

At the beginning of the 1956/57 school year more than 9,100 students were enrolled in all the higher pharma-

ceutical educational institutions of the country, whereas at the beginning of the 1945/46 school year approximately 6,000 were in training, i. e., the number of students had increased by more than 3,000. The distribution of students of pharmaceutical institutes and faculties among the union republics is given in Table 1 (data is shown as of 15 September of each year).[1]

Almost twice as many pharmacists were trained in the USSR during the two postwar five-year plans than in the period from 1936 to 1945. For example, during 1936-41, the higher pharmaceutical educational institutions graduated about 2,770 specialists; in the period of the Great Patriotic War (1941-1945) 3,500 were graduated; during the Fourth Five-Year Plan 6,561 pharmacists were turned out, while in the Fifth Five-Year Plan 4,829 highly qualified pharmacists were graduated, i. e., over the 20-year period (from 1936 to 1956), the higher pharmaceutical educational institutions trained a total of 17,660 pharmacists.

The number of students admitted to the higher pharmaceutical educational institutions increased at the end of the Great Patriotic War and even more since 1953, a circumstance caused by a shortage of pharmaceutical personnel in a number of area in the RSFSR, Central Asia, Belorussian SSR, etc. On 1 January 1946 there were 3,000 fewer pharmacists in the non-State-financed /khozraschelnaya/ pharmaceutical system of the Ministry of Health USSR than on 1 January 1947 (8,965 to 5,928, respectively). Many pharmacies and pharmaceutical administrations were still managed by persons without higher pharmaceutical education. Even as late as 1949 only 25 percent of pharmaceutical administration managers and 26 percent of pharmacy managers were pharmacists.

In the face of this situation together with the increased turnout of young highly qualified pharmacist-specialists, it became imperative to review the improper practice, existing in a number of places, of the use of pharmaceutical personnel. To this end the Ministry of Health USSR undertook the great task of regulating the selection and placement of personnel in the pharmacy system according to duty nomenclatures of pharmaceutical workers.

As a result of the measures taken (in improving the use of pharmaceutical personnel on the one hand and expanding their training on the other) the number of pharmacists in the country increased considerably, and in the most im-

[1] Data of the pharmaceutical department of Tartu University (Estonian SSR) was not included in the table, nor are correspondence students included.

Table 1

Union republic \ Year	1937	1938	1940	1945	1946	1947	1948	1949	1950	1951	1953	1954	1955	1956
RSFSR	851	1 355	1 671	2 965	2 947	3 239	3 157	2 984	2 681	2 541	3 689	4 382	4 680	5 109
Ukrainian SSR	1 681	1 721	257	1 853	2 034	2 295	1 963	1 899	1 824	1 739	2 280	2 415	2 513	2 590
Uzbek SSR	—	157	273	391	501	533	445	442	432	521	526	629	698	750
Kazakh SSR	—	—	→	—	—	—	—	—	—	50	146	250	357	415
Azerbaydish SSR	60	165	141	167	217	233	196	207	199	204	256	264	264	258
Georgian SSR	325	369	345	517	520	491	396	315	307	186	209	216	232	208
Latvian SSR	—	—	—	—	—	—	—	—	130	121	169	193	215	251
Lithuanian SSR	—	—	—	—	—	—	—	—	—	130	146	167	200	267
Total	2 917	3 768	2 687	5 893	6 219	6 781	6 156	5 847	5 453	5 492	7 420	8 536	9 159	9 848

portant and responsible sectors of pharmacy pharmacists with higher education began to predominate, a fact which had great importance in raising the quality of drug service to the population.

The number of pharmacists in the pharmacy system of the Ministry of Health USSR in 1950 was almost double that of 1945, and in 1955 it increased still further by almost 4,000 (in 1945 -- 5,928; in 1950 -- 10,113; in 1955 -- 13,898). In addition, the correspondence-course training of pharmacists was resumed: since the 1953-54 school year a correspondence-course faculties has been functioning at Moscow Pharmaceutical Institute and since the 1955/56 school year, at Perm', Tashkent, and Odessa Pharmaceutical Institutes. On 15 September 1956 as many as 1,438 persons were pursuing their education in all the various pharmaceutical institutes without discontinuing work (823 persons at Moscow Pharmaceutical Institute, 226 at Odessa Pharmaceutical Institute, 177 at Perm' Pharmaceutical Institute, and 212 at Tashkent Pharmaceutical Institute). In 1958 a total of 162 persons graduated from the correspondence-course faculty at Moscow Pharmaceutical Institute. In that year there was also a small number of correspondence-course graduates from Tashkent Pharmaceutical Institute (16 persons).

The graduation of pharmacists has increased in company with a considerable improvement in the quality of their training, both theoretical and practical. The appearance of a large number of new drugs (sulfanilamides, antibiotics, hormones and vitamins, a number of new synthetic preparations with specific effects, such as bigumal, dicoumarin, syntomycin, butadion, phtivaside, etc.), as well as the vast growth of the domestic pharmaceutical industry require the scientific development of new methods of the manufacture and quality control of drugs, and the formation of highly-qualified pharmaceutical personnel. The school plan and curricula designed for a four-year course of training did not satisfy all these requirements. Lengthening the term of study was necessitated primarily by the fact that the profile (pharmaceutical) disciplines (technology of drug types, galenic preparations, pharmacognosy, pharmaceutical chemistry, forensic chemistry, organization of pharmacy, as well as certain others, organic chemistry, analytical chemistry, physical and colloidal chemistry, pharmacology and the science of medical commodies) held a totally inadequate place in the school plan.

Little time was assigned for production practice, where in pharacognosy was conducted during the summer vacation between the third and fourth courses.

Beginning with the 1949/50 school year the government

established a five-year course of study in the pharmaceutical institutes and faculties, a fact which created conditions for a serious reexamination of the schhol plan and curriculum in order to intensify the theoretical and practical training of pharmacists in the country.

A decisive factor in the training of highly qualified specialists is the staff of professors and instructors, whose number at the pharmaceutical institutes and faculties had increased somewhat by the end of the Great Patriotic War, but the higher pharmaceutical educational institutions presented a mixed picture in this respect. For instance, in the 1947/48 school year there were 57 professors, 156 docents, and 415 assistants in all the pharmaceutical institutes and faculties, 52 had a doctor's degree, and 170 had a candidate's degree, i. e., individuals with scientific degrees comprised 35.3 percent.

The peripheral higher pharmaceutical educational institutions were staffed exclusively with candidates of pharmaceutical sciences, some of the specific chairs being headed by persons without a scientific degree (for example, the chair of pharmaceutical chemistry at Perm' Pharmaceutical Institute.

To rectify this situation, the training of scientific-pedagogical personnel was expanded from year to year. For example, in 1945 at the pharmaceutical institutes, 11 persons were taking graduated courses. In 1946, eight more were admitted, and during the years subsequent to the Fourth Five-Year Plan over 20 persons were admitted yearly. The status of scientific-pedagogical personnel in the postwar period is given in Table 2.

Thus, with an almost unchanged over-all number of professorial and pedagogical personnel there were 71 more candidates of sciences (including 45 candidates of pharmaceutical sciences) in the pharmaceutical institutes and faculties in 1956 over 1946; the number of doctors of pharmaceutical sciences increased by only four, a situation which is obviously inadequate and testifies that there are serious gaps in the training of doctors of sciences in the pharmaceutical branch.

At the beginning of the 1956/57 school year there were no doctors of sciences at all in the chairs of the Dneproperrovsk, Alma-Ata, Irkutsk, Riga, and Kaunas pharmaceutical faculties.

On 1 October 1956 in all higher pharmaceutical educational institutions a still considerable number of assistants and instructors had no scientific degree. During the postwar years the chairs in the pharmaceutical disciplines became considerably staffed with professorial-pedagogical

personnel. Showing a particular increase was the number of individuals with the academic degree of candidate of sciences. For instance, in the 1956/57 school year in the chairs of technology of drug-types and galenic preparations there were two more doctors of sciences and 15 more candidates of sciences; in the chairs of pharmaceutical chemistry -- two more doctors and 28 more candidates of sciences; in the chairs of pharmacognosy -- two more doctors and 25 more candidates of sciences; in the chairs of organization of pharmacy there were five more candidates of sciences (not one chair has any doctor of sciences as yet); at the chairs of forensic chemistry the number of doctors of sciences decreased by one, while the number of candidates of sciences increased by one. At the same time it should be particularly noted that the chairs (courses) of organization of pharmacy were extremely poorly staffed with qualified personnel: as of 1 October 1956 there were four candidates of sciences in Moscow Pharmaceutical Institute, two at Leningrad chemico-pharmaceutical Institute, and one each at Khar'kov and Odessa pharmaceutical institutes; at other higher pharmaceutical educational institutions the chairs of organization of pharmacy were staffed with persons without scientific degrees or titles.

Table 2

Nomenclature	At beginning of school year	
	1946/47	1956/57
Professors and instructors in all higher pharmaceutical educational institutions in the USSR	553	556
Of these:		
Doctors of sciences	53	49
including those of pharmaceutical sciences	8	12
Candidates of sciences	98	169
including those of pharmaceutical sciences	60	105

The chairs of the higher pharmaceutical educational institutions have made a definite contribution to the development of pharmacy, which, under the Soviet regime, outgrew the limits of one discipline and today represents a complex of independently developing pharmaceutical disciplines (technology of drug types and galenic preparations, pharmaceutical chemistry, pharmacognosy, organization and history and pharmacy, and forensic chemistry). Considerable work has been done by the scientists of pharmaceutical institutes in the writing of textbooks and training-method appliances. Expansion and improvement of scientific research work in the pharmaceutical institutes and faculties for the training of pharmacists at the pharmaceutical faculties are closely related to the necessity of improving their educational scientific basis.

In addition to the selection of buildings for the pharmaceutical institutes, attention must be paid to the equipping of chairs and laboratories. Each pharmaceutical institute should contain training laboratories for the manufacture of galenic preparations, drug types, and for pharmaceutical analysis, a model training pharmacy, and a plot of land for the cultivation of medicinal plants. Great possibilities for further improvement in the training pf pharmacists in the pharmaceutical institutes and faculties have been created by recent resolutions of the Party and government.

All this will undoubtedly help to improve considerably the quality of the training of pharmacists in the current Seven-Year Plan.

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