journals, he also has taken a leading part in the establishment of this new industry. The book is highly technical, but would certainly repay close study by any one interested in this field.

One instance, apart from gas separation, of some of the problems which have been solved in the USSR should prove of interest to scientists in this country. The so-called "natural gas" found in and adjoining oil fields consists largely of methane. This gas is much superior to ordinary illuminating gas in calorific value, but, more surprising, it is an excellent anti-knock fuel for internal combustion engines. The difficulty lies in storage, since a cylinder designed for 150 atmospheres pressure weighs about ten times more than the methane it contains. However, a tank $20 \times 15 \times 10$ feet could hold as much methane (liquid) as a two million cubic foot gas-holder and would be immeasurably cheaper and less dangerous. The advantages of such a scheme are obviously very great—such stored gas would be of great value in emergencies or when sudden and heavy industrial demands on fuel gas occur.

Despite all this industrial activity in recent years, a good deal of purely "academic" research of high quality has come from Kapitza's laboratory. One such outstanding contribution was made during the current year and reported in the *Physical Review*. This had to do with the properties of liquid helium. Kapitza had earlier discovered that liquid helium at a temperature some two degrees above absolute zero (so-called Helium II) behaves like an "ideal" fluid, apparently possessing a vanishingly small viscosity or fluid friction. It appears from this latest work that Helium II flows in narrow channels without change in entropy and accordingly is truly a super fluid. We must therefore regard this substance as being unique —nothing like it has ever been previously observed. The significance of this discovery for modern atomic physics is likely to be of the greatest importance.

The whereabouts and activities of Kapitza since the German invasion are not known. It is probable that his purely scientific work has been interrupted although likely that he is still engaged in his industrial activities.

THE NATIONAL ROSTER OF SCIENTIFIC AND SPECIALIZED PERSONNEL: THIRD PROGRESS REPORT

By Dr. LEONARD CARMICHAEL

PRESIDENT OF TUFTS COLLEGE, DIRECTOR OF THE NATIONAL ROSTER OF SCIENTIFIC AND SPECIALIZED PERSONNEL

IN previous reports[1] an outline has been presented of the basic plan and the preliminary steps taken in the construction of the National Roster of Scientific and Specialized Personnel. In the present report emphasis is given to a description of the actual operation of the Roster as it appears at the close of the first year of performance.

So far, more than 200,000 names of individuals are listed in the analytical files of the Roster. It is interesting that from this list already more than 50,000 names have been presented to various defense agencies and other government bureaus for consideration in connection with appointments. Almost all the requests that come to the Roster office are of a confidential character and it is not possible at this time to describe them. It can be said, however, that especially large numbers of demands have been presented for individuals in the fields of physics, electrical engineering, aeronautical engineering, marine engineering and mechanical engineering. Significantly large numbers of requests have also been received for individuals with special language skills or with a combination of some other professional competency and language skill. There have been demands also for a good many economists and psychologists, and, indeed, there have been some requests for men in each of the fields covered by the Roster. The fields for which technical check lists have so far been prepared are as follows:

- Administration and Management, including separate lists in:
  - Accounting
  - Management Engineering
  - Personnel Administration
- Agricultural and Biological Sciences, including separate lists in:
  - Animal Sciences
  - Botany
  - Forestry and Range Management
  - Genetics
  - Plant Pathology, Horticulture and Agronomy
  - Zoology and Entomology
- Engineering and Related Fields, including separate lists in:
  - Aeronautical Engineering
  - Architecture

[1] SCIENCE, August 16, 1940, Vol. 92, No. 2381, pages 135–137, and SCIENCE, March 7, 1941, Vol. 93, No. 2410, pp. 217–219.

- Automotive Engineering
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Heating, Ventilating, Refrigerating and Air Conditioning Engineering
- Industrial Design
- Mechanical Engineering
- Mining and Metallurgical Engineering and Mineral Technology
- Motion Pictures—Engineering, Production, Direction
- Naval Architecture and Marine Engineering
- Radio Engineering
- Safety Engineering
- Testing of Materials—Engineering and Technology
- Transit and Traffic Engineering

Humanities
- Foreign Languages

Medical Sciences and Related Fields, including separate lists in:
- Anatomy
- Bacteriology, Immunology and Pathology
- Nutrition
- Pharmacology and Experimental Therapeutics
- Physiology
- Tropical Medicine (and Parasitology)

Physical Sciences, including separate lists in:
- Actuarial Science
- Chemistry
- Geology
- Geophysics
- Horology
- Mathematics
- Physics and Astronomy

Raw and Manufactured Products and Associated Industries:
- Speleology

Social Sciences, including separate lists in:
- Anthropology
- Economics
- Geography
- History and Political Science
- Psychiatry
- Psychology
- Recreation Leadership
- Sociology
- Social Welfare
- Speech Pathology
- Statistics
- Trade and Industrial Education

A few examples of the sort of requests which come to the Roster from non-confidential sources may give an indication of the character of demands in the confidential areas as well.

The Bureau of Mines of the Department of the Interior requested names of chemical engineers skilled in extractive metallurgy, especially in the field of aluminum.

The Interstate Commerce Commission requested a transportation economist capable of assuming responsibility for conducting independent research and using statistical data in the investigation of the economics of transportation.

An investigating committee of the United States House of Representatives requested the names of experts in the fields of economics, sociology, transportation and job statistics to perform research and analysis in connection with national defense migration.

The Office of Price Administration and Civilian Supply requested a number of mathematical statisticians.

Engineers of various types have been requested for the Panama Canal Zone.

The Office of Production Management has requested, under specific description, more than thirty economists skilled in such fields as brass, cadmium, hides, rubber, cork and miscellaneous metals.

The National Youth Administration requested the names of individuals eligible for appointment as radio engineers to provide advisory service to state administrators in connection with the training of young radio operators.

From the Securities Exchange Commission a request for statisticians in securities and corporate finance has been received.

The examples given above hardly give a fair picture of the work of the Roster because by far the largest number of individual requests that have come to the office have been from the Army, Navy and other services in which information is at the present time restricted. Nevertheless, these examples may show something of the highly specific character of the demands which are made upon the Roster concerning citizens who have had very specialized training.

Some of the individuals for whom confidential requests have come are: translators of many languages; maritime reporters; physical chemists; radio physicists; industrial chemists; women physicists; explosives chemists; specialists in European history; electrical, mechanical, chemical, civil, sanitary, safety, aeronautical, marine, motion picture, and other engineering specialists; business specialists; personnel administrators; petroleum economists; statisticians with ability to speak Spanish; research physicists with experience in testing strength of materials; recreation supervisors; topographers; accountants; industrial commissioners; economists for monetary research; economic geologists; physicists with expert knowledge of oscillographs; psychologists for personnel testing; physicists for research in optics; safety experts; experts in hydro-dynamics; psychologists with expert knowledge of vision and audition; x-ray experts; public administrators; labor representatives; indus-

trial training coordinators; experts on import and export problems of clearance; experts in labor relations; ordnance experts; nutrition chemists; speech pathologists; physiologists with experience in high altitude research; budget examiners; architectural inspectors; examiners with knowledge of Polish; personnel placement officers; and many others.

From time to time those in charge of the administration of the Roster have secured statistical data concerning its growing file. At one time, for example, the percentage of men and women listed was determined for the entire file. While names have been added since that time, it is presumed that this ratio has not changed materially. The numbers indicated are: men, 142,845; women, 8,881. The median age of Roster registrants, based on a similar procedure, was found to be 37.65.

At the time when the total registration of the Roster included 151,726 individuals, a study was made of the distribution of those registered by professional field, and at the same time a study was made of the academic training of those registered. It should be emphasized that selective factors have determined the academic level of the individuals listed on the Roster. For example, circularization in certain fields of the humanities has been limited to those who have pursued studies equivalent to those ordinarily required for the Ph.D. degree, whereas in other fields all individuals who have received Bachelor's degrees and whose names could be secured by the Roster have been listed. It should be added that there are no minimum educational requirements for inclusion in the Roster. The number of individuals in various fields and their educational level are given as of September 1, 1941, in the table below.

Dr. Steuart H. Britt, of George Washington University, has been serving as a special consultant of the Roster to deal with the problem of the relationship between the Roster and the Selective Service System. After consultation with leading academic authorities in the fields of specialization for which there is the greatest demand because of the defense effort, Dr. Britt has worked out a procedure by means of which information on the Roster concerning a man's accomplishments may be made available, through the national and state boards, to the local boards of the Selective Service System for their own evaluation. Emphasis should be given to the fact that this relationship between the Roster and the Selective Service System is wholly of an advisory character. The procedure employed by the Roster in this work has been to use the selecting card sorter and to tabulate the names of those individuals on the Roster whose age is such that they are subject to call by the action of the Selective Service System. Special questionnaires are forwarded from the Roster office to these individuals requesting information concerning their status with their local boards. On the basis of this information and information contained in the individual's questionnaire as originally filled out, authorities in the man's special field are asked to advise the Roster concerning the training of the man in question in relation to necessary defense work. The registrant's employer, as well as others having knowledge of his technical competences, is also asked to furnish information concerning his qualifications.

It is recognized that especially because of the changing activities brought about by the national emergency, information secured a number of months ago may rapidly become obsolete. The Roster has, therefore, arranged a procedure by means of which the

DISTRIBUTION OF INDIVIDUALS REGISTERED WITH THE NATIONAL ROSTER OF SCIENTIFIC AND SPECIALIZED PERSONNEL BY PROFESSIONAL FIELD AND EXTENT OF EDUCATION SEPTEMBER 1, 1941

Field of specialization	Extent of education					
	Doctor	Master	Bachelor	4 Yrs. Coll. No Degree	Others	Total
Languages	2,785	1,607	1,598	116	566	6,672
Genetics	435	164	82	13	61	755
Zoology	1,500	975	597	28	294	3,394
Physiology	554	50	13	1	....	618
Botany	741	247	79	3	6	1,076
Bact., Immu., Path.	1,384	349	369	25	56	2,183
Anatomy	484	25	13	1	3	526
Tropical med.	245	30	18	....	5	298
Chemistry	7,345	7,378	19,093	1,242	3,394	38,452
Physics	2,507	1,679	1,335	82	218	5,821
Mathematics	1,502	1,838	880	31	44	4,295
Geology	932	1,020	1,996	147	484	4,579
Actuarial sci.	9	96	278	8	100	491
Speleology	17	6	13	2	26	64
Horology	....	....	16	2	663	681
Civil eng.	135	1,616	5,825	291	1,357	9,224
Marine eng.	4	76	313	51	269	713
Safety eng.	9	41	366	59	585	1,060
Traffic eng.	2	31	125	8	100	266
Radio eng.	108	348	905	73	704	2,138
Testing mat. eng.	70	211	567	36	237	1,121
Chemical eng.	331	595	1,915	138	317	3,296
Electrical eng.	228	1,339	5,402	219	1,205	8,393
Mechanical eng.	117	1,055	4,500	288	1,478	7,438
Motion Pict. eng.	2	12	69	9	124	216
Automotive eng.	48	215	1,047	99	1,145	2,554
Aeronautical eng.	55	328	1,627	139	988	3,137
Management eng.	103	309	1,136	98	1,114	2,760
Heating and vent. eng.	19	159	851	95	696	1,820
Mining and met. eng.	335	856	2,733	154	612	4,690
Economics	1,103	867	425	17	105	2,517
Accounting	1	42	176	36	393	648
Psychology	1,957	1,013	181	7	10	3,168
Anthropology	281	147	95	14	32	569
Hist. and pol. sci.	2,120	1,367	413	17	64	3,981
Personnel adm.	348	1,350	1,178	100	608	3,584
Speech pathology	70	110	39	....	10	229
Statistics	595	615	517	29	108	1,864
Geography	231	171	98	8	56	564
Sociology	472	301	133	4	23	933
Recreation leadership	33	311	650	52	185	1,231
Plant path., hort. and agr.	1,020	839	642	21	69	2,591
Forestry and range mgmt.	136	982	2,272	71	418	3,879
Animal sciences	350	684	5,887	57	259	7,237
	30,723	31,454	66,467	3,891	19,191	151,726

entire card index may be run through and those cards selected which have been in the files for twelve months. All such individuals receive a special abbreviated questionnaire asking them to fill in blanks which indicate changes in status which have occurred during the previous year. This recirculation procedure is just beginning.

Because of the fact that many of the demands that come to the office of the Roster require the services of young scientists with advanced training, it has been decided this year to add to the lists of the Roster the names of all young men and women who are expected to graduate from colleges and technical schools in 1942, provided they are carrying on major work in physics, mathematics, astronomy, chemistry, geology or any of the engineering fields.

Recently, due to demands from the Office of Production Management, special procedures have been worked out by means of which accredited governmental agents may use the facilities of the Roster in connection with the needs of rapidly developing private defense industry. In this work, as in all other aspects of the operation of the Roster, every effort is made by the staff and by the scientific and technical consultants, who are called together for the purpose, to emphasize the conservation aspects of the work of the Roster. If it were not for the limits imposed upon the office because of the confidential nature of the work which the Roster carries out, it would be possible to give hundreds of examples of individuals who have been allowed to continue in educational work, defense or even non-defense research of an important character as a result of the operation of the Roster. This means that by using the large lists available in the Roster office, it is possible to suggest alternative names to individuals who are very anxious to call from one defense agency to another some important man. In a similar way, going enterprises in education and public health research, for example, have been safeguarded.

It is clear that the work of preliminary evaluation and of consultation with various defense agencies requires continued and active supervision. The writer of this report is in Washington on an average of only two or three days each week, so the general burden of the development and effective administration of the Roster in all its aspects falls upon Mr. James C. O'Brien, who from the first has been the efficient executive officer of the project. There are slight fluctuations in the number of individuals employed in clerical and other capacities in the Roster office, but the average figure of those employed may be set at 100.

The writer can not resist once again emphasizing the fact that the Roster seems to have so many implications for peace-time as well as war-time economy that it is our profound hope that this new and effective agency for dealing with America's highly trained citizens may not be thought of wholly in war terms, although at the present time almost all its activities are specifically of a defense character. It seems quite clear to those who are working with the Roster that in time of peace as well as in war a great central list of this sort will be advantageous to the country as a whole and especially advantageous to the scientists and specialized workers who are listed on the Roster.

OBITUARY

ELSIE CLEWS PARSONS

DR. ELSIE CLEWS PARSONS, president of the American Anthropological Association, died on December 19 after an operation, just before she was to preside at the annual meeting of the association.

Dr. Parsons' anthropological work is outstanding both by the quality and the wide extent of her contributions. Her early publications on sociological questions relating to our present civilization were in part influenced by the teachings of Giddings, but reflected at the same time her intense devotion to individual freedom. She was one of the early champions of the rights of women, a vigorous opponent of the recognition of any form of status to which a person is born or assigned, and she lived her life according to her convictions, which demanded social responsibility combined with individual tolerance.

Later on she turned to anthropological studies of a different character, largely prompted by the feeling that we need an understanding of foreign cultures in order to enable us to evaluate clearly the problems that have to be solved in our own civilization. Her interest was challenged, perhaps accidentally, by observation of the Indians of New Mexico and Arizona. The contrast between their cultural behavior and our own, the influence of cultural forms upon personalities, the ways in which personalities similar to those found in our own civilization respond to the demands of their culture, were problems that challenged her attention. Combined with this was an insatiable demand for ample and reliable factual information for supporting her deductions, which accounts for her prolific writings.

The study of the ceremonials, customs and folk-lore brought home to her the importance of the influence of Spanish civilization upon the American Indian, and with ever-expanding appreciation of the importance of this problem she extended her work over other