

Representatives of Societies—*American Society of Agronomy*: Charles V. Piper. *American Society of Bacteriologists*: Samuel C. Prescott. *Botanical Society of America*: William Crocker, A. S. Jones. *Ecological Society of America*: W. M. Wheeler. *American Society of Economic Entomologists*: P. J. Parrott. *Society of American Foresters*: Barrington Moore. *American Genetics Association*: G. N. Collins. *American Society for Horticultural Science*: U. P. Hedrick. *American Phytopathological Society*: G. R. Lyman. *Society of American Zoologists*: M. F. Guyer, F. R. Lillie, G. H. Parker.

Members-at-large, nominated by the division: I. W. Bailey, B. E. Livingston, C. E. McClung, C. F. Marbut, A. G. Mayor, H. F. Moore, J. R. Murlin, W. Osgood, A. F. Woods.

RESEARCH FELLOWSHIPS

THE National Research Council announces its first appointments to national research fellowships in physics and chemistry. The fellowships are supported by the Rockefeller Foundation and the object of the National Research Council in maintaining a system of research fellowships is to promote fundamental research in physics and chemistry primarily in educational institutions of the United States. Fellowships are awarded to persons who have demonstrated a high order of ability in research for the purpose of enabling them to conduct investigations at educational institutions which make adequate provision for research in physics or chemistry. The National Research Council has received approximately forty applications. The following initial appointments have been made:

In Chemistry

F. R. Bichowsky, of Washington, D. C., A.B. (Pomona, '12), Ph.D. (California, '16). Physical chemist at the geophysical laboratory of the Carnegie Institute of Washington since 1916. Mr. Bichowsky plans to conduct researches at the University of California.

Emmett K. Carver, of New York City, A.B. (Harvard, '14), Ph.D. (Harvard, '17). Formerly assistant to the director of the Wolcott Gibbs Memorial Laboratory at Harvard; captain, Chemical Warfare Service, U. S. A.

W. H. Rodebush, Ph.D. (California, '17), at present research chemist for the United States Industrial Alcohol Company, of Baltimore, Md. Mr. Rodebush will conduct researches at the University of California on A Study of the Specific Heats and Other Properties of Substances at Low Temperatures.

In Physics

Leonard B. Loeb, of New York City, B.S. (Chicago, '12), Ph.D. (Chicago, '16). Formerly assistant physicist at the Bureau of Standards, Washington, D. C.; lieutenant, Aviation Service, U. S. A. Mr. Loeb will conduct his researches at the University of Chicago.

Robert A. Patterson, of Bristol, Connecticut, A.B. (Yale, '11), Ph.D. (Yale, '15). Formerly instructor in physics at Yale University; major, Field Artillery, U. S. A.

George P. Paine, of Madison, Wisconsin, A.B. (Harvard, '05), Ph.D. (Wisconsin, '18). Instructor in engineering mathematics, University of Wisconsin. Mr. Paine will conduct his researches at Harvard University and at Blue Hill Meteorological Observatory.

It is expected that additional appointments will be announced in the near future. The members and acting members of the Research Fellowship Board are as follows: Wilder D. Bancroft, Henry A. Bumstead, Simon Flexner, George E. Hale, Elmer P. Kohler, A. O. Leuschner, Robert A. Millikan, Arthur A. Noyes, E. W. Washburn.

THE INDUSTRIAL FELLOWSHIPS OF THE MELLON INSTITUTE¹

THE annual report of Director Raymond F. Bacon of the Mellon Institute of Industrial Research² records a general extension of the institute's activities during the past year.

¹ For previous reports on the status of the system of cooperation between science and industry in operation at the Mellon Institute, see Duncan, *SCIENCE*, N. S., Vol. XXXIX. (1914), 672; Bacon, *ibid.*, XLIII. (1916), 453; *ibid.*, XLV. (1917), 399; and Weidlein, *ibid.*, XLVII. (1918), 447.

² The full report is published in *J. Ind. Eng. Chem.*, 11, 371-374, 1919.

A LIST OF THE INDUSTRIAL FELLOWSHIPS IN OPERATION AT THE MELLON INSTITUTE ON MARCH 1, 1919

Numbers and Names of Industrial Fellowships	Industrial Fellows, Names and Degrees	Foundation Sums and Dates of Expiration
No. 117—window glass.....	(Fellow to be appointed).	\$3,000 a year.
No. 127—collar	H. D. Clayton (B.A., Ohio State University).	Bonus: \$2,000.
No. 129—illuminating glass.	A. H. Stewart (B.A., Washington and Jefferson College).	\$2,800 a year.
No. 145—soap	(Fellow to be appointed).	June 14, 1919.
No. 150—enameling	R. D. Cooke (M.S., University of Wisconsin).	\$2,100 a year.
No. 151—leather belting....	P. G. McVetty (M.E., Cornell University), Senior Fellow.	October 1, 1919.
No. 152—refractories	R. H. Edson (B.A., Clark College).	\$2,000 a year.
	R. M. Howe (M.S., University of Pittsburgh), senior fellow	\$2,600 a year.
	B. M. Burchfiel (B.A., Southwestern College).	April 1, 1919.
	E. N. Jessop (B.S., University of Pittsburgh).	\$4,900 a year.
	S. M. Phelps (assistant).	April 1, 1919.
No. 153—canning	M. R. Daughters (M.A., University of Nebraska), (second fellow to be appointed).	\$7,000 a year.
No. 154—paper	Howard Curtis (B.A., Washington and Jefferson College).	May 1, 1919.
No. 155—protected metals..	J. H. Young (Ph.D., Ohio State University).	\$2,175 a year.
No. 156—physiological research	K. K. Jones (M.S., Kansas State Agricultural College).	June 1, 1919.
No. 157—dental products...	C. C. Vogt (Ph.D., Ohio State University).	\$3,000 a year.
No. 158—leather soling....	C. B. Carter (Ph.D., University of North Carolina).	June 1, 1919.
No. 159—copper	C. L. Perkins (B.S., New Hampshire College).	\$4,000 a year.
No. 160—oil	R. E. Sayre (M.S., University of Wisconsin).	August 1, 1919.
	W. F. Faragher (Ph.D., University of Kansas), senior fellow.	\$2,000 a year.
No. 161—glass	W. A. Gruse (Ph.D., University of Wisconsin).	July 1, 1919.
No. 162—gas	R. R. Shively (Ph.D., University of Pittsburgh).	Bonus: Royalty on sales.
	J. B. Garner (Ph.D., University of Chicago), senior fellow.	\$3,500 a year.
No. 163—aluminum	H. B. Heyn (B.S., University of Wisconsin).	June 1, 1919.
	E. O. Rhodes (M.S., University of Kansas), senior fellow.	\$5,400 a year.
No. 164—alloy	R. B. Trusler (B.S., Syracuse University).	July 1, 1919.
No. 165—coffee	O. E. Harder (Ph.D., University of Illinois).	\$10,000 a year.
	C. W. Trigg (B.S., University of Pittsburgh).	September 1, 1919.
No. 166—food container....	F. W. Stockton (B.A., University of Kansas).	Bonus: \$10,000.
No. 167—magnesia	M. S. Mason (M.S., University of Illinois).	\$4,000 a year.
No. 166—yeast	R. H. Heilman, assistant (University of Pittsburgh).	September 1, 1919.
	Ruth Glasgow (M.S., University of Illinois), senior fellow.	\$7,500 a year.
	Grace Glasgow (M.S., University of Illinois).	September 15, 1919.
	G. S. Bratton (B.A., University of Tennessee).	\$6,500 a year.
	F. M. Hildebrandt (Ph.D., Johns Hopkins University).	September 15, 1919.
	W. H. Randall, assistant (George Washington University).	\$3,500 a year.
		October 1, 1919.
		\$2,250 a year.
		October 1, 1919.
		Bonus: 2 per cent. of gross profits.
		\$5,000 a year.
		October 16, 1919.
		\$6,000 a year.
		January 1, 1920.
		\$15,000 a year.
		November 1, 1919.

A LIST OF THE INDUSTRIAL FELLOWSHIPS IN OPERATION AT THE MELLON INSTITUTE ON MARCH 1, 1919
(Continued)

Numbers and Names of Industrial Fellowships	Industrial Fellows, Names and Degrees	Foundation Sums and Dates of Expiration
No. 169—copper	<i>G. A. Bragg</i> (B.S., University of Kansas), senior fellow. <i>J. W. Schwab</i> (B.S., University of Kansas).	\$6,000 a year. November 1, 1919.
No. 170—household utilities	<i>F. F. Rupert</i> (Ph.D., Massachusetts Institute of Technology). <i>E. R. Edson</i> (B.A., Clark College).	\$5,000 a year. November 1, 1919.
No. 171—asbestos	<i>A. F. Shupp</i> (Ph.D., University of Pittsburgh).	\$3,500 a year. November 1, 1919.
No. 172—silicate	<i>M. G. Babcock</i> (M.S., Iowa State College).	\$2,500 a year. December 1, 1919.
No. 173—fiber	<i>J. D. Malcolmson</i> (B.S., University of Kansas).	\$3,000 a year. November 15, 1919.
No. 174—glycerine	<i>R. K. Brodie</i> (M.S., University of Chicago). <i>Melvin DeGroot</i> (B.Ch.E., Ohio State University).	\$5,000 a year. November 15, 1919.
No. 175—light metals	<i>P. V. Faragher</i> (Ph.D., Massachusetts Institute of Technology).	\$4,000 a year. December 1, 1919.
No. 176—fuel	<i>J. G. Davidson</i> (Ph.D., Columbia University).	\$5,000 a year. January 1, 1920.
No. 177—toilet articles	(Fellow to be appointed.)	\$3,500 a year.
No. 178—silverware	<i>H. E. Peck</i> (B.S., Clarkson Memorial College of Technology).	\$2,500 a year. December 11, 1919.
No. 179—organic solvents..	<i>L. M. Liddle</i> (Ph.D., Yale University), senior fellow. <i>H. W. Greider</i> (M.S., University of Kansas).	\$5,600 a year. January 1, 1920.
No. 180—keratin	<i>B. A. Stagner</i> (Ph.D., University of Chicago).	\$4,000 a year. January 1, 1920. Bonus: \$5,000.
No. 181—synthetic resins..	(Senior fellow to be appointed). <i>A. E. Coxe</i> (B.S., University of Chicago).	\$5,000 a year. December 23, 1921.
No. 182—by-products recovery	<i>Walther Riddle</i> (Ph.D., University of Heidelberg). <i>H. E. Gill</i> , assistant (University of Pittsburgh).	\$3,000 a year. January 1, 1920.
No. 183—A, organic synthesis	<i>G. O. Curme, Jr.</i> (Ph.D., University of Chicago), senior fellow. <i>H. R. Curme</i> (Ph.D., University of Pittsburgh). <i>J. N. Compton</i> (M.S., Columbia University). <i>C. O. Young</i> (Ph.D., University of Pittsburgh). <i>E. W. Reid</i> (M.S., University of Pittsburgh).	\$32,400 a year. January 1, 1920.
No. 183—B, organic synthesis	<i>H. A. Morton</i> (Ph.D., University of Pittsburgh), senior fellow. <i>C. J. Herrly</i> (B.S., Pennsylvania State College).	
No. 184—coke	<i>F. W. Sperr, Jr.</i> (B.A., Ohio State University), advisory fellow. <i>O. O. Malleis</i> (M.S., University of Kansas). <i>L. R. Office</i> (B.S., Ohio State University). <i>H. S. Davis</i> (Ph.D., Harvard University).	\$7,020 a year. January 1, 1920.
No. 185—insecticides	<i>O. F. Hedenburg</i> (Ph.D., University of Chicago).	\$3,500 a year. January 1, 1920.
No. 186—fertilizer	<i>H. H. Meyers</i> (B.S., University of Pennsylvania).	\$4,000 a year. January 5, 1920. Bonus: \$5,000.
No. 187—glue	<i>R. H. Bogue</i> (M.S., Massachusetts Agricultural College).	\$2,500 a year. January 5, 1920.
No. 188—distillation	<i>David Drogin</i> (M.S., University of Pittsburgh).	\$3,000 a year. January 18, 1920.
No. 189—laundry	<i>H. G. Elledge</i> (M.S., University of Pittsburgh). <i>Alice L. Wakefield</i> , assistant (B.S., Margaret Morrison).	\$5,000 a year. February 15, 1920.

A LIST OF THE INDUSTRIAL FELLOWSHIPS IN OPERATION AT THE MELLON INSTITUTE ON MARCH 1, 1919
(Concluded)

No. 190—bread	H. A. Kohman (Ph.D., University of Kansas), senior fellow.	\$10,000 a year. March 1, 1921. Bonus: \$10,000.
	Roy Irvin (M.S., University of Kansas).	
	R. J. Cross (B.A., Leland Stanford Jr. University).	
No. 191—fruit beverages...	H. A. Noyes (M.S., Massachusetts Agricultural College).	\$3,000 a year. March 1, 1920.

During the institute year March 1, 1918, to March 1, 1919, there was a marked growth in both the number of industrial fellowships in operation and the amounts subscribed for their support. At the present time there are 47 industrial fellowships, and 5 additional ones have been arranged for, to begin just as soon as the necessary laboratory space can be provided. Of these 47 industrial fellowships, 35 utilize the services of one research man on each fellowship (individual fellowships), while 12 have the intensive work, in each instance, of one or more investigators under the supervision of a senior fellow (multiple fellowships). Of these two types of industrial fellowships, 9 have been founded by associations of manufacturers and these association fellowships serve in all 2,700 company members.

The following table presents the number of industrial fellowships which have been founded in the institute from March to March of each year, 1911 to 1919; the number of industrial fellows (research chemists and engineers) who have been employed thereon; and the total amounts of money contributed for their maintenance by the industrial fellowship donors (industrialists and associations of manufacturers):

March to March	Number of Fellowships	Number of Fellows	Amounts Contributed
1911-1912	11	24	\$ 39,700
1912-1913	16	30	54,300
1913-1914	21	37	78,400
1914-1915	21	32	61,200
1915-1916	36	63	126,800
1916-1917	42	65	149,100
1917-1918	42	64	172,000
1918-1919	47	77	238,245

The total amount of money contributed by industrial firms to the institute for the eight years ending March 1, 1919, was \$919,745.

During the eight years, the institute itself expended over \$330,000 in taking care of overhead expenses—salaries of members of permanent staff and office force, maintenance of building, apparatus, etc.—in connection with the operation of the industrial fellowships. Besides this amount, the building and permanent equipment of the institute, which make it the most complete and modern industrial experiment station in the country, represent an investment of about \$350,000.

The administration of the Mellon Institute is now constituted as follows: Raymond F. Bacon, Sc.D., director; Edward R. Weidlein, M.A., associate director; E. Ward Tillotson, Jr., Ph.D., assistant director; William A. Hamor, M.A., assistant director; David S. Pratt, Ph.D., assistant director; Harry S. Coleman, B.S., assistant director.

SCIENTIFIC EVENTS

MINERAL DEPOSITS IN THE UNITED STATES

THE Geological Survey has recently published as its Bulletin 660 its annual volume entitled "Contributions to Economic Geology (short papers and preliminary reports), 1917. Part I. Metals and Nonmetals Except Fuels." This bulletin contains 11 papers describing deposits of ores of iron, manganese, tin, antimony, lead, silver and gold in widely separated parts of the United States and deposits of greensand, clay, and strontianite. The shortage of manganese, which is used extensively in hardening steel, and the high prices resulting from its scarcity, caused the survey to examine undeveloped deposits in western Arkansas and in Shenandoah Valley, Va., the results of which are described in "Manganese Deposits of the Caddo Gap and De Queen quadrangles, Ark.," by H. D. Miser, and "Possibilities for Manganese Ore on Certain Un-