

The following estimates of research-development in the various fields of activity in 1957 show that mechanical, electrical and "other" (mainly aeronautical) engineering, chemistry and metallurgy together accounted for almost 80 p.c. of the total. Expenditures in all engineering fields combined accounted for almost 65 p.c. of the total. Every industry reported some activity in mechanical engineering and at least one other phase of engineering research and also in the chemical research field.

### 2.—Research-Development Expenditures, by Field of Research, 1957

Field of Research	Amount	Field of Research	Amount
	\$		\$
Chemical engineering.....	10,078,282	Geology, geophysics and other earth sciences.....	1,621,535
Civil engineering.....	935,371	Metallurgy.....	12,879,038
Electrical engineering.....	22,300,993	Medicine.....	2,473,357
Mechanical engineering.....	39,843,632	Agriculture.....	421,383
Other engineering.....	23,438,084	Other.....	4,688,988
Chemistry.....	20,328,760		
Physics.....	10,134,656		
		<b>Total.....</b>	<b>149,144,079</b>

Arrangement of industrial-research expenditures by size group based on annual sales of research-active firms shows that the larger firms with annual sales in excess of \$50,000,000 accounted for the major part of the expenditures, although this size group included only 12 p.c. of the firms maintaining research establishments.

### 3.—Research-Development Expenditures, by Size Group, 1957

Size Group <sup>1</sup>	Firms	Research-Development Cost	Percentage of Total
	No.	\$	
\$50,000,000 or over.....	57	108,116,078	72.49
\$10,000,000 to \$49,999,999.....	131	22,028,562	14.77
\$ 1,000,000 to \$ 9,999,999.....	221	14,774,187	9.91
Under \$1,000,000.....	46	4,225,252	2.83
<b>Totals.....</b>	<b>455</b>	<b>149,144,079</b>	<b>100.00</b>

<sup>1</sup> Based on annual sales value in 1957.

During 1957 the equivalent of 4,448 professionally trained scientists were employed on research-development projects. The three top industrial groups, in terms of numbers of professionally trained employees, were transportation equipment, electrical apparatus and supplies and chemical products, which together accounted for almost 63 p.c. of the total professional employment in the research field.

Classification of the professional scientists by field and degree of training reveals that for all types of engineers engaged in research there is a greater predominance of professional employees with bachelor degrees. On the other hand, medical scientists, geologists, geophysicists or other earth scientists, chemists, administrators, physicists and agricultural scientists have a greater percentage of the professional employees engaged in research work with doctorate or master degrees than in the engineering field or in the over-all pattern.