double those in 1910. This 20-year period since the separation of these two services especially directed to the promotion of the mining industry has been one of notable growth for both; yet because of the postwar economies their growth has not approached that of the industry they serve.

The discovery of geology by industry in recent years has placed the small corps of government scientists under new and larger obligations. The army of geologists and engineers in commercial work necessarily looks to the federal service for the collection of geologic facts and the working out of new generalizations and principles. High-pressure industrial development throughout the country has involved an increasing demand for raw materials, with a corresponding larger need for basic engineering information. The demand for intensive study of ore possibilities is most active in the same mining states—Colorado and Nevada—where the first mining work of the Geological Survey was done, the production of the epoch-making monographs on Leadville, Eureka and the Comstock, which had as their purpose to meet the anxious desires "of miners as well as of students of geology and economy."

Another phase of governmental activity hardly foreseen in the beginning is the degree to which the public domain is administered on a scientific basis. In the twenty years beginning in 1907 approximately a million dollars was spent for geologic work in areas in which the federal government owns coal lands. Upon this investment of appraising its property the government is now collecting between $400,000 and $500,000 a year in royalties from coal mined from government leases. The oil and gas leases have been still more productive, although the chief contribution of this service to the public interest has been the conservation of the natural resources belonging to the people. The enforcement of the best economic practices by the federal engineers is their contribution to the conservation of life and health, both the zinc and the coal mines under federal supervision showing better accident records than other mines in the same states.

THE NATIONAL PARK SERVICE

THE cooperation of the National Park Service in affording relief to local unemployment during the past season is outlined in detail by Horace M. Albright, director of the National Park Service.

Upon telegraphic receipt last spring from the Washington office of the signing of the 1930 appropriation act of the Interior Department, throughout the national park system action was immediately taken to get construction under way and to purchase equipment. The headquarters office kept in close touch with the field, making adjustments and transfers of funds where necessary to enable the park superintendents to carry on to the best advantage.

In addition to beginning construction and improvement work early in the season, these activities were carried on all summer under full steam and as late into the fall as weather conditions permit. Yosemite National Park, California, reports that it already has continued operations five weeks longer than last year, and proposes to continue until heavy snowfall shuts up the last activities. A few days ago it was reported that despite the heavy snows which necessitated shutdowns of work in the mountainous back country, 358 people were still on the pay roll. This is in addition to the highway construction being carried on under contract.

One of the highway jobs, that of building a tunnel through solid rock, will continue all winter, and the contractor in charge has agreed to take many men from the park forces as other work is suspended through climatic necessity.

In Carlsbad Caverns National Park work will continue all winter on the construction of an elevator shaft, 750 feet deep, and the installation of elevator equipment. Contracts will be awarded within a few days to enable work to commence at once.

At Hot Springs National Park award has just been made covering the construction of a complete hot-water system collecting all hot water from the springs, and also for the construction of concrete reservoirs, pumping station, pipe lines, etc. Much labor will be employed directly by the government.

Contracts will soon be let for the purchase of the pumping and electrical equipment. This project will cost approximately $140,000 and will materially improve the unemployment situation in the Hot Springs region during the period of greatest winter stress.

Work will also be continued during the winter in Wind Cave National Park, where a lighting system will be installed, and in the Mesa Verde, where a deep water well—probably 3,600 feet or more deep—will be drilled.

In Grand Canyon National Park, work will be in progress all winter on the reconstruction of the Bright Angel Trail. This trail is one of the long-remembered features of Grand Canyon by all those who either hike or ride mule-back into the depths of the canyon. It passes along ledges and through clefts in the solid rock walls. The new trail now being constructed will still be just as spectacular as the old one, but of sufficient width and ease of grade to afford perfect safety.

THE NIAGARA FRONTIER RESEARCH COUNCIL

THE Niagara Frontier Research Council has completed its organization to include investigators repre-

senting each branch of pure and applied science in which research is being carried on in the Niagara area. Buffalo and Niagara Falls are the central communities in the area which includes Erie and Niagara Counties of western New York.

The objects of the council are to promote scientific research and coordinate so far as possible the research work done in the area in order that duplication may be prevented and closer relations established between the individuals engaged. Buffalo and Niagara Falls by virtue of their varied industries are said to be particularly fitted to benefit by a council of this sort.

The members and the fields of research they represent include:

Dr. Charles J. Fish, *President*, Buffalo Museum of Science, zoology.
Cedric A. Vincent-Daviss, *Vice-president*, Roessler & Hasslacher, Niagara Falls, N. Y., chemistry.
William N. Kessel, *Secretary*, Buffalo Chamber of Commerce, business.
Christopher H. Bierbaum, Lumen Bearing Company,
Professor John A. Curtin, D'Youville College, meteorol-
engineering.
ogy and astronomy.
George A. Davis, Buffalo, astronomy.
Professor John P. Delaney, Canisius College, seismology.
Robert W. Elmes, Buffalo Chamber of Commerce, business.
Charles Ward Hall, Hall Aluminum Aircraft Corporation, aeronautics.
Dr. L. Grant Rector, University of Buffalo, physics.
Dr. Frances M. Hollingshead, Buffalo Foundation, social science.
Dr. Frans Visser't Hooft, Lucidol Corporation, chemistry.
Dr. Edward W. Koch, University of Buffalo, medicine.
J. Allen Johnson, Buffalo, Niagara and Eastern Power Corporation, engineering.
James A. Johnson, Buffalo, radio.
Stephen T. Lockwood, Buffalo, engineering.
Dr. R. H. Pegrum, University of Buffalo, geology.
R. R. Ridgway, Niagara Falls, electrochemistry.
Wilbert H. Spencer, University of Buffalo, botany.
Dr. A. A. Thibaudeau, State Institute for the Study of Malignant Diseases, physiology.

APPROPRIATIONS FOR GRANTS-IN-AID BY THE NATIONAL RESEARCH COUNCIL

AT its meeting in December the National Research Council's committee on grants-in-aid made eighteen grants for the support of research, as follows:

R. C. Gibbs, professor of physics, Cornell University, the measurement and interpretation of the structure of lines in the atomic spectra of nitrogen; George R. Harrison, professor of physics, Massachusetts Institute of Technology, the determination of transition probabilities in multiple ionized atoms; Mark H. Liddell, professor of English, Purdue University, physical characteristics of speech sounds.

John B. Whitehead, professor of electrical engineering, the Johns Hopkins University, studies upon insulating oils.

Warren O. Thompson, assistant professor of geology, University of Colorado, stratification of unconsolidated deposits.

Sydney W. Britton, professor of physiology, University of Virginia Medical School, the isolation and evaluation of the function of the cortico-adrenal hormone; Israel L. Chaikoff, instructor in physiology, University of California Medical School, the relationship of high fat diets to arteriosclerotic changes in depancreatized dogs: E. A. Doisy, professor of biochemistry, St. Louis University School of Medicine, the female sex hormone; James Ewing, professor of pathology, Cornell University Medical College, the possible tuberculous nature of Hodgkin's granuloma; E. B. Krumbhaar, professor of pathology, University of Pennsylvania School of Medicine, the mechanism of opsonin and bacteriotropin action; Mildred Trotter, associate professor of anatomy, Washington University, the weight of hair in relation to its form, size and color.

Bennet M. Allen, professor of zoology, University of California at Los Angeles, the influence of the thyroid gland and hypophysis upon growth and development; Lee R. Dice, assistant professor of zoology, University of Michigan, variability in subspecies of *Peromyscus maniculatus;* Francis W. Pennell, curator of plants, Academy of Natural Sciences of Philadelphia, Scrophulariaceae of the northwestern part of the United States; Charles H. Philpott, professor of zoology, Harris Teachers College, the effects of snake venoms on certain protozoa.

Melville J. Herskovits, assistant professor of anthropology, Northwestern University, Africanisms in the American Negro; Melville Jacobs, instructor in anthropology, University of Washington, the preservation of extinct or nearly extinct Indian tribal songs of northwestern Oregon.

VERNON KELLOGG,
Permanent Secretary, National Research Council

OFFICERS OF THE AMERICAN CHEMICAL SOCIETY

PROFESSOR MOSES GOMBERG, of the University of Michigan, became president of the American Chemical Society on January 1. Professor Gomberg will serve during 1931, succeeding Dean William McPherson, of the Ohio State University.

Dr. L. V. Redman, vice-president and director of research of the Bakelite Corporation, Bloomfield, New Jersey, has been elected president of the society in 1932. The other nominees were Professor Joel H. Hildebrand, of the University of California; Professor Samuel C. Lind, of the University of Minne-