the other islands of the Hawaiian group there are volcanic mountains scarcely less interesting. The crater of Haleakala, in the summit of East Maui, 10,000 feet above sea level, is one of the largest extinct craters in the world and is as well preserved as if its fires had been extinguished but a few years, instead of perhaps several hundred years ago.

The active volcanoes of Hawaii give a wonderful demonstration of the processes by which all these island mountains have been built up from the great depths of the ocean. Since the days of Captain Cook, geologists and others who are interested in the problems of volcanoes have visited the Hawaiian Islands and written about them.

Near the base of these mountains of igneous rock lie fields of sugar cane, which are just now of special interest. They are supplied with water from mountain streams and from wells and drainage tunnels that tap underground supplies. The Geological Survey, in cooperation with the Territory of Hawaii, has for several years been studying the water resources of the islands with a view to increasing the amount of water available for use in irrigation, and therefore in the output of sugar and other crops.

Several publications giving information on special phases of these interesting islands will be sent free on application to the Director of the United States Geological Survey, Department of the Interior, Washington, D. C. Among these are Water-Supply Paper 318, "Water Resources of Hawaii, 1909–1911," by W. F. Martin and C. H. Pierce, and Water-Supply Paper 336, "Water Resources of Hawaii, 1912," by C. H. Pierce and G. K. Larrison. These papers deal mainly with stream measurements and kindred subjects but contain also much information of general interest. A paper on the water supply of one of the neighboring islands is also available—Water-Supply Paper 77, "The water resources of Molokai, Hawaiian Islands," by Waldemar Lindgren. This paper contains an excellent map of the island.

Professional Paper 88 of the United States Geological Survey, Department of the Interior, "Lavas of Hawaii and their relations," by Whitman Cross, presents a summary of our present scientific knowledge of the lavas of the islands. With the exception of the introduction the book is mainly technical. It contains 97 pages and includes an excellent map of the Hawaiian Islands and diagrams showing the composition of the lavas.

THE DIVISION OF GAS WARFARE OF THE WAR DEPARTMENT

By direction of President Wilson all the activities of the government concerned with manufacturing poison gas for war and experimenting in the work of devising new methods were transferred to the control of the War Department on July 1.

The entire gas experimental work will be under the direction of Major General William L. Sibert, who recently returned from France, where he commanded the First Division of the regular army, and was assigned as chief of a special department on gas defense.

President Wilson has signed an order transferring the chemical section of the Bureau of Mines of the Department of the Interior to the War Department in accordance with the President's decision that measures for the use of gas as a weapon of offense and defense should be coordinated under the War Department. Experiments on war gas and masks have been divided among several branches of the government, including the Ordnance and Medical Departments of the army.

The most extensive work has been conducted by the Bureau of Mines, which established a special chemical laboratory at the American University on the outskirts of Washington. About 1,700 American chemists have given the government the benefit of their advice, experience, and services in this work, and important results are predicted.

Among the chemists whose services have been utilized by the Bureau of Mines in its Chemical Section in the gas experimentation are Dr. William H. Nicolls of 25 Broad Street, New York, President of the General Chemical Company; Dr. F. C. Venable, of the University of North Carolina; Professor E. C.

Franklin, of Leland Stanford University; William Hoskins, chemical engineer of Chicago; Professor H. P. Talbot, of the Massachusetts Institute of Technology, Dr. Ira Remsen, president emeritus of Johns Hopkins University; Professor F. W. Richards, of Harvard; Dr. Charles L. Parsons, of the Bureau of Mines; Dr. Reed Hunt, of Harvard; Professor W. D. Bancroft, of Cornell; Professor A. B. Lamb, of the Havemeyer Laboratory, New York University; W. K. Lewis, Chemical Engineer of the Massachusetts Institute of Technology; Professor C. A. Hulett, of Princeton; Yandell Henderson, of the Yale Medical School, and Dr. F. B. Underhill, of Yale.

In a letter dated June 26 to Dr. Van H. Manning, chief of the Bureau of Mines, notifying him of the coordination of war gas experimental work in the War Department, President Wilson wrote as follows :

I have had before me for some days the question presented by the Secretary of War involving the transfer of the chemical section established by you at the American University from the Bureau of Mines to the newly organized Division of Gas Warfare, in which the War Department is now concentrating all the various facilities for offensive and defensive gas operations. I am satisfied that a more efficient organization can be effected by having these various activities under one direction and control, and my hesitation about acting in the matter has grown only out of a reluctance to take away from the Bureau of Mines a piece of work which thus far it has so effectively performed. The Secretary of War has assured me of his own recognition of the splendid work you have been able to do, and I am taking the liberty of inclosing a letter which I have received from him in order that you may see how fully the War Department recognizes the value of the services.

I am to-day signing the order directing the transfer. I want, however, to express to you my own appreciation of the fine and helpful piece of work which you have done, and to say that this sort of teamwork by the bureaus outside of the direct war-making agency is one of the cheering and gratifying evidences of the way our official forces are inspired by the presence of a great national task.

WAR ACTIVITIES OF THE U. S. COAST AND GEODETIC SURVEY

BY executive order dated May 16, 1918, the President transferred to the service and jurisdiction of the Navy Department for temporary use the Coast and Geodetic Survey steamers *Patterson* and *Explorer,* including their equipment and personnel other than commissioned officers. These vessels have been employed for many years in surveys on the Pacific coast and chiefly on the coast of Alaska.

Since the beginning of the war the work of this bureau has been almost entirely for military purposes. Five vessels, three on the Atlantic and two on the Pacific coast, have been transferred to the Navy, and about twenty-three per cent. of the personnel has been transferred to some branch of the military service. Of the remaining force most of the field officers are engaged in land or hydrographic surveys for the Army or Navy, and a large portion of the office force is employed in reducing and publishing the results thus obtained.

A very important part of the office work is the preparation and production of charts, coast pilots and tide tables for vessels of the Navy and Merchant Marine, including those operated by the Shipping Board, the Railroad Administration, the Coast Guard and the Bureau of Lighthouses. The officers of the Survey are trained in work of triangulation, precise leveling, astronomic work, hydrographic surveying and chart construction, and are particularly available for service as navigation officers in the Navy and for duty with the Corps of Engineers, the Artillery Corps and the Aviation Service of the Army.

MAGNETIC OBSERVATIONS

THE various parties sent out by the Carnegie Department of Terrestrial Magnetism and the United States Coast and Geodetic Survey, have all reported securing successful series of magnetic observations during the time of the total solar eclipse of June 8. Magnetic observations were made by the Coast and Geodetic Survey at Green River, Wyo., Mena, Ark., and Orlando, Fla. In addition data will be obtained from the various magnetic observatories of the Coast and Geodetic Survey.