

S. Olmsted, of the Army Air Service, necessary funds for the purchase of equipment and the maintenance of this laboratory were furnished to the Bureau of Mines late last spring. This equipment is now being received and installed by the Bureau of Mines in the New Department of the Interior Building at Washington. The equipment consists of two four-stage Norwalk compressors with a capacity of 75 cu. ft. of free air per minute each. These will be used for making liquid air and for other purposes in connection with the experimental work. There will also be one vertical submarine type Norwalk compressor with a capacity of 12 cu. ft. of free air per minute to be used in connection with a liquid hydrogen cycle, and a similar compressor with a capacity of 8 cu. ft. of free air per minute for use in connection with a liquid helium cycle. These compressors will all be driven by variable speed motors, and be equipped with unloading valves so that the capacities can be varied within wide limits. In addition, there will be an adequate equipment of gas holders, a machine shop, and a chemical and physical laboratory. The force will consist of four technical men and two mechanics, and the whole laboratory will be under the direction of the writer. It is hoped that the equipment will be completely installed by January 1.

Whereas the main object of the laboratory will be to assist in every possible way the whole helium project, both on the production and refining ends, there is a strong desire that this laboratory shall be of material use to science in general, and that it may be possible later on to make arrangements for its facilities to be used in special cases by men outside the government service who are specially equipped for such work.

R. B. MOORE

SCIENTIFIC EVENTS

PHOSPHATE IN MOROCCO

IN times of peace this country, according to the Geological Survey, has in a single year sent abroad, mostly to Europe, 1,250,000 long tons or more of high-grade phosphate rock, or more than 40 per cent. of its total annual output. The exports decreased during the war

until, in 1918, they amounted to only 143,000 tons, or 6 per cent. of the domestic output. They increased to 379,000 tons in 1919, but these reports of newly discovered large deposits in Morocco, which, like those in Algeria and Tunis, are near to the large fertilizer market in southern Europe, may mean that the American exporter of phosphate rock will have formidable competition in that region.

As superphosphate fertilizer is manufactured chiefly from phosphate rock, France, by her control of the deposits in Algeria, Tunis and Morocco, has a practical monopoly of the North African sources of a commodity that is essential to the restoration of European agriculture. When these deposits have been further developed and adequate transportation facilities have been provided the market for phosphate rock in southern Europe will probably be supplied from northern Africa, so that the American exports to Europe will be confined to the northern countries.

The principal deposits in Morocco are about 80 miles southeast of Casablanca and consist of three beds or series of beds of phosphatic sand in a formation that is 50 to 200 feet thick. The uppermost phosphatic bed contains 67 per cent. of tricalcium phosphate, the middle bed 30 per cent. and the lower beds 53 per cent., and the commercial average for the group is about 59 per cent. Water and hydroelectric power for the exploiting of the deposits can be obtained from a river near by. In order to market the rock, however, a railroad would have to be built from the deposits to Casablanca, the nearest port.

Another deposit, which consists of soft phosphatic material carrying 72 to 75 per cent. of tricalcium phosphate, lies 40 miles northeast of the principal one. Still another deposit lies a short distance southeast of Rabat, a coast town. This deposit consists of sandy clay 16 feet thick containing nearly 47 per cent. of tricalcium phosphate.

THE PASTEUR INSTITUTE OF PARIS

THE Paris correspondent of the *Journal* of the American Medical Association writes: