the California Institute of Technology; W. L. DeBaufre, University of Nebraska; Edgar Buckingham, of the U. S. Bureau of Standards, and John W. Davis, of the U. S. Bureau of Mines. The government also had the assistance of Dr. Frederick Keyes, Massachusetts Institute of Technology, and Dr. Harvey N. Davis, Harvard.

Helium recovery as carried on at government plants in Texas, results in a gas of about 64 per cent. purity, and necessitates a second operation to remove impurities. By the old method the flow from the natural gas wells is directed through a series of compressors which reduce the various gases in the mixture to liquid form. Methane (illuminating gas) becoming liquid at a higher temperature is taken off first. The remaining gases are then, one by one, liquified and helium, having an exceedingly low liquefying point, remains. The difficulty with this method is to liquefy all of the nitrogen in the mixture.

THE USE OF OXYGEN IN METALLURGICAL OPERATIONS

USE of oxygen in connection with the enrichment of the blast in the blast furnace and in practically all phases of pyro-metallurgical work will furnish the key to success in the further development of such metallurgical operations, according to Dr. F. G. Cottrell, formerly director and now consulting metallurgist of the United States Bureau of Mines, who first directed the bureau's attention to this subject. Through this enrichment process, it is hoped to increase the efficiency of metallurgical operation with a resultant production of metals at lower cost and possibly the use of lower grade ores.

The Bureau of Mines now has outlined plans for two studies which will be carried on simultaneously. The first will cover the present-day processes for the production of oxygen, in order to determine the feasibility of attempting to produce oxygen, or oxygenated air, in such amounts and at such a cost as to permit of its use in metallurgical operations. The second study will be devoted to the feasibility of using oxygen, or oxygenated air, in metallurgical operations.

Because of his interest in this investigation, M. H. Roberts, vice-president of the Franklin Railway Supply Company, was asked to select an advisory committee to work with the Bureau of Mines and to act as chairman of this committee. The committee will consist of Dr. F. G. Cottrell, director of the Fixed Nitrogen Research Laboratory; Professor W. L. DeBaufre, chairman of the mechanical engineering department of the University of Nebraska; Dr. D. A. Lyon, chief metallurgist of the Bureau of Mines; Dr. R. B. Moore, chief chemist of the Bureau of Mines; Dr. R. C. Tolman, professor of physical chemistry and mathematical physics, California Institute of Technology; J. W. Davis, mechanical engineer of the Bureau of Mines; F. W. Davis, metallurgist of the Bureau of Mines; Frank Hodson, president of the Electric Furnace Construction Company, and P. H. Royster, assistant metallurgist of the Bureau of Mines.

Previous to the war, some work was done in Belgium on the enrichment of the blast with oxygen in connection with the smelting of iron ores in the blast furnace. In the United States, the late J. E. Johnson, Jr., was interested in the possible use of oxygen in metallurgical operations and carried on some experimental work along these lines previous to his death.

ACOUSTICAL RESEARCH

THE London *Times* writes editorially in regard to the desirability of cooperation in the conduct of acoustical research as follows:

> Architects are still unable to predict with certainty the acoustic properties of the halls and chambers they design. Commenting a few weeks ago on the failure in this respect of the new London County Hall, we suggested that bodies such as the Royal Institute of British Architects and the National Physical Laboratory might get together for the devising and conduct of experiments for future guidance. But, so far as we are aware, no practical steps have been taken in this country. Meantime similar problems are engaging attention in the United States, where, indeed, the late Professor Sabine, of Harvard, had already made valuable progress in exploration of the acoustic properties of architectural interiors. A scheme is on foot to establish an American Institute for Acoustic Research. Pro-