mineral springs and volcanoes, and were analyzed for helium by Cady and McFarland's method, for other constituents by Hempel's standard method. The purity of the helium was tested spectroscopically. Carbon dioxide, sulphuretted hydrogen, oxygen, carbon monoxide, methane, ethane, nitrogen and heavy hydrocarbons were among the chief constituents of the gases investigated, and from the analytical results it has been possible to classify the natural gases into three types rich in carbon dioxide, in hydrocarbons and in nitrogen respectively; as in the case of helium in American natural gas, the percentage of this element is highest in nitrogen-bearing gas. The helium content of some mineral spring gases examined reaches 0.2–0.3 per cent., but unfortunately the amount of gas available from this source is strictly limited and insufficient for industrial purposes; very small quantities of helium were found in the gas from the Taiwan and Hokkaido areas, where it is associated with petroleum, the average being 0.005 per cent., again an impracticable amount for commercial purposes. The oil and gas reservoirs of Taiwan and Hokkaido are of Tertiary age, from which the low helium content of the gas from these sources is accordingly explained. The authors find that the percentage of helium in a hot spring gas depends to a certain extent on emanation content, though no direct ratio could be established, this agreeing with McLennan's conclusions with regard to Canadian natural gas. Samples containing no helium generally possess the least radioactivity, and this it is said to some extent supports the theory that the origin of helium in natural gas is to be ascribed to disintegration of radioactive substances; if this is so, then the geological age of a gas reservoir is an important criterion of helium possibilities.

RESEARCH FELLOWS IN MINING AND METALLURGY OF THE CARNEGIE INSTITUTE OF TECHNOLOGY

THIRTEEN graduates of colleges and universities have been appointed research fellows to conduct an extensive program of studies in mining and metallurgy at the Carnegie Institute of Technology during the coming year. The work, as in the past, will be carried on by the department of mining and metallurgical engineering, in cooperation with the Pittsburgh Station of the U. S. Bureau of Mines and under the direction of two advisory boards of engineers and business men representing the mining and metallurgical industries.

Of the thirteen investigators, five will study problems in metallurgy and eight have been assigned to carry on research in problems relating to coal mine engineering. The program of metallurgical studies will be supervised officially by an advisory board of Pittsburgh district steel men and engineers. The coal mining investigations will be made under similar conditions with an advisory board of coal operators and mining engineers.

Four of the studies will be financed by the Carnegie Institute of Technology, while the remainder of the work will be underwritten by the industries. Among the contributors are the American Gas Association, which is interested directly in a study of "warning agents for manufactured gas," The National Coal Association, the New York Edison Company and other industrial enterprises.

Senior investigators to assist the research fellows will be furnished by the Bureau of Mines. Problems have been selected and assigned for the year as follows: "Constitution of Low Temperature Tar," by B. F. Branting, fellow, and R. L. Brown, senior; "Coal Ash Fusibility as Related to Clinkering," by C. L. Corban and E. J. Talbert, fellows, and P. Nichols and A. Selvig, seniors; "Formation and Identification of Inclusion in Steel," by G. R. Fitterer, fellow, and C. H. Herty, senior; "Solubility of Iron Oxide in Iron and its Effect on Physical Properties of Pure Iron," by R. L. Geruso, fellow, and C. H. Herty, senior; "Flammation of Fine Sizes of Coal Dust," by C. H. Gilmour, fellow, and C. M. Bouton, senior; "Electric Power of Storage Batteries *vs.* Trolley Locomotives," by Donald C. Jones, fellow, and L. C. Illsley and C. W. Owings, seniors; "Warning Agents for Manufactured Gas," by E. R. Perry and E. J. Talbert, fellows, and S. H. Katz, senior; "Viscosity of Open Hearth Slag," by M. B. Royer, fellow, and C. H. Herty, senior; "Mine Timber Treatment," by N. A. Tolch, fellow, and L. D. Tracy, senior; "Distribution of Ferrous Oxide between Slag and Metal," by S. P. Watkins, fellow, and C. H. Herty, senior; "Case Carburizing of Steel," by R. E. Wiley, fellow, and C. E. Sims, senior.

MENTAL HYGIENE AT YALE UNIVERSITY

YALE UNIVERSITY has announced plans for the development of mental hygiene work in its academic community. With the aid of an appropriation of $50,000 a year for five years from the Commonwealth Fund the university will establish next fall instruction in mental hygiene and will provide a trained staff with whom students may advise concerning problems in this field.

In the freshman year voluntary conference groups will be arranged in which the point of view of mental hygiene will be presented and through which the students may become acquainted with the staff. The groups will be limited to fifteen or twenty men and will meet a member of the staff at least three times during the year.

It is expected to institute a lecture course open to