devoted largely to the fundamentals, leaving the individual companies to build upon this substructure their own specific technical developments." The American Institute of Mining and Metallurgical Engineers is cooperating in the development of this new project.

The second phase of the program, which, it is expected, will extend over a long period of years, will be research directed toward increasing fundamental knowledge of iron and its combinations with other substances, particularly alloys of pure iron with one or two or three or more other pure metals; also the effects of the impurities incident to practical operations.

For other research the foundation has appropriated $10,000. At Lehigh University, Professor Bradley Stoughton is investigating combinations of silicum with iron. At the Carnegie Institute of Technology, Pittsburgh, Professor V. N. Krivobok is studying combinations of manganese with iron.

CHEMICAL EDUCATION AT THE JOHNS HOPKINS UNIVERSITY

THE numerous inquiries about the chair of chemical education, provided by Francis P. Garvan, president of the Chemical Foundation, seem to warrant a few preliminary remarks at this time. This chair has been established in the department of chemistry of the Johns Hopkins University and has for its primary objective the promotion of chemistry through chemical education. The principal project being investigated at the present time is connected with the regular chemical work of the scholastic year.

During the scholastic year, there is a program of study in the selection and education of prospective leaders in the field of chemistry. In the study to be pursued, emphasis is to be laid equally upon the selection of men to be trained and the training of men selected. In order to limit the project and, at the same time, to place it upon a truly national basis, the plan adopted makes ultimate provision for one student from each of the forty-eight states. Selection is to be made from the sophomore, junior or senior classes of the colleges and universities of the respective states. The time of selection is indicated by the desirability of obtaining students as soon as possible after they have had reasonable opportunity to determine the field in which they desire to specialize. It is, furthermore, in harmony with the present plan of the Johns Hopkins University, which affords the student an opportunity to acquire the Ph.D. degree in a minimum of four years after the completion of the sophomore year.

The selection is accomplished through state committees which evaluate the student's complete previous scholastic record and the following personal qualities as rated by his instructors: health, ability to cooperate, creative ability, intellectual honesty, persistency, faculty of observation, enthusiasm, initiative, reliability, conduct, morality, scholarship.

As an assurance that men of unusual promise shall not be debarred by lack of funds, a four-year fellowship of one thousand dollars annually will be offered in each state.

Among the fellowships to be thus offered are those established by: The Eli Lilly Company, of Indianapolis, Indiana; The J. T. Baker Chemical Company, of Phillipsburg, New Jersey; The Firestone Tire and Rubber Company, of Akron, Ohio; Dr. H. A. B. Dunning, of Hynson, Westcott and Dunning, Baltimore, Maryland; Bill Raskob Foundation, Wilmington, Delaware; Kewaunee Manufacturing Company, Kewaunee, Wisconsin; Francis P. Garvan, New York, N. Y.; Brown Company, Portland, Maine; Brown Company, Berlin, New Hampshire.

In the training of these selected men, fundamental courses in mathematics, physics and English, as well as the four major branches of chemistry (inorganic, organic, physical and analytical), will be emphasized. There will be no attempt to specialize in the various applications of chemistry. The elective system of study for the student is under an advisory committee of the department.

An explorative opportunity will be offered in the teaching of chemistry and in industrial work to determine the line of work for which the student is best fitted.

Those who choose teaching as a profession will have the opportunity of taking four subjects in addition to the regular curriculum for a Ph.D. degree in chemistry. The subjects are: educational psychology, philosophy of education (or history of education), theory and practice in chemical education and comparative study of chemical development. These subjects will be presented with a view to fitting the candidate to teach in colleges or universities. The satisfactory completion of these subjects will be rewarded by a certificate, which will be given in addition to the Ph.D. degree in chemistry.

In addition to pursuing the fundamental curriculum above outlined, the students will have the opportunity of coming into personal contact with leading European and American chemists through a series of special lectures, means for which have been provided by Dr. A. R. L. Dohme, of Sharpe and Dohme, Baltimore, Maryland.

SCIENTIFIC NOTES AND NEWS

DR. W. W. KEEN, emeritus professor of surgery at the Jefferson Medical College, celebrated his ninety-second birthday on January 19. An Associated Press dispatch reports that on February 13 Dr. Keen un-