

sum total of those that are useful or essential to the geologist.

Give the undergraduate language, above all four years of English. Let him know and appreciate good literature and learn to write the language clearly, directly and yet *interestingly*. There is too much scientific writing that like some minerals is clear but colorless. Let him have a working knowledge of two modern languages, French and German. There is little advantage for him to spend years reading foreign classics. His working knowledge must be a thorough basis of grammar. This acquired, give the student a German or French geologic text, dictionary and plenty of room to flounder till he acquires a vocabulary. I disagree with those who cry out for Spanish. A speaking knowledge of that language is no doubt an asset to any who may go to South or Central America, but there is so relatively little in the literature in Spanish that its neglect will not prove fatal. Whatever the future status of European culture and languages may be, the vast geologic bibliographies printed of French and in German articles warrant the study of these languages first and always.

In engineering fields a geologist needs several courses. He must have mechanical drawing and plane surveying. With these I would somehow try to squeeze in descriptive geometry for its value in training a man to think in three dimensions. To these courses may be added one each in general metallurgy and the principles and practice of mining.

Courses in most of the major, non-geologic sciences are necessary parts of a geologist's training. He must have mathematics at least through plane trigonometry. That will take care of anything, including his surveying, he may encounter during undergraduate days, if not throughout his professional career. If he should become an engineering geologist or a geophysicist or a meteorologist, he must have more mathematics. Keep this in mind as his interests and learning progress. A year of chemistry, that is through qualitative analysis, is none too much. I should prefer to add a semester of quantitative analysis, but am not

adamant on this point. Your economic geologist will need it, but he might take it in graduate school where physical chemistry may also be inserted. A year of physics is unavoidable. Should our man lean toward geophysics or meteorology, a minor in physics is advised. General biology he must have, for who dare speak in terms of bare fossil bones and empty shells but know nothing of their flesh and blood descendants? The amount of course dosage must be more or less controlled by individual interests and intentions. For a would-be paleontologist, general biology must be followed by courses in botany, ecology and perhaps embryology and comparative anatomy, especially if comparative anatomy of invertebrates is available.

I realize that I have set up an ideal, an educational vehicle with stellar attachments. That a set-up such as outlined may seldom be attained is true. Few students decide upon their major soon enough in their careers to complete such a major. They must postpone a varying percentage of the courses to graduate years. Too few curricula are liberal enough or flexible enough to permit insertion of all my suggestions. Nevertheless, here is the mark at which I aim.

SUMMATION

Believing as I do that geology in the immediate future will have a greater application, that with that application we shall see its expansion, I present the suggestions in this paper. They are based upon careful consideration, analyses, deductions from assembled views and opinions. Specialization will mean more and better geologists but also a greater graduate school population which must be fed from the undergraduate curriculum. There, and there particularly, is the basement complex on which to build. The greatest immediate need in geology is a broad, adequate undergraduate preparation, not so much in geology itself, but in a slightly appalling list of collateral "must" subjects. Once this foundation is attained, graduate work in its several fields will care for itself.

OBITUARY

RECENT DEATHS

PROFESSOR JAMES ALEXANDER SHOHAT, of the department of mathematics of the University of Pennsylvania, died on October 8 in his fifty-eighth year.

HOWARD CHAPIN IVES, consulting civil and construction engineer, retired, formerly professor of railway engineering at the Worcester Polytechnic Institute, died on October 6, aged sixty-six years.

DR. EARL C. SHERRARD, since 1917 chemist with the U. S. Forest Products Laboratory at Madison, Wis., died on October 5 at the age of fifty-eight years.

DR. EDWARD WILLIAM BERGER, who retired in 1943 as entomologist of the Florida State Plant Board, died on August 23. He was seventy-four years old.

DR. WILLIAM H. SCHACHT, mining engineer, since

1935 a member of the Board of Control of the Michigan College of Mining and Technology, died on September 29. A correspondent writes: "Mr. Schacht was president and general manager of the Copper Range

Company and president of the Copper District Power Company. He was a graduate of the Michigan College of Mines, which in 1940 conferred upon him the honorary degree of doctor of engineering."

SCIENTIFIC EVENTS

THE SCOTTISH SEAWEED RESEARCH ASSOCIATION

A SCOTTISH Seaweed Research Association has been established with the cooperation of the British Ministry of Supply and the Scottish Council of Industry. It will derive half its funds from private subscription and half from the Development Commissioners.

It is reported in *The Times*, London, that through its survey and ecology division the association will attempt to discover or develop reliable methods of survey of littoral and sublittoral seaweed, and conduct surveys. The engineering division will maintain and develop *The Prospecto*, a ship specially equipped for the survey and collection of deep seaweeds. It will also be the task of this division to develop equipment for littoral surveys, for landing weed, for assisting crofters and farmers in collecting seaweed and to investigate the possibilities of pressing, drying and milling equipment. The chemistry division will study seasonal variations of various Scottish seaweeds and provide information for those engaged in the extraction of chemicals and who market or use seaweed for feeding stuffs or fertilizers.

A director will be appointed to coordinate all these activities. The board of the association is being assisted by leading scientific men and has been promised the fullest use of the facilities of other scientific organizations. It is intended that the results of the investigations will stand the scrutiny of both technical and commercial groups. The work of the association will largely determine the future development of seaweed resources in Scotland and subsidiary and allied industries associated with seaweed products.

The chairman of the association is Sir A. Steven Bilsland.

THE ALABAMA ACADEMY OF SCIENCE

THE Alabama Academy of Science held its twenty-first annual meeting in Birmingham on April 14 under the presidency of E. V. Jones, of Birmingham-Southern College. The meeting was well attended, having a registration of over a hundred members and visitors. Fifty-nine papers were presented in the various sections.

Dr. Jones's presidential address was entitled "Challenges Facing the Alabama Academy of Science."

New and reelected officers for 1944-45 are:

President, James T. MacKenzie, American Cast Iron Pipe Company, Birmingham.

President-Elect, J. M. Robinson, Alabama Polytechnic Institute, Auburn.

Vice-presidents and Section Chairmen: Biology and Medical Sciences, J. P. Reynolds, Birmingham-Southern College, *Secretary*, Alvin V. Beatty, University; Chemistry, G. H. Evans, Huntingdon College, Montgomery, *Secretary*, Davis H. Thomson, Birmingham; Geology and Anthropology, E. C. Horton, U. S. Weather Bureau, Birmingham, *Secretary*, Peter A. Brannon, Department of Archives and History, Montgomery; Geography and Conservation, J. M. Stauffer, Department of Conservation, Montgomery, *Secretary*, Thomas A. Ford, Department of Conservation, Montgomery; Physics and Mathematics, A. T. Wager, Birmingham-Southern College; Industry and Economics, W. M. Mobley, Alabama By-Products Corporation, Tarrant; The Teaching of Science, Mrs. W. D. Thompson, Birmingham-Southern College.

Treasurer, John Xan, Howard College, Birmingham, reelected for three years.

Councilor of the American Association for the Advancement of Science, Septima C. Smith, University, reelected.

Long Range Planning Committee, member, Section III, S. J. Lloyd, University.

Councilor for the Junior Academy for three years, Miss Lillian Worley, Alabama College, Montevallo.

The Alabama Junior Academy of Science was in session at the same time, at the Phillips High School, with exhibits constituting a special feature of the program.

The next annual meeting of the academy will be held in Birmingham in the spring, the date to be determined later.

WINNIE MCGLAMERY,
Secretary

DECORATIONS OF RUSSIAN SCIENTIFIC MEN BY THE SOVIET GOVERNMENT

The Information Bulletin of the Embassy of the U.S.S.R. reports the following decorations conferred on eighty-one members and workers of the Academy of Sciences of the Ukrainian SSR in recognition of notable services in various branches of science:

The highest decoration, the Order of Lenin, has been conferred upon Academician Vladimir Filatov, famous oculist, whose method of cornea transplanting has helped to restore sight to thousands of wounded men during the war. Academician Filatov has also scored important successes in the field of tissue therapy. In a number of diseases, even those entirely unconnected with the eyes,