even qualitatively with any other assumption about the earth's constitution that is consistent with the known cosmic abundance data of the elements (*7, 8*). In particular, the assumption of Ramsey (*9*) that the earth's core consists of silicates seems to be excluded, and still more so the sugestion that the earth's interior contains large amounts of compressed hydrogen.

Fig. 4, finally, shows the quantity $d \ln \rho / d \ln p$, essentially the compressibility, as a function of the pressure. The figure conveys the suggestion that Bullen's values for the earth might have to undergo some slight adjustments to agree better with the curves obtained by joining the experimental data to the high-pressure part of the theoretical data.

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News and Notes

The International Oxford Conference on Nuclear Physics

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THE INTERNATIONAL NUCLEAR PHYSICS CONFERENCE took place in historic Oxford last September 7–13. Sponsored by the British Ministry of Supply, it was organized—and excellently so—by the British Atomic Energy Research Establishment (AERE). About 200 physicists participated; half of them came from British universities, about 30 from AERE itself, nearly as many from America, and approximately 40 from the European continent. Pontecorvo's name was in the list of participants, but actually he was not present. There was no direct delegation from behind the Iron Curtain.

Most of those who came alone were housed in Brasenose College, Oxford; the couples were pleasantly quartered in the country in a palatial house provided by the Ministry of Supply. A guided tour through the AERE Laboratories at Harwell made a deep impression on many of us. In spite of the very much smaller funds at the disposal of the British counterpart of the U. S. Atomic Energy Commission, and in spite of the shorter history of the British atomic energy program, one sensed the stability of the organization, the permanency of the installation, and the well-settled personal relations within the AERE Laboratories. The scientific and technical accomplishments of the Harwell Laboratory are quite impressive. It was also refreshing to find its director, Sir John Cockcroft, participating in the whole conference.

The principal subjects of the conference were high-energy physics, physics of light nuclei, reactor physics, and theory. Naturally this summary will be only illustrative of the subjects discussed and can cover only a few examples to show the type of results presented. Not even examples will be given of the discussion of experimental techniques and apparatus.

Several new and important results were announced on the high-energy program. Moyer described the experiments (Steinberger and Bishop, Berkeley) which led to the discovery of the neutral π meson. The mass of this particle is slightly lower than that of the charged π mesons; it is about 265 against 275 electron masses. Evidence was presented that its lifetime is very short: in about 2×10^{-13} seconds it disintegrates into two light quanta. Experiments proving the existence of the neutral π mesons and their disintegration were presented also by King (Bristol).

New data were presented also on the high-energy proton-proton and proton-neutron scattering, originating in Berkeley, AERE, Rochester, and Harvard. The cross section for a collision between a neutron and a proton is considerably smaller than that for a collision between two protons. The latter cross section seems to depend very little on energy in the high-energy region, and the collision appears to be spherically symmetric. Its absolute value is around 4.5×10^{-27} cm^2 per unit solid angle. These data were discussed by Pais (Princeton) from the theoretical point of view. He showed that, assuming a spin-orbit type of interaction, it is possible to explain the data in such a way that the interaction is, fundamentally, the same between a proton-neutron and a proton-proton pair. The difference in the actual cross section arises from the Pauli exclusion principle (Case and Pais).

Professor Blackett (Manchester) presented evidence for mesons of about 800 electron masses.

Level schemes for several nuclei, including Li^7, Be^7, O^{16}, C^{13}, and O^{17}, were presented in the session on light nuclei. Some of these apparently showed remarkable regularities which are not understood. Extensive data were given also on the reactions of the various hy-

drogen and helium isotopes with each other. Alvarez described experiments to produce new high-energy radioactive nuclei, such as N^{12}, N^{17}, and Na^{20}. The disintegration of these nuclei produces delayed protons and α-particles, which follow the original β-disintegration much in the same way as the delayed neutrons follow the β-disintegration accompanying fission. There was also an extended session on angular distributions and angular correlations, the investigation of which promises to solve many a problem that could not be tackled previously.

The theoretical session was mainly devoted to the discussion of the nuclear shell model, in particular the *j-j* coupling scheme proposed by M. G. Mayer and Haxel, Jensen, and Suess. The last address was given by Dirac on his new field theory. It was a most interesting occasion: apparently none of the participants could follow Dr. Dirac's new ideas in detail. Nevertheless all realized that important new physical principles are in the course of being formulated.

As mentioned, the organization of the conference was excellent. The discussion was lively throughout, to the point, and never protracted. Perhaps the most remarkable accomplishment of the organizers was, however, a 115-page report of the proceedings of the conference. This was mailed out to the participants a little more than two weeks after the conclusion of the meeting. It contained a remarkably accurate summary of all the addresses and most of the discussion, even of the highly technical and "theoretical" remarks. It was the result of the work of several members of the AERE and was edited by E. W. Titterton.

Scientists in the News

G. Robert Coatney has assumed the editorship of the *Journal of the National Malaria Society.* Manuscripts intended for publication in the *Journal* should be sent to Dr. Coatney, Laboratory of Tropical Diseases, National Institutes of Health, Bethesda 14, Md.

Alonzo G. Grace has been appointed to head a new Division of Advanced Study in New York University's School of Education. Formerly on the faculty of the Department of Education of the University of Chicago, he was for ten years Commissioner of Education for Connecticut, resigning in 1948 to become the first director of the Education and Cultural Relations Division of the American Military Government in Germany.

James M. Hundley has been appointed consultant on nutrition in the Office of Health Resources of the National Security Resources Board. Dr. Hundley will advise on problems of food and diet in relation to total defense planning. He has been a member of the staff of the National Institutes of Health, PHS, since 1943 and is chief of the Nutrition Section of the recently created National Institute for Arthritis and Metabolic Diseases.

Los Alamos Scientific Laboratory of the University of California has announced two recent additions to the staff. They are **William E. Keller,** a research chemist formerly associated with the Ohio State University Research Foundation, who will work with the laboratory's Chemistry and Metallurgy Division, and **Rodney H. Foss,** formerly at Yale University's Sterling Chemistry Laboratory, where he had been working for his Ph.D. in organic chemistry, who will head the biochemistry section of the Biomedical Research group.

Changes in membership of the Committee on Navigation, Department of Defense Research and Development Board, were announced recently. **Frederick B. Lee,** Civil Aeronautics Administration, has been appointed a member to represent the Department of Commerce; he succeeds **Delos W. Rentzel,** whose deputy he has been. **David D. Thomas,** has been named Mr. Lee's deputy. **L. F. Dodson** has been named a Navy member to succeed **Robert C. Sutliff.**

Meetings and Elections

A **symposium on Molecular Structure and Spectroscopy,** sponsored by the Graduate School and the Department of Physics and Astronomy at the Ohio State University and by the Division of Chemical Physics of the American Physical Society, will be held at the University, June 11–15. There will be discussions of the interpretation of molecular spectroscopic data, as well as of methods of obtaining such data. In addition, there will be sessions devoted to those phases of spectroscopy of current interest. For further information or for a copy of the program when it becomes available, write to Professor Harald H. Nielsen, Department of Physics, Ohio State University, Columbus 10.

The recently chartered **Institute of Cancer Cytology** has elected the following officers: president, Arthur Purdy Stout, Columbia University, and a member of the Educational Committee of the American Cancer Society; vice presidents, Herbert F. Traut, University of California; Emil Novak, Johns Hopkins Hospital; Charles D. Read, University of London; J. Ernest Ayre, McGill University; and K. Sheldon MacLean, Roosevelt Hospital, New York; chairman of the board, F. Bayard Carter, Duke University. The principal aims of the international organization are to endorse, and to aid in developing, regional cytology centers and to popularize the utilization of the cytologic test for cancer. These centers will provide educational and training facilities for local and visiting physicians and technicians.

The **7th Annual Conference on Protein Metabolism,** sponsored by the Bureau of Biological Research at Rutgers, in cooperation with FAO, is considering (January 26–27) these phases of the subject: Gastrointestinal dynamics and utilization of protein, folic

acid and vitamin B_{12} in relation to amino acids, specific amino acids in relation to water-soluble vitamins, mineral metabolism and tissue protein synthesis, protein metabolism, clinical aspects of protein malnutrition, and protein metabolism as affected by food shortage. Ernest Geiger, J. A. Stekol, Robert R. Sealock, Paul R. Cannon, M. Macheboeuf, Hugh M. Sinclair, and Ancel Keys are participating.

The 1950–51 **Jesup Lectures,** sponsored by the Department of Zoology, Columbia University, will be given by John Runnström, of the University of Stockholm. The subject will be "Developmental Physiology of the Sea Urchin," and the dates are February 14, 16, 21, 23, 28, and March 2, 7, 9.

Grants and Awards

The **American Society of Photogrammetry's award** for outstanding work in its field was presented to Russell K. Bean during the society's recent annual convention. Chief of the photography section of research and engineering control, Topographical Division, U. S. Geological Survey, Mr. Bean was honored for his design of a twinplex system of mapping photography, which gives greater accuracy with fewer pictures.

The Chemical Arts Company of Chicago, a teenage concern manufacturing decorative Christmas candles, has won the third annual **Chemistry Products Award,** given by *Chemical and Engineering News* to honor the nation's outstanding Junior Achievement group in the chemical field. The award, a bronze plaque, will be presented by Walter J. Murphy, editor of the ACS journal, at a dinner to be held by the society's Chicago Section February 23. June E. Stinnett, sixteen-year-old president of the company, will accept the plaque. Individual certificates also will be conferred on Miss Stinnett and the 14 other members of the company, which was selected from among more than 100 competing groups by the editors of *C&EN* and a committee of leading industrialists. The winning company was sponsored by the Peoples Gas, Light & Coke Company, Chicago.

The **Theobald Smith Award** of $1,000 and a bronze medal, which has been given yearly since 1937 (except for a lapse during the war years) by Eli Lilly and Company, of Indianapolis, under the auspices of the AAAS, was not given during the recent meeting of the Association because of an unavoidable delay in calling for nominations. Nominations are now being requested, however. They may be made by Fellows of the AAAS and should be sent to the secretary of the Subsection on Medicine (Dr. Gordon K. Moe, Department of Physiology, State University of New York Medical Center, Syracuse, N. Y.). Nominations should be accompanied by full information concerning the nominee's personality, training, and research work. The prize is given for "demonstrated research in the field of the medical sciences, taking into consideration independence of thought and originality." The research is not to be judged in comparison with the work of more mature and experienced investigators. Any investigator who was less than thirty-five years of age on January 1, 1950, and is a citizen of the United States is eligible. Nominations must be received before *March 15.* The secretary requests that all data be submitted in triplicate. The president of the Association and four Fellows will form the committee of award, and the winner will be announced early in May. Past recipients: 1937, Robley D. Evans, MIT; 1938, Charles F. Code, The Mayo Foundation; 1939, Albert B. Sabin, Children's Hospital Research Foundation, Cincinnati; 1941, Herald R. Cox, Lederle Laboratories, Inc.; 1943, Sidney C. Madden, Brookhaven National Laboratory; and 1949, Seymour S. Kety, Graduate School of Medicine, University of Pennsylvania.

Fellowships

Tau Beta Pi has announced its annual program of fellowships for graduate study in engineering for the school year 1951–52. The amount available for each fellowship is $1,200 payable in ten monthly installments, and in some cases the society has arranged with schools to remit tuition. For additional information write Paul H. Robbins, Director of Fellowships, 1121 15th St., N.W., Washington 5, D. C. Applications must be received by *February 28.*

The **Oak Ridge Institute of Nuclear Studies** has been named administrator of the AEC predoctoral and postdoctoral fellowships for 1951–52. Tentatively planned are: predoctoral fellowships, up to 150 in the physical sciences and up to 100 in the biological sciences; postdoctoral, up to 30 in the physical sciences and up to 45 in the biological sciences. Predoctoral fellows will receive a basic stipend of $1,600, and postdoctoral fellows $3,000, with an additional $500 if married, plus $250 for each child not exceeding two. Additional allowances will be made for travel and tuition. Application forms and other information may be obtained from the Oak Ridge Institute of Nuclear Studies, University Relations Division, Box 117, Oak Ridge, Tenn. Applications must be received by *February 15.*

The Institute of Medicine of Chicago announces that the **Jessie Horton Koessler Fellowship** for aid in research in biochemistry, physiology, bacteriology, and pathology has been re-awarded for 1950–51 to Charlotte Robertson, to continue her work on the loss of sensitivity to stimulation by cholenergic drugs manifested by denervated sweat glands, and to begin an investigation of the histamine content of various body secretions under the direction of Andrew C. Ivy, Department of Clinical Science, University of Illinois.

The New York Zoological Society again announces grants-in-aid available for the research program at its Jackson Hole Research Station. The fifth summer

program will include studies in ecology, animal behavior, and land management. Further information may be obtained by addressing Director, Jackson Hole Research Station of the New York Zoological Society, Moran, Wyo.

Colleges and Universities

The new Research Laboratory for Diseases of Dogs has opened at **Cornell University.** The center is especially designed for the study of viruses, which are believed to cause many of the contagious diseases. A main laboratory building contains the latest in isolation facilities for the controlled study of dog diseases. The center also has a separate kennel for rearing a disease-free dog colony. A staff of 20, including 5 veterinarians, under the direction of James A. Baker, is already conducting studies on infectious hepatitis, leptospirosis, and encephalitis. In general, the research will deal with fundamental aspects of disease from the point of view of prevention rather than cure.

A new research foundation has been established at **Fordham University** to coordinate present research and to stimulate original studies in the arts and sciences. Researchers at the university have recently developed a high-temperature, light-weight refractor material for the Air Materiel Command at Wright Field, Dayton, Ohio. Other projects now being conducted include those for the ONR, Damon Runyon Cancer Fund, Research Corporation, USPHS, and the AEC.

A new Blood Characterization and Preservation Laboratory was dedicated January 8 in **Harvard University's** Bussey Institution of Applied Biology. The new laboratory, under the direction of Edwin J. Cohn, is an emergency establishment to accelerate the development of new methods for use in the National Blood Program.

Deaths

Harry G. Haskell, a director and former vice president of E. I. du Pont de Nemours & Co., died January 4 at 80. Starting with Du Pont in 1893 as a clerk, he became director of the high-explosives operating department during World War I. He retired in 1946.

The founder of Columbia University's Department of Industrial Engineering, **Walter Rautenstrauch,** died recently at the age of 70. Dr. Rautenstrauch was a key figure in the "Technocracy" movement during the depression, and his later defection helped to end the movement. He was the author of 14 books on economics and engineering. His most recent work, *Budgetary Control,* which he wrote with Raymond Villers, was published in September.

Albert S. Howell, co-founder of the Bell & Howell Company, manufacturers of motion-picture and photographic equipment, died January 3 in Chicago at 71. Early inventions by Mr. Howell were credited with eliminating the "flicker" in motion pictures and with providing a way for additional copies of films to be made cheaply. These inventions were a film perforator, a continuous printer, and a standard camera with precise film-moving mechanisms.

Alfred Hume, chancellor emeritus of the University of Mississippi, died December 25 at 84. Starting as a professor of mathematics in 1890, he was chancellor three times during his 58 years of teaching.

Miscellaneous

The **Registry of Rare Chemicals,** 35 West 33rd St., Chicago, submits the latest list of wanted chemicals: bromogermane; bromosilane; iron pentacorbonyl; silicon bromotrifluoride; silver peroxide; sym.-tri (trifluoromethyl) benzene; 3,3,3-trifluoropropene; benzothiophene; 1-chloro-3,5-dimethylbenzene; methyl stearyl ketone; 4-hydroxy coumarin; D-monochlorosuccinic acid; Ethyl-b,b-diethoxypropionate; p-hydroxyhippuric acid; 1,3-diphenylbenzofuran; uramildiacetic acid; ferritin; toxisterol; L-xylulose; and hexokinase.

An **International Commission for Plant Slide Exchanges** has been established by the Botanical Section of the International Union of Biological Sciences in cooperation with the California Botanical Materials Company. The aim of the commission is to enable cooperating institutions and individuals to build up reference slide collections by exchanging plant material sent in by them for slides processed either from these materials or from those forwarded by others. Information may be obtained from Dr. D. A. Johansen, Chairman, International Commission for Plant Slide Exchanges, 861 East Columbia Ave., Pomona, Calif.

The Technical Command at **Army Chemical Center,** Md., has openings for approximately 60 professional employees. Analytical, organic, inorganic, and physical chemists, meteorologists, physicists, chemical engineers, mechanical engineers, statisticians, and draftsmen are needed immediately for work on various research and development projects for new chemical and radiological warfare agents and materiel. The salary range is from $3,100 to $7,400. Interested applicants may apply on Standard Form 57, or in person, to the Civilian Personnel Office, Army Chemical Center, Md.

Publications Received

Guide to the Classification of Fishing Gear in the Philippines. Augustin F. Umali. Fish and Wildlife Service Research Report 17. U. S. GPO, Washington, D. C. 40¢.

Raccoons of North and Middle America. Edward A. Goldman. North American Fauna 60. Fish and Wildlife Service. U. S. GPO, Washington, D. C. 45¢.

Bulletin on Narcotics. Vol. II, No. 2. U. N. Dept. of Social Affairs, Lake Success, N. Y.

Ten Years of Progress—Illinois Institute of Technology. Technology Center, Chicago 16.