tific endeavor. This certainly appears true with respect to the attitudes and level of understanding of the general public, which have a powerful and pervasive influence on science.

With respect to formulation of decisions at the appropriate level, a shrewd observer has said, "There is more inadequacy in government because of the inability of officials to operate on their proper levels than from any other single cause" (*7*). This is as true in the area of research as it is in other fields.

Trouble is ahead when an individual attempts to make decisions that people "above" or "below" him are more competent to make. Specifically, if the head of an agency makes a habit of dictating specific lines of experimentation, he is likely to destroy the effectiveness of the laboratory. This is true even though his judgment in some scientific areas may be superior to that of the staff. In other words, he is, or should be, restricted in the kind of research planning that he can productively engage in. Much of the fear of scientists engaged directly in research is based not upon the exercise of research planning functions by administrators, but upon apprehension that they will not confine themselves to appropriately general decisions. This apprehension is not always unfounded.

Whereas the making of detailed decisions by those who should confine themselves to general decisions is pernicious, an attempt by those appropriately concerned with detailed decisions to make general decisions is bound to be frustrating and futile. For example, the head of a laboratory cannot properly or profitably take upon himself the responsibility for indicating how much of the total federal budget should be allocated to medical research, even though he may have firm convictions on the matter. He can indicate what he believes to be a proper level of operation for the programs he heads, but he cannot assess the full array of factors that should influence the decisions of the secretary of his department, the Bureau of the Budget, and Congress.

It would, of course, be quite useful if one could formulate a set of criteria indicating precisely the kinds of decisions that people at a given level should and should not make. However, any attempt at precision in this area is almost certain to be a meaningless exercise because the nature of organizations, the content of research, and personalities vary so widely that what may be most productive in one situation may be quite disruptive in another.

One generalization that does seem sound, however, is that persons engaged in research planning should, in making decisions, or in refraining from making decisions, bear in mind not only the substantive merits of a question but also the level at which they act. If this consciousness of role were invariably present, common sense, reasonable sensitivity, and knowledge of the organization would substitute admirably for a set of precise guides.

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News and Notes

Mechanism of Enzyme Action

THE Symposium on Mechanism of Enzyme Action, sponsored by the McCollum-Pratt Institute, was held at the Johns Hopkins University, Baltimore, June 16–19, 1953. This symposium, concerned with the fundamental problems related to the mechanism of enzyme action, was a logical and necessary extension of the previous symposium on Copper Metabolism, held in 1950, and the two symposia on Phosphorus Metabolism, held in 1951 and 1952. The symposium was organized, under the skillful guidance of W. D. McElroy and his associates in the McCollum-Pratt Institute, to follow a gradual and smooth progression from a consideration of electronic and ionic forces to group transfer mechanisms.

The first two days of the symposium were devoted to the more theoretical aspects of protein structure and the nature of the forces which bind protein molecules with each other and with smaller molecules. In the session on Protein Configuration and Biological Activity, J. G. Kirkwood discussed the forces between protein molecules in terms of a theory of matching constellations of charges. According to this concept, fluctuating distributions would, by induction effects, give rise to patterns specific for the interacting proteins. The nature of the essential groups for enzyme catalysts was considered by R. Herriott, who reviewed the evidence for the participation of specific functional groups in enzyme reactions, with particular emphasis on the appearance of such groups when inactive enzyme precursors, such as chymotrypsinogen, are converted to the active form. The first session was concluded by W. Kauzmann, who discussed the re-

versible and irreversible changes accompanying denaturation of proteins and enzymes and the properties which may be used to define a protein in its native state. In the second session, on the Kinetics of Enzyme-Catalyzed Reactions, H. Eyring covered kinetic and thermodynamic aspects, including the relation between reaction rates and activation energy and the possible effects of environmental influences during protein synthesis. H. Bull reviewed the role of the enzyme substrate complex as an intermediate in enzyme-catalyzed reactions, with particular emphasis on the kinetic treatment of reactions involving activators and inhibitors. In the third session, on the Function of Metals in Enzyme Catalysis, the theory of chelation and the relation between structure and binding affinity was reviewed by M. Calvin. The properties of metal protein complexes and the nature of groups in protein molecules responsible for the binding of metal ions were discussed by I. Klotz. E. L. Smith and his collaborators reported the results of studies with two highly purified metal peptidases, prolidase and leucine aminopeptidase, where a detailed study of metal and substrate specificity has permitted a number of conclusions regarding the binding mechanisms between substrate, metal activator, and enzyme.

In the last two days of the symposium attention was directed to a number of transport and transfer mechanisms. The fourth session, on the Mechanism of Electron and Hydrogen Transport, was opened by F. H. Westheimer, who reviewed the evidence for one-electron and two-electron transport mechanisms in oxidation-reduction reactions and the problem of free radical formation. The formation of enzyme-substrate complexes in living cells was demonstrated by B. Chance, whose elegant spectrophotometric methods have permitted the direct observation of reactions involving peroxidases, cytochromes, and pyridine nucleotide enzymes in intact cells. Evidence for the direct transport of hydrogen in reactions catalyzed by pyridine nucleotide dehydrogenases and for the steric specificity of such reactions was presented by B. Vennesland.

The final session included papers on the function of enzymes in group transfer reactions. The vast field of carbonyl and acyl group formation and transfer was reviewed by E. Racker, with special emphasis on the role of the sulfhydryl group in acyl transfer and of thiamine pyrophosphate in carbonyl transfer. I. C. Gunsalus provided an up-to-date discussion of the function of lipoic acid in the oxidation of pyruvate, with new evidence for its role as a carrier in oxidation-reduction reactions. A number of types of substitution mechanisms were discussed by D. Koshland, who illustrated the types of displacement reactions which are to be considered in an interpretation of enzymatic mechanisms. H. Kalckar reviewed the mechanisms of transglycosidation in the formation of polysaccharides and nucleotides and the role of uridine-containing coenzymes in such reactions.

Unfortunately the list of discussants, many of whom presented brief but nevertheless important original contributions, is too long to be included. The moderators, M. Heidelberger, F. Brink, L. Hellerman, E. G. Ball, and F. Lipmann, are to be commended for their part in leading the active and stimulating discussion which followed each paper. This discussion, faithfully recorded and transcribed by the McCollum-Pratt staff, should prove to be one of the most interesting features of the book, just as it has in past symposia. The critical exchanges between physical chemist, organic chemist, and enzymologist served to point up the important contribution which these branches of chemistry can make to biology. The forthcoming volume containing the symposium proceedings should be of great value to all concerned with enzyme studies.

As a consequence of the excellent arrangements, there was ample occasion for informal discussion and exchange of ideas outside of the meeting hall. The speakers, moderators, and especially the 85 invited discussants are greatly indebted to the sponsors of the symposium for making this opportunity available.

B. L. HORECKER

National Institute of Arthritis and Metabolic Diseases
National Institutes of Health

Scientists in the News

George A. Baitsell, Executive Secretary of the Society of the Sigma Xi since 1940, has resigned from that post and will devote himself to editorial duties for the Society. Dr. Baitsell, who is Colgate Professor Emeritus of Biology at Yale University, will be full-time editor of the *American Scientist,* the Society's quarterly, and of *Science in Progress,* the biennial volume. He has been editor of both on a part-time basis since 1940. In 1948–1949 he was also Editor-in-Chief of SCIENCE, **Thomas T. Holme,** Professor of Industrial Engineering at Yale, has been named Acting Executive Secretary to succeed Dr. Baitsell. A regular appointment will be made at the annual Sigma Xi convention in Boston next December.

John H. Cornehlsen, Jr., former scientist for the Department of Defense, has been elected Director of the Tufts Institute for Applied Experimental Psychology and Professor of Psychology at Tufts College. This position was previously held by **Leonard C. Mead,** who remains Chairman of the Department of Psychology and assistant for research projects to the president of the university. Dr. Cornehlsen's new duties will involve directorship of various projects being carried on at Tufts for government, industry, and private organizations in the fields of personnel, applied psychology, and human engineering. The Institute has a staff of 18 individuals with professional training. Its *Handbook of Human Engineering Data* is widely used by the armed forces and their engineering contractors in the development of equipment.

John E. McKeen, President of Chas. Pfizer & Co., Brooklyn, N.Y., has been awarded the Order of Vasco Nunez de Balboa, with rank of Knight Commander, by the Republic of Panama. The decoration is that country's highest civilian honor. Mr. McKeen, whose company is the largest producer of antibiotics, supervised the activities of the Pfizer research team which, in 1949, developed Terramycin. During World War II he was one of several American experts who, at the request of the U.S. Government, first developed procedures for the mass production of penicillin.

Gustavo Molina, Professor of Public Health Administration at the School of Public Health of the University of Chile, Santiago, has been appointed Chief of the Professional Education Branch of the Division of Education and Training for the Pan American Sanitary Bureau, Regional Office of the World Health Organization, Washington, D.C. Training professional public health workers holds a high priority in the international health services of the PASB.

The College of Physicians and Surgeons of Philadelphia has awarded the Alvarenga Prize for 1953 to **Francis D. Moore,** Surgeon-in-Chief, Peter Bent Brigham Hospital and Mosely Professor of Surgery, Harvard Medical School, for his outstanding contributions to our knowledge of the changes in body metabolism following surgery. The Alvarenga Prize was established by the will of DaCosta Alvarenga of Lisbon, Portugal, an Associate Fellow of the College of Physicians of Philadelphia, to be awarded annually by the College on the anniversary of the death of the testator, July 14, 1883.

Benedict Nagler, Chief of neuropsychiatric service at McGuire Veterans Administration Hospital at Richmond, Va., and Assistant Professor of Psychiatry and Neurology at the Medical College of Virginia, has been appointed Chief of the neurology section of the psychiatry and neurology division of the Veterans Administration in Washington, D.C.

H. L. Osterud retired July 1 after 31 years of service with the Medical College of Virginia as Professor of Anatomy. He was honored by a gathering of his friends and former students at which he received a bound volume of letters from his admirers, a radio-recorder and a gift certificate for records, and an all-expense paid two weeks' vacation in Puerto Rico made possible by MCV alumni in that country, and many personal tokens. Beginning next year a prize, known as the Osterud Prize, will go to a deserving student of anatomy. To fill the vacancy left by Dr. Osterud, **William M. Shanklin** has been appointed Visiting Professor of Anatomy. Dr. Shanklin comes to MCV from the American University of Beirut, Beirut, Lebanon.

Henry and **Mary Paul,** husband-and-wife biochemistry team at Eaton Laboratories, Inc., Norwich, N.Y., have been given new research positions. Henry Paul has been named Assistant Research Director and Mary Paul will take over her husband's former duties as Chief of the Biology Division. During the past decade the Pauls have conducted investigations into problems of cellular metabolism as part of the research program out of which the nitrofuran family of drugs has developed.

Captain C. P. Phoebus, MC, USN, has been appointed Special Assistant for Bio Sciences at the Office of Naval Research, Washington, D.C. A qualified naval aviator, Dr. Phoebus was Head of the Medical Military Specialties Branch and Aviation Medicine Section of the Research Division of the Bureau of Medicine and Surgery.

Maj. Gen. Donald L. Putt has been appointed commander of the Air Research and Development Command, whose headquarters are in Baltimore. Formerly vice commander of the ARDC, General Putt succeeds **Lt. Gen. Earle E. Partridge,** who has assumed his new duties as Deputy Chief of Staff for Operations, Headquarters, U.S. Air Force. The ARDC regulates the Air Force's integrated research and development program conducted at its nine research, development and testing centers located throughout the nation.

Burrell O. Raulston, Dean of the University of Southern California School of Medicine for ten years and a member of the faculty since 1929, has become Dean Emeritus. Dr. Raulston has been a resident of Southern California for 30 years and has long been prominent in medical education in the nation. He has been active in the Association of American Medical Colleges, the American Board of Internal Medicine, and the Councils of the U.S. Public Health Service. He was graduated from Maryville College and Rush Medical College, served in the Army Medical Corps in World War I, and then did graduate study at the University of Chicago, University of Bern, Switzerland, and Stanford Lane Hospital. In June Dr. Raulston was given an honorary degree of Doctor of Science by the University of Southern California at its 70th annual commencement exercises "in recognition of distinguished service in the field of medicine." He is succeeded by **Gordon Goodhart,** who has been on the SC medical school faculty for five years.

Frank Richardson, Chairman of the Department of Biology at the University of Nevada, has been dismissed by the Board of Regents. According to the President of the University, among the grounds for Dr. Richardson's dismissal was his distribution to his colleagues of copies of an article on certain aims and aspects of professional education written by Arthur E. Bestor, Jr., of the Department of History of the University of Illinois. The article, entitled "Aimlessness in Education," appeared in THE SCIENTIFIC MONTHLY of August, 1952. It calls for a restoration of emphasis upon intellectual content in the American curriculum, and decries the usurpation by the professional educators of the power of

making education policy. Dr. Richardson agreed with Bestor's point of view and used it to support his own position on local educational policies. (A later article, "Professional Education and the Disciplines," by William Clark Trow, Professor of Educational Psychology at the University of Michigan, presents the other side of the argument in THE SCIENTIFIC MONTHLY of March, 1953.)

M. W. Stout, President of the University of Nevada since September, 1952, and previously Principal of the University High School of the University of Minnesota, shortly after assuming office announced an entrance policy whereby the University would admit graduates of Nevada high schools who failed to meet regular entrance requirements, as well as non-graduates, if aged 21 and legal residents of the state. Such "unclassified students" would, it was hoped, make the necessary adjustment and work toward a degree. Dr. Richardson and certain other professors disagreed with this policy, which they felt seriously undermined academic standards.

On November 19 Dr. Stout held a conference with Harold Brown, Director of the School of Education, Dean Frederic Wood, and Dr. Richardson. Dr. Richardson gave his reasons for his actions. Then, in the President's own statement, it was pointed out that Dr. Richardson was hired to teach in the Department of Biology, and that the Administration would do everything it could to help him do a thorough job. Dr. Richardson was asked to return to his Department and devote his energies to his own work and not to interfere with the work assigned to other people.

As the president of his university's chapter of the American Association of University Professors, Dr. Richardson called a meeting to consider a questionnaire from the national office regarding administrative policies in universities and the participation of faculties in administration. President Stout thereafter called a faculty meeting, at which he charged that a minority of the faculty and some outsiders were working to endanger the University budget in the Legislature and were creating disloyalty and insubordination to the injury of the University. No one was named.

On March 31, Dr. Richardson, Assistant Professor Little of the same department, and three professors in the English Department were directed to appear before the Board of Regents to show cause why they should not be dismissed. Later the letters to Dr. Little and the English professors were rescinded.

After hearings, the Board of Regents dismissed Dr. Richardson. Two faculty members, one being Dr. Little, have since resigned. Dr. Richardson has appealed his case to the Nevada Supreme Court. The outcome of this litigation is awaited with interest. Other aspects of the story appear in *Time,* June 15 and 22.

Sir Robert Robinson of Oxford University, England, chemist, Nobel Prize winner, and an internationally known authority on vitamins, hormones, and other natural chemicals, will receive the American Chemical Society's Priestley Medal—highest honor in American chemistry—during the Society's 124th national meeting to be held in Chicago in September.

Education

Fifteen prominent scientific, industrial, and educational leaders have been named to a new advisory board created to assist **New York University's Institute of Mathematical Sciences.** A. B. Kinzel, President of Union Carbide and Carbon Research Laboratories, New York City, is Chairman of the group. Members of the board will assist the Institute in developing its facilities and will advise on problems of operation and administration.

NYU announced in January (SCIENCE, Feb. 6, 1953, p. 127) the creation of the Institute and the purchase of a nine-story building near Washington Square to house its activities. An outgrowth of the University's Institute for Mathematics and Mechanics, the Institute represents an expansion and integration of advanced research and instruction in the mathematical sciences. Some 150 persons will be employed at the Institute which will operate at an annual budget of more than one million dollars. A major facility in the Institute's building at 25 Waverly Place will be a computing center to be operated for the Atomic Energy Commission. The $880,000 Univac #4 is now being installed there.

Objectives of the Institute are to develop young scientists, of high caliber, to draw upon the experience of visiting professors and research scientists, and to combine basic research with instruction. David D. Henry, Executive Vice Chancellor of NYU, is Administrative Director, and Richard Courant, Professor of Mathematics, is Scientific Director.

Grants and Fellowships

A program of fellowships designed to prepare men for academic careers in medicine, principally in the field of pathology, has been established by the Department of Pathology in the University of Pittsburgh. The fellowships, entitled the **Sarah Mellon Scaife Fellowships,** will provide experience in research, teaching, and diagnostic pathology. Three years will be spent in the Department of Pathology, University of Pittsburgh. Arrangements will be made for one year to be spent at another medical center of the applicant's choice. One fellow will be appointed each for a four-year term and will receive a stipend increasing as follows: 1st year, $3000; 2nd year, $3300; 3rd year, $3700; 4th year, $4000. The applicant must be a graduate of an approved medical school. *Application must be made by November 1* for a fellowship beginning July 1 of the following year. Notice of selection will be made by December 15. Further information and application forms are available from Dr. Frank J. Dixon, Department of Pathology, University of Pittsburgh, Pittsburgh 13, Pa.

The **National Science Foundation** has entered into a contract with the Slavic Language Department of Columbia University, New York, to translate approximately 1,000 pages of current Russian research reports in physics during the coming year. The Columbia project is part of a larger program undertaken by the Foundation to make it easier for American scientists to keep informed of current scientific developments abroad. In the course of preparing translations the staff will also compile files of new or unusual Russian terms in physics and related sciences as the basis for an improved Russian-English scientific glossary. During the past year the Columbia group undertook preparation of a similar glossary of terms used in metallurgy.

Limited numbers of the completed translations will be printed at the facilities maintained at Oak Ridge by the U.S. Atomic Energy Commission. In addition to the official distribution to Federal agencies interested in the material, copies will be distributed to some 40 depository libraries throughout the country which hold complete files of AEC unclassified reports. Copies may also be purchased for a nominal charge at the Office of Technical Services, Department of Commerce, Washington 25, D.C. Titles will be announced in the *Bibliography of Technical Reports,* issued monthly by OTS, and in the *Monthly List of Russian Accessions,* issued by the Library of Congress. The translations concerning nuclear physics will also be announced in *Nuclear Science Abstracts.* The first group of translations will include physics reports from the January, 1953, issues of *Doklady Akademii Nauk SSSR* (Reports of the Academy of Science of the USSR).

Meetings and Elections

At its 2nd Annual Meeting the **American College of Cardiology** elected the following officers for the year 1953–54:

Pres.: Robert P. Glover, Clinical Professor of Surgery, Hahnemann Medical College and Hospital, Philadelphia, Pa.
Pres. Elect: Ashton Grayviel, Director of Research, U.S. Naval School of Aviation Medicine, Pensacola, Fla.
V. Presidents: David B. Dill, Hubert Mann, and John C. Krantz, Jr.
Sec.: Philip Reichert
Ass't. Sec.: Simon Dack
Treas.: Seymour Fiske
Ass't. Treas.: William L. Wheeler, Jr.
Trustees (for 2 years): Irving Brotman, George W. Calver, and Joseph P. Harvey

A **European Federation of Chemical Engineering** was formally inaugurated at a Foundation Meeting held in the Maison de la Chimie in Paris on the 20th of June, 1953. The purpose of this Federation is to promote European cooperation in the fields of chemical engineering and equipment. The Federation owes its origin to efforts commenced in 1951, and which assumed a more concrete form during the course of the European Convention for Chemical Engineering and the Achema X Chemical Engineering and Equipment Exhibition, which took place in 1952. These efforts have now been crowned with success. The following scientific and technical societies were represented at the inauguration of the Federation:

Asociscián Nacional de Químicos de España, Madrid
Association des Ingénieurs et Techniciens Chimistes de Belgrade, Belgrade
Colegio de Ingenieros industriales, Madrid
Dechema Deutsche Gesellschaft für chemisches Apparatewesen, Frankfurt a.M.
Gesellschaft Deutscher Chemiker, Frankfurt a.M.
Instituto de Ingenieros Civiles de España, Madrid
Kemian Keskusliitto-Kemiska Centralförbundet, Helsinki
Nederlandse Chemische Vereniging, 's-Gravenhage
Sociedade Portuguesa de Quimica e Fisica, Oporto
Société de Chimie Industrielle, Paris
Société des Ingénieurs Civils de France, Paris
Schweizerischer Chemiker-Verband, Zürich
Schweizerische Gesellschaft für Chemische Industrie, Zürich
Schweizerischer Ingenieur- und Architektenverein, Zürich
Verein Deutscher Ingenieure, Fashgruppe "Verfahrenstechnik," Frankfurt a.M.

Many more scientific and technical societies, some of which are located in Norway, Denmark, Luxemburg and Austria, have signified their early intention of joining the Federation. The activities of the Federation are managed by a committee, and the following were elected members of this Committee of Management: Herbert Bretschneider, Germany; Hans C. Egloff, Switzerland; Francis A. Freeth, Great Britain; and Jean Gérard, France. The General Secretariats of the European Federation of Chemical Engineering are located in the Maison de la Chimie, 28 Rue Saint-Dominique, Paris, and in the Dechema-Haus, Frankfurt am Main, Rheingauallee, 25.

Officers of the **Illinois State Academy of Science** for the year 1953–54:

Pres.: W. W. Grimm, Bradley University, Peoria
1st V. Pres.: G. W. Thiessen, Monmouth College, Monmouth
2nd V. Pres.: Lyle Finley, Monmouth College, Monmouth
Sec.: Lyle E. Bamber, Univ. of Ill., Urbana
Treas.: Walter B. Welch, So. Ill. Univ., Carbondale
Libr.: Thorne Deuel, State Museum, Springfield
Rep. on AAAS Council: Percival Robertson, The Principia, Elsah

Officers of the **Wisconsin Academy of Sciences, Arts, and Letters** for the year 1953–54:

Pres.: Charles L. Fluke, Univ. of Wis.
V. Pres. (Science): Henry Meyer, Ripon College
V. Pres. (Arts): Mary L. Doherty, Kenosha
V. Pres. (Letters): Harry H. Clark, Univ. of Wis.
Sec.: Robert J. Dicke, Univ. of Wis.
Libr.: Gilbert H. Doane, Univ. of Wis. Library
Rep. on AAAS Council: Robert J. Dicke, Univ. of Wis.