monium sulphate itself accelerates the test reaction, blank determinations with ammonium sulphate added to the reagents are necessary.

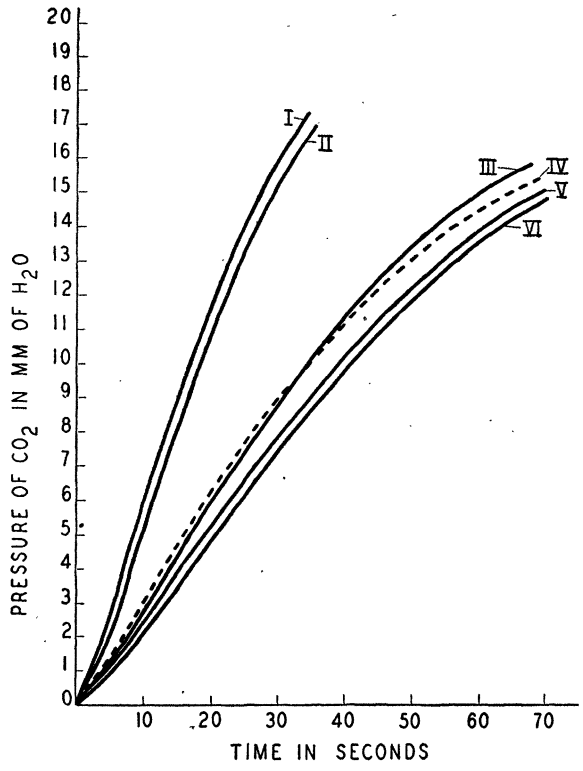

FIG. 2. Observations on plant enzyme solution: I. 0.1 ml. of dextrose-fluoride-enzyme solution after dialysis for 8 hours; II. 0.1 ml. of dextrose-fluoride-enzyme solution after storage for 4 weeks at 10° C.; III. 0.1 ml. of the same solution in 0.001 M KI; IV. 0.1 ml. of same solution as in II in 0.001 M $CuSO_4$; V. Same as II except heated at 80° for 15 minutes; VI. Blank. Curves I and II also are virtually identical to those obtained when the same solutions are used with sulfanilamide and sodium cyanide added.

The behavior of the active principle in the above-described procedures indicates that it is a protein. This opinion is supported by its lability to heat and by its failure to pass through a dialyzing membrane. A solution of the enzyme in sodium phosphate was dialyzed against 30 per cent ethanol for 8 hours. At the end of this time activity was unimpaired, but the concentration of phosphate had decreased to 2.5 per cent of the starting value.

The plant enzyme shows certain similarities to animal carbonic anhydrase but is different in other respects. Both are sharply inhibited by low concentrations (0.01–0.001 M) of H_2S, $KMnO_4$, $CuSO_4$, and I_2. On the other hand, neither sulfanilamide nor cyanide appears to inhibit the plant enzyme, though both inhibit that obtained from animals (*4*) (Fig. 2).

Both the animal and the plant enzymes are soluble and stable in 30 per cent ethanol but are inactivated at concentrations of this alcohol above 40 per cent. In purified solution the plant enzyme is less heat labile than in the crude suspension; in fact, it is destroyed at the same temperature as the animal enzyme. Both are inactivated by 5 minutes at 80° C., at which temperature a precipitate forms. At 70° C. there is only slight inactivation even after half an hour.

Zinc, known to be a constituent of animal carbonic anhydrase (*3*), was found to be present in our solutions by the method of Hibbard (*2*). However, it cannot be stated whether this is associated with the active principle or with some other protein. Dialysis for 48 hours does not remove the zinc.

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News and Notes

About People

Irving Hill Blake has been appointed chairman of the Department of Zoology, University of Nebraska, to succeed David D. Whitney, who will remain on the staff as a professor of zoology.

L. W. Chubb, director of the Westinghouse Research Laboratories, is the recipient of the John Fritz medal and certificate, awarded annually for notable scientific or industrial achievement. The award is made by representatives of four national engineering societies: the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, and American Institute of Electrical Engineers.

Capt. Guy Wheeler Clark, USN, was appointed superintendent of the U. S. Naval Observatory, Washington, D. C., on 1 September, to succeed Capt. R. S. Wentworth, who has retired.

Howard F. Hunt has been appointed acting assistant professor of psychology at Stanford University, where he is connected with the general training program in

clinical psychology. Dr. Hunt will also be in charge of the Veterans Administration clinical training program.

Elmer Drew Merrill, Arnold professor of botany at Harvard University and former director of the Arnold Arboretum, has been honored by a special dedicatory number of the *Journal of the Arnold Arboretum* on the occasion of his 70th birthday on 15 October. This issue was edited by A. C. Smith and contains contributions from colleagues all over the world. Early in October a special issue of *Chronica Botanica,* entitled *Merrilleana* and consisting of a collection of reprints of Dr. Merrill's principal general writings, as well as a chronological biography and bibliography, was published in honor of Dr. Merrill.

Allan D. Maxwell, formerly acting chairman of the Department of Astronomy, University of Michigan, has joined the staff of the Nautical Almanac Office, U. S. Naval Observatory, Washington, D. C.

Donald C. Lowrie, director of the Museum of the Academy of Science of St. Louis, has been appointed professor of zoology at New Mexico Highlands University, Las Vegas.

Harry A. Allard, co-discoverer of photoperiodism, retired on 1 October after 40 years in the U. S. Department of Agriculture. In 1920 he and W. W. Garner announced in the *Journal of Agricultural Research* the principle that the blossoming and fruiting of plants depends upon the length of day. Knowledge of this principle has borne results in commercial horticulture and has stimulated increasing research in the field of photoperiodism which is today yielding useful facts. In addition to his pioneering work on the effects of light and dark periods on plants, Mr. Allard did early work in the investigation of tobacco mosaic disease and in scientific tobacco breeding. The record of his published papers covers nearly 50 years.

Norman R. Davidson, recently of the RCA Laboratories, Princeton, has been appointed an instructor in general chemistry at the California Institute of Technology, according to an announcement by Linus Pauling.

Announcements

Leading librarians and museum directors of the country will be honored on 19 October at a convocation culminating a two-day program in celebration of the return of Yale University's collections to peacetime use. Several receptions have been planned to open special exhibitions.

On the afternoon of 18 October the unveiling of a natural history mural and several dioramas will be held in the Peabody Museum of Natural History. The mural, which shows the great dinosaurs of 200,000,000 years ago in their natural habitat, was painted by Rudolph F. Zallinger, of the Yale Fine Arts Faculty, and covers the east wall of the Hall of Dinosaurs. The dioramas, showing some of Connecticut's plants and animals in a series of selected environments, were the work of Perry Wilson, on leave from the American Museum. Also on display at the same time will be paleontological collections made by Marsh, Beecher, Schuchert, and Wieland; the minerals, obtained early in the 19th Century, which established Yale's eminence in geological studies; and the zoological collections formed by Verrill and Petrunkevitch. Representative groupings from the University's 1,250-item anthropological collection will also be on display. Best known of these are the Marsh and Grinnell Collections of the American Plains Indians and the Peruvian finds made and given by former U. S. Senator Hiram Bingham. Friday's formal program will end with a reception in the evening in the Art School, when William M. Ivins, Jr., curator emeritus of prints in the Metropolitan Museum of Art, will give an address. The third reception, which opens an exhibition of 300 noteworthy books in the Yale Library, will be held on Saturday afternoon. In this exhibition Sir Isaac Newton's own copy of *Principia,* which he gave the Yale College Library shortly after its founding, will be of special interest to scientists.

At the convocation on Saturday evening, the degree of Doctor of Science will be conferred upon: Alfred L. Kroeber, director emeritus of the Anthropological Museum, University of California; Albert Eide Parr, director of the American Museum of Natural History, New York City; and George Gaylord Simpson, curator of the paleontological collections, American Museum of Natural History.

Among the librarians to receive degrees are Luther Harris Evans, Harry Miller Lydenberg, Keyes DeWitt Metcalf, and Lawrence Counselman Wroth.

The Jesup Lectures, given under the auspices of the Department of Zoology, Columbia University, are being delivered this year by G. Ledyard Stebbins, Jr., of the University of California, Berkeley, on "Variation and Evolution in Plants." The series of lectures opened on 15 October. Subsequent lectures will be given on 22 October, 29 October, 12 November, 19 November, and 26 November at 5:00 P.M. in Columbia's Schermerhorn Hall.

Three emergency colleges for veterans have been organized for freshman and sophomore curricula by New York State. These colleges—Sampson at Sampson, Mohawk at Utica, and Champlain at Plattsburg—are being converted from former military installations at these locations.

The appropriation for the colleges and the operating corporation, named the Associated Colleges of Upper New York, were created by act of legislature last March. The Board of Trustees consists of the presidents of New York State colleges and universities, including Clarkson, Colgate, Cornell, Colleges of the Seneca, Hamilton, Rensselaer Polytechnic Institute, Rochester, St. Lawrence, Syracuse, and Union. The president chosen by the Board is Asa S. Knowles, formerly of Rhode Island State College.

The faculties of the colleges, two of which have opened within the last month, have been chosen from among retired teaching personnel, persons recently released from the services or government agencies with teaching experience, graduate schools and placement bureaus of colleges and universities throughout the country, the professional division of the U. S. Employment Service, and the U. S. Department of Labor's National Roster of Scientific and Specialized Personnel.

The curriculum, including engineering, liberal arts, and business administration, has been especially designed for freshman and sophomore students, who may transfer elsewhere for their third and fourth years of academic work. Full credit will be given by established schools for the courses completed at the emergency colleges. Extracurricular activities, such as intercollegiate and intramural sports programs, will also be provided.

Over 9,000 inquiries have been made by veterans and others from New York and other states, and about 2,000 completed applications have been accepted. The colleges will have accommodations for 6,800 students this fall with an ultimate capacity of more than 10,000. Registration for the three institutions will not be limited to male veterans. At present, however, only the wives of students will be permitted residence on the campus, all others attending on the day school basis.

A series of lectures on physicochemical methods and their applications in research and technology will be presented by specialists of Mellon Institute during 1946–47. The lectures will be delivered on Thursdays at 11:40 A.M., both semesters, in the auditorium of the Institute. The series is open to all students in the professional courses in chemistry and chemical engineering in the University of Pittsburgh, to the Institute's members, and to interested persons in the district.

The following sessions have been scheduled: J. R. Bowman: "Molecular Distillation," 24 October; J. R. Anderson: "Ebulliometry," 14 November; G. C. Akerlof: "Analytical Instruments," 21 November; H. P. Klug: "Electron Optics," 12 December; A. L. Marston: "Spectroscopy," 9 January; L. E. Alexander: "Crystal Structure," 23 January; E. P. Barrett: "Sorption," 20 February; W. M. Kutz: "Catalysis," 6 March; R. H. Hartigan: "Synthetic Methods," 20 March; T. W. DeWitt: "High-Vacuum Techniques," 10 April; J. T. Kummer: "Isotopes and Tracer Techniques," 24 April; and J. W. Jordan: "Colloid Techniques," 8 May.

Karl T. Compton told of recent changes at M.I.T. in his address, "On Engineering Education," delivered at the Princeton Bicentennial on 4 October. Among these changes are: the addition of a new engineering department, Food Technology; simplification of the undergraduate curriculum; and an increase in the proportion of graduate students. Courses in the fields of humanities and social sciences have been intensified. New subjects, such as the gas turbine and jet propulsion, supersonic air flow, and nuclear chemistry, have been introduced, and previous subjects, such as instrumentation, servomechanisms, electronics, nuclear physics, applied mathematics, and acoustics, have been substantially strengthened.

A group of Centers of Research have been set up under interdepartmental auspices to handle important fields of work which extend across the conventional departmental boundaries. Among these Centers are: the Research Laboratory of Electronics, the Research Laboratory of Nuclear Science and Engineering; the Research Laboratory of Acoustics; the Spectroscopy Laboratory; and the Center of Analysis.

Attempts are being made to derive the greatest educational benefits for the senior, postgraduate, and postdoctorate levels through sponsored research, handled on behalf of industry and governmental agencies through the Institute's Division of Industrial Cooperation.

Meetings

The Eastern Association of Electroencephalographers will hold their fourth meeting on 26 October at the Yale School of Medicine, New Haven, Connecticut. The Scientific Meeting, scheduled for 2:30 P.M., will include the following lectures: Margaret Lennox: "Some Effects of Deep Brain Lesions on the Electroencephalogram"; Frederick Redlich: "Some Other Uses of the Electroencephalograph"; and Mary A. B. Brazier: "A Review of the Electroencephalographic Findings at Various Levels of O_2 and CO_2." Leslie F. Nims will act as chairman for the discussions.

The American Society of Agronomy and *The Soil Science Society of America* will hold their annual meetings on 19–22 November at the Hotel Fontenelle, Omaha, Nebraska.

The Sixth International Congress on Experimental Cell Research will be held in Stockholm in July 1947. The Congress will be organized by a Swedish working committee. J. Runnström, of Wenner-Grens Institute, will act as chairman for the conference, and T. Caspersson and H. Hyden, of the Karolinska Institute, as secretaries. A preliminary program will be published this fall. The conference will include a series of symposia on important problems in experimental cell research from physicochemical, physiological, and morphological aspects. The Swedish organizing committee hopes that cell research workers in all fields will take advantage of this occasion for exchanging and renewing contact with their colleagues. Suggestions or questions regarding the conference should be sent to the secretaries.

Recent Deaths

Robert Lemuel Sackett, 78, dean emeritus of the School of Engineering, Pennsylvania State College, died on 6 October in New York City. Dr. Sackett was a former vice-president of Section M, AAAS.

John E. Walter, 29, assistant professor of physics, Princeton University, died on 23 September in Princeton, New Jersey.

H. C. Plummer, 70, fellow of the Royal Society (England), died on 30 September at his home in Oxford. Dr. Plummer's most well-known work was *An introductory treatise on dynamical astronomy.*

H. L. Cooke, 67, since 1919 professor of physics at Princeton University, died on 30 September in Princeton, New Jersey.

Support for Animal Experimentation

Under the date of 12 August, Howard Strong, secretary of the Health and Advisory Council of the U. S. Chamber of Commerce, reported to A. J. Carlson that a poll of the member organizations resulted in an overwhelming majority in favor of the following resolution:

> In view of the great progress that has been made in preventive and curative medicine and surgery through animal research and the prospect of even greater progress in the future, the National Chamber is unalterably opposed to the prohibition of this scientific procedure. Such a prohibition would seriously hamper all medical progress.

A total of 2,424 member organizations approved of the statement, and 18 organizations did not approve. Since these organizations have approximately 1,000,000 members from the business and professional fields, the support is tangible. Furthermore, the U. S. Chamber of Commerce is in a position to present its opposition to antivivisection legislation wherever it might appear, and, when advisable and possible, a representative of the Chamber can actually appear in opposition to any such measure.

The secretary's report acknowledged the influence of Dr. Carlson in bringing about the adoption of the resolution.

A second resolution in favor of animal experimentation was unanimously passed by the membership of the American Diabetes Association in session on 17 September at Toronto:

> WHEREAS, the American Diabetes Association at this meeting is commemorating the 25th anniversary of the discovery of insulin; and whereas, insulin has been instrumental in restoring the health and saving the lives of countless human beings suffering from diabetes; and whereas, the great work of Banting and Best in discovering insulin, and the subsequent scientific investigations clarifying its actions and uses, would have been impossible without the use of dogs and other domestic animals as experimental subjects; therefore, be it resolved that the American Diabetes Association hereby testifies to the value of the use of dogs and other domestic animals for purposes of scientific research and urges all enlightened citizens to refrain from supporting the misguided efforts of so-called antivivisectionists, who constantly try to hamper the advancement of scientific medicine.

The National Science Foundation and Military-sponsored Research

Otto Stern, professor emeritus of physics, Carnegie Institute of Technology, and Nobel Laureate in Physics (1943), speaking for the Executive Committee of the Northern California Association of Scientists, has recently called attention to the dangers in the present broad-scale sponsoring of university research by military agencies and pointed out the necessity for a speedy enactment of a National Science Foundation bill. The statement says:

> The Army and Navy are outstanding examples, and it is highly commendable that, recognizing the value of fundamental research, they have assigned extensive funds to universities, under liberal contracts which permit research relatively free of restrictions. But the fact that scientists must depend on the Army and Navy for their funds may ultimately defeat the purpose for which these funds are provided. In raising this criticism it should be made clear that it is not the Army and Navy who are at fault: they have acted most intelligently in recognizing the need for a more adequate support of basic research; this criticism is directed at the American Congress for its delay in passing the bill establishing a National Science Foundation.
>
> The reason for the undesirability of military sponsoring of research lies in the nature of fundamental research and in the atmosphere necessary for its pursuit. Fundamental research consists of the discovery and elucidation of natural phenomena and the subsequent formulation of

the basic laws of nature. Very often such discoveries and laws have no immediate practical applications, serving only as a contribution to the general framework of theory which is a fundamental part of science. History teaches us that these researches have often the greatest significance in the light of later discoveries. A striking example is the development of the practical utilization of atomic energy, which depended on chemical and physical knowledge dating back many years in scientific history, extended by individual investigators in many lands. For this kind of research a certain atmosphere is required. The scientist must be free to exercise the full range of his curiosity and imagination, without having to justify his experiments for the practical minded, or to seek practical application of his theories, or to write monthly reports. For its most fruitful fulfillment, fundamental research must be completely divorced from concern with practical matters of this sort. Grants for fundamental research should be made at the discretion of a civilian board made up of scientists qualified to judge the value of a research project, and above all the researcher. Such a decision should not reside in a military or political officer, nor should a scientist be accountable for his work to a military or political officer.

Only under conditions of completely free fundamental research will the best possible development of science continue. It is fortunate that funds have become available for the more extensive support of university research; the need for such funds is great. But it should be recognized that Army and Navy sponsoring of research is only a stop-gap arrangement, serving until the time that a National Science Foundation is established by the Federal Government. We therefore urge the speedy enactment of a bill establishing a National Science Foundation.

Dr. Stern is now living in Berkeley at 759 Cragmont Avenue.

War Department Research and Development Division

On 19 September the War Department announced a civilian appointment of special interest to scientists. Pres. Cloyd H. Marvin, of George Washington University, will be the new Deputy for Research.

The Research and Development Division was organized this spring under the direction of Maj. Gen. Henry S. Aurand, who is now adviser to the Secretary of War and the Chief of Staff on all War Department matters relating to both research and development.

Gen. Aurand's Deputy for Development is Brig. Gen. Earl S. Hoag, who was a wing commander in the Air Transport Command during World War II. Gen. Aurand was the commanding general of the Sixth Service Command from September 1942 to October 1944. Since 1944 he has had several commands overseas and most recently has returned as commander of Service of Supply in the Chinese Theater.

Dr. Marvin, who will continue as president of George Washington University, has recently set up an office in the Pentagon building, where he will be supported by a staff of scientists who will represent primarily the broad fields of science and engineering which impinge most directly on War Department research interests.

The Division will also include representatives of the social science fields on its scientific staff to attack the broad problems of utilization of rare and highly trained man power.

These scientists will maintain the closest contact with research and development activities in War Department laboratories. In addition, they will work closely with other Services and with the research programs prosecuted by civilian institutions throughout the United States.

Their work will be supplemented by a corps of technically trained Army officers, and a panel of consultants drawn from the highest levels of science, education, and industry will stand ready to assist with expert counsel whenever needed.

Since the War Department realizes that the permanent withdrawal of scientists from fundamental research weakens the Nation's scientific future, these scientific advisers will be asked to serve for only one year on a rotational basis. The cooperation of the various scientific societies is being sought to maintain this rotation. Scientists who have worked with the Division will be asked to serve on the panel of consultants so that their experience can be further utilized. There will be created in this way a group of scientists familiar with War Department needs and problems, to supplement those who aided so materially in military research during World War II.

Dr. Marvin's knowledge of the War Department dates back to World War I, when he served as a captain in the Army Aviation Service. Subsequently he became dean at the University of California, then president of the University of Arizona, and went to George Washington University as president in 1927.

Gen. Aurand has devised a pattern of close integration between research, on the one hand, and development, on the other, within the War Department. But the role of the new Division will be not only that of coordinating War Department research. It will insure the closest cooperation between military and civilian organizations in attacking the grave problems which must be overcome to keep the United States in the forefront of military research. Gen. Aurand is firmly committed to this policy of cooperation and holds strongly that future planning for defense must involve the concept of a steady and enduring partnership between science, industry, and the military organization.