is not the case. Such a treatment induces a "lag" before growth of the culture can again proceed, and some of the cells die before the adjustment is made. Within one hour, however, reproduction is under way at a rate characteristic of a 45° C. culture.

If an actively growing culture at 45° C. is transferred to sterile medium of the same composition at 10° C., more striking results are obtained. In this case there occurs an extensive mortality among the young bacterial cells—sometimes exceeding 95 per cent. of the total. As is well known, such a drop in temperature has no effect upon "mature" bacterial cells.

A fact brought out by these experiments, which is perhaps new and certainly not generally appreciated, is that abrupt environmental changes within the range of growth of an organism may prove lethal to the young of the species. The "hardening" of young greenhouse plants by subjecting them to low temperatures, so they may later survive freezing, is a practise which rests on conclusive experimental data. But that environmental fluctuations within the natural range of growth may be fatal to the young organism has not been so clear.

A point of more interest is the fact that the young bacteria growing at 10° C. are not so extensively killed when changed to 45° C. as are those growing at the higher temperature when changed to the lower. This indicates a greater hardiness in those grown at the lower temperature. That this is indeed the case has been proved by other methods.

The experiments on which this communication is based constitute a part of a series which was planned in order to test a hypothesis, long held by us, that slow growth should lead to a more perfect adjustment of an organism to its environment and, therefore, to greater viability. While the greater viability of the cells grown at low temperatures, as compared with those grown at higher temperatures, has been established, it is not conclusively proved that the difference is due to the slower growth rate. Proof of this point would convey broad implications.

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REPORTS

HONORS CONFERRED BY THE FRANKLIN INSTITUTE

AT the Medal Day exercises of the Franklin Institute of the state of Pennsylvania, held in the hall of the institute in Philadelphia on the afternoon of Wednesday, May 17, fourteen honors which had been awarded during the institute year were presented to their recipients or representatives of them. The medalists were drawn from three foreign countries as well as from the United States. The awards were as follows:

A certificate of honorary membership was presented to Mr. Alfred Rigling, of Philadelphia, Pennsylvania, in recognition of a half century of helpful and intelligent service as librarian and assistant secretary of the Franklin Institute, during which long term of duty well done he has been a pillar of strength to the institute, a source of comfort to the discouraged and of knowledge to the ignorant, a librarian amazingly informed concerning his library and a kindly gentleman skilful and eager in friendly service to his fellow men.

A certificate of merit to Dr. Henry Selby Hele-Shaw, of London, England, in consideration of his development of a superior filtering device involving stream-line principles. The British consul, Mr. Frederick Watson, received the certificate.

A certificate of merit to Mr. Arthur F. Poole, of Ithaca, New York, in consideration of his combination in a battery-operated clock, of known mechanisms, that has produced a clock in which the swing of the pendulum is the driving force of the gears controlling the hands, and also determines the frequency of the impulse, that requires battery renewal at long intervals only and that is an accurate time-keeper.

The fourth presentation of the day was that of an Edward Longstreth Medal—founded in 1890 by Edward Longstreth, of Philadelphia—to Mr. Howard L. Ingersoll, of the New York Central Lines of New York City, in consideration of his development of the locomotive booster to a state in which it gives valuable aid to locomotive performances and railroad service.

A second Longstreth Medal was presented to Dr. Dunlap Jamison McAdam, Jr., of the Bureau of Standards, Washington, D. C., in consideration of the fact that Dr. McAdam has provided information that satisfactorily explains certain structural failures, has developed formulae and diagrams to illustrate the complex relationship of the influences of stress on corrosion, and has done more than any one else to establish the fundamental principles of corrosion fatigue, coupled with the fact that the information provided has already been usefully applied and should have wide future practical application.

Three John Price Wetherill Medals—founded in 1925 by the family of the late John Price Wetherill—were next presented: the first to Messrs. Henry S. Hulbert, Francis C. McMath and Robert R. McMath,

of the McMath-Hulbert Observatory of the University of Michigan, Lake Angelus, Michigan, in consideration of their design and construction of novel apparatus for the making of motion pictures of astronomical subjects, which have proven of value in the teaching and popularization of astronomy.

A Wetherill Medal was presented to the Industrial Brownhoist Corporation, of Bay City, Michigan, in consideration of the high degree of ingenuity in design and execution of detail, embodied in a successful machine for cleaning railway ballast resulting in a real contribution to railroading and the solution of a maintenance problem of great moment, especially under traffic conditions of extreme density.

The Wetherill Medal was presented to the Koppers Company of Delaware, of Pittsburgh, Pennsylvania, in consideration of the development of systems for the liquid purification of gases, the success of which is evidenced by the number of such installations in regular use.

A Louis Edward Levy Medal—founded in 1923 by the family of Louis E. Levy, of Philadelphia—was next presented to Mr. Leon S. Moisseiff, of New York City, for his paper entitled "The Design, Materials and Erection of the Kill Van Kull (Bayonne) Arch," published in the May, 1932, issue of the *Journal* of the Franklin Institute.

A George R. Henderson Medal—founded in 1924 by the widow of George R. Henderson, of Philadelphia—was presented to Mr. Otho C. Duryea, of the O. C. Duryea Corporation of New York City, in consideration of the meritorious railway engineering and the novel feature embodied in the invention of the Duryea Railway Car Cushion Underframe.

The Howard N. Potts Medal—established in 1906, by will of Mr. Potts, a Philadelphia lawyer—was awarded to Mr. Igor I. Sikorsky, of the Sikorsky Aviation Corporation of Bridgeport, Connecticut, in consideration of his pioneer work and inventions in the development of multi-motored airplanes of various types, for different uses, including amphibians and the largest combined planes for land and water service, and of his method of direction control of a multi-motored machine by the use of an automatic stabilizer.

One Elliott Cresson Medal—founded in 1848 by Mr. Elliott Cresson, who was very much interested in the work of the Franklin Institute, this award being highly prized and next to the Franklin Medal in importance—was awarded this year to Señor Juan de la Cierva, of London, England, in consideration of the original conceptions and inventive ability which have resulted in the creation and development of the autogiro.

The Franklin Medal was founded in 1914 by Samuel Insull, Esq., of Chicago, Illinois, a long-time member and friend of the Franklin Institute. This medal is to be awarded to those workers in physical science or technology, without regard to country, whose efforts, in the opinion of the institute, have done most to advance a knowledge of physical science or its application.

The Franklin Medals are awarded each year, usually to an outstanding scientist of the United States and to some scientist from some other country. This year the first Franklin Medal was awarded to Dr. Orville Wright, of Dayton, Ohio, in recognition of the valuable investigations carried out by him and his brother, Wilbur, from which they obtained the first reliable scientific data concerning the principles of flight and the design of aeroplanes, upon which they constructed the first heavier than air machine which flew by its own power under human control.

The second Franklin Medal was awarded to Dr. Paul Sabatier, dean of the Faculty of Science of Toulouse University, Toulouse, France, in recognition of his numerous and fruitful contributions to the general field of chemistry and especially to organic chemistry, in which he discovered the catalytic activity of finely divided common metals and devised methods for their use in science and industry. Dr. Sabatier was unable to come to America to receive his medal in person. He was represented by the councillor of the French Embassy in Washington, Monsieur Jules Henry.

On the evening of Medal Day, the Franklin Institute held a dinner at the Bellevue-Stratford Hotel in honor of the medalists of the day. About seventy-five guests were present.

SOCIETIES AND MEETINGS

THE OHIO ACADEMY OF SCIENCE

THE forty-third annual meeting of the Ohio Academy of Science was held on April 14 and 15, on the beautiful campus of historic Ohio University, Ohio's oldest university, at Athens, Ohio. To the surprise of many the attendance was probably the largest in the history of the academy, there being some 360 registered members and visitors, besides quite a few who forgot to register.

This meeting concluded the presidency of Dr. R. A. Budington, Oberlin College, Oberlin, Ohio, the two outstanding events of whose very successful administration were the formation of a new section, namely, a section of chemistry, under the inspiration and leader-