by which the maximum stress is limited to that at the yield point, such as actually must be the case.

Dielectric properties of crystals: HANS MÜLLER (introduced by J. C. Slater).

Chemical structure and optical activity: P. A. LEVENE and ALEXANDRE ROTHEN.

Contrasting properties of ions, zwitterions and uncharged molecules: EDWIN J. COHN (introduced by J. B. Conant).

A development of a theoretical basis for the behavior of controlled time-temperature curves: EVALD L. SKAU and WENDELL H. LANGDON (introduced by F. G. Keyes). Assuming that a homogeneous and perfectly conducting sample is so arranged that it can lose or gain heat only by radiation to or from the surroundings so that Newton's law of cooling is applicable, and assuming that the temperature of the surroundings is raised or lowered at a constant rate, the following propositions have been proved analytically. I. That if the specific heat of the sample is constant with respect to the temperature the temperature difference between the sample and the surroundings approaches the constant value $\frac{C_p}{K}\frac{d\theta_s}{dt}$, where C_p is the specific heat of the sample at constant pressure, K is a constant of the apparatus, and $\frac{d\theta_s}{dt}$ is the rate of change of the temperature of the surroundings with respect to the temperature. II. That if now the specific heat of the sample begins to increase progressively with the temperature (so as to be concave upward) the time-temperature curve for the sample then becomes concave downward in case $\frac{d\theta_s}{dt}$ is positive, *i.e.*, in the case of a heating curve.

Demonstration of high-speed photography of motions of animals and insects: H. E. EDGERTON and K. J. GERMESHAUSEN (introduced by K. T. Compton). A short reel of motion pictures illustrating the use of high-speed motion pictures for analyzing the motions of biological subjects was shown after the particular method of taking the photographs was described. The camera used for taking these pictures uses stroboscopic light as a source of illumination of a period sufficiently short to effectively stop the object being photographed and to take the pictures on the continuously-moving film without blurring. The motion pictures showed a cat turning over in mid-air after being dropped upside down (500 frames per second), a snake's tongue in action (250 frames per second) and a house fly in action (6,000 frames per second).

A solution of the Poincaré continuation problem: MARSTON MORSE.

Boolian algebras and their applications to topology: MARSHALL H. STONE (introduced by G. D. Birkhoff).

SCIENTIFIC EVENTS

CONSTRUCTION AT THE BELTSVILLE EXPERIMENT STATION

ALLOCATION of more than $1,750,000 of funds for new construction on government property near Beltsville, Md., as a part of the public works program will enable the U. S. Department of Agriculture to develop there a model experiment station for agriculture.

For years the department has been making plans for equipment that would facilitate research on numerous agricultural problems. This work has been conducted heretofore at scattered stations in the vicinity of Washington, D. C. The present building program—designed primarily to relieve unemployment—provides a scheduled stage of construction for July 1, 1934, which is years ahead of progress that would have occurred in the normal course of events. Plans likewise involve the acquisition of about 1,000 acres of land to consolidate government property now in two tracts.

The largest single construction unit will be the new three-story animal-husbandry laboratory. It will provide about one million square feet of floor space and will house a group of laboratories dealing with animal nutrition, genetics, meat and wool investigations and scientific studies involving small animals. This building will cost about $450,000 and will permit an economy and thoroughness in animal husbandry research more nearly compatible with the needs of the many cooperative projects with states and other agencies which center at Beltsville.

For moving the facilities of the Bureau of Animal Industry Experiment Station from Bethesda, Md., to Beltsville, $265,000 has been allowed. This fund will provide a number of small buildings required for the proper isolation and quarantine of many of the animals kept under test and observation in studies of disease.

The poultry-nutrition laboratory, constructed last year, also is modern and will be supplemented by new buildings which will make the plant one of the best equipped poultry research stations in the world.

The field station of the Zoological Division of the Bureau of Animal Industry provides a place for so-called second-stage investigations of parasites. The first-stage studies are carried out at Washington, D. C. The present plans call for a laboratory with rooms and facilities for insectaries, aquariums and vivariums of various sorts for raising suitable hosts of worm parasites.

The $158,300 granted to the Bureau of Dairy Industry will provide for the construction of nine new

buildings and also for making other improvements. The principal new structure will be a laboratory and dairy-products building equipped for experimental work in the manufacture of dairy products and by-products on a factory scale. It is also proposed to complete the construction of the nutrition laboratory, which was begun in 1931. This building, when completed and equipped, will provide adequate and modern laboratory facilities for investigational work in all phases of dairy-cattle nutrition.

The $135,000 allotted to the Bureau of Entomology will provide four structures: (1) A semi-fire-proof building to house investigations on bee culture now carried on at Somerset, Md.; (2) a semi-fire-proof building to house basic studies on insects now conducted in a rented building at Takoma Park, Md.; (3) greenhouses to replace those used by the bureau on the department grounds at Constitution Avenue and 12th Street for investigations on insects injurious to greenhouse plants, and (4) mushroom house for investigations on insects attacking mushrooms.

The newly acquired land, in addition to its uses for building operations, will provide space for studies of dual-purpose cattle, hogs and chickens and will also provide testing plots for the Bureau of Entomology.

EXPERIMENTS ON THE PREVENTION OF SOIL EROSION

A NATIONAL experiment in land use, devoted to studying the prevention of soil erosion and providing for removal from cultivation of submarginal land instead of the average land required in the crop reduction programs, is being undertaken cooperatively by the Replacement Crops Section of the Agricultural Adjustment Administration and the Soil Erosion Service of the Department of the Interior. The experiment was authorized upon the recommendation of Secretary of Agriculture Wallace and Secretary of Interior Ickes. It will cover two million acres of land in 10 different regions.

Under the cooperative program, in those areas where projects of the Soil Erosion Service are located, farmers who reduce acreage under crop reduction programs may substitute acres of submarginal land for the average land that would be taken out of production under the terms of their contracts. Under such an arrangement, for instance, a farmer whose contract would require him to remove five acres of average land from production would have the privilege of removing, instead, 10 acres of submarginal land which was half as productive as his average land.

The Soil Erosion Service, of which H. H. Bennett is director, has chosen tentative locations for 10 erosion prevention projects. Each project includes about 200,000 acres and covers an entire watershed. Farmers who substitute submarginal land for average land under their contracts, will be asked to use the methods recommended by the Soil Erosion Service to prevent erosion of their land.

In the opinion of Joseph F. Cox, chief of the Replacement Crops Section of the Agricultural Adjustment Administration, these projects, being scattered, will provide demonstrations in different regions and under different conditions of what needs to be done to prevent erosion and the use which can be made of submarginal land.

The tentative locations of the ten soil erosion prevention projects are:

Upper Mississippi Valley, near LaCrosse, Wisconsin.
North Central Missouri and South Central Iowa, near Bethany, Missouri.
Central Illinois, in McLean County.
Central Texas, near Temple.
South Carolina Piedmont, near Spartanburg.
Pacific Northwest, in Palouse section, near Pullman, Washington.
Oklahoma Red Plains, near Stillwater.
Tennessee Valley.
Kansas, near Mankato, in Jewell County.
A large project, including land in Arizona, New Mexico and Utah, known as the Navajo project.

The Replacement Crops Section will extend its erosion prevention work beyond the projects in which it is cooperating with the Soil Erosion Service. Erosion-preventing or soil-improving crops are recommended by the section for all land taken out of production, and it plans to supply farmers with full information on crops for these purposes. The work done by the Soil Erosion Service on the 10 projects will be much more intensive, however, than that done elsewhere.

THE MORRIS FOUNDATION FELLOWSHIPS

FIVE Morris Foundation fellowships in botany, each of which carry a stipend of $1,200, have been awarded for the current academic year by the committee on administration of the Morris Arboretum of the University of Pennsylvania, as announced by Dr. Rodney H. True, director of the arboretum.

Recipients of the fellowships, recommended by the scientific staff of the arboretum from among a large number of applicants, are: Lewis E. Anderson, Batesville, Miss.; Miss Ruth Beall, Riderwood, Md.; Thomas W. Childs, Salem, Ore.; Miss Esther L. Larsen, Crosby, N. D., and William E. McQuilkin, Cambridge, Nebr.

In her will bequeathing the Morris Arboretum to the University of Pennsylvania the late Miss Lydia Thompson Morris expressed a desire that post-graduate work in botany be conducted at the arboretum, and the appointment of the five Morris fellows marks the first step taken in accordance with her wish.