first part to be evidently affected. They are the reservoir which the cell draws upon for carbohydrates and proteids. Depleted plastids have a tendency to agglutinate as the neighboring cytoplasm assumes the structure of a network around a number of small vacuoles, which contents become richer in water soluble peptides, as first the plastids, and then the cytoplasm itself, undergo proteolysis.

Death may abruptly affect the cell as a whole, "fixing" the various cell constituents in the place they occupied at the moment death occurred; or death may affect the cell slowly during which agony the constituents have time to undergo changes. Premortal changes are fundamentally alike, whatever the cause of death: their results mainly depend on how long the cell endured.

Lethal factors which act very slowly (malnutrition of adult cells, infection by endophytes or viruses), will first produce increased respiration in the affected cell when part at least of the cytoplasm will become spongy. Proteolytic processes, being enhanced, result in the formation of more water soluble peptides which may accumulate in the vacuolar sap. Finally, large vacuoles are partitioned off into a number of smaller ones by the extension and branching of cytoplasmic strands.

CONCLUSION

Death is the change from the clearly visible harmonious arrangement of homogeneous living parts of the cell into crowding of microscopically heterogeneous material.

The living cell is a harmonious building, coordinating a number of homogeneous materials, the contour of which can be made out under the microscope or the ultramicroscope, making the architectural design of the living cell observable. Killing the cell suddenly by proper cytological technique preserves the architectural disposition of the cell materials, making those materials themselves visible through ultramicroscopical changes of structure admitting of staining. Slow death of the cell preserves neither the architectural disposition of the cell material nor even its microscopical structure, as premortal changes are mainly concerned in the splitting of the homogeneous unstainable living complex into a coarse, granular collection of its constituents.

SCIENTIFIC EVENTS

REFORESTATION BY THE TENNESSEE VALLEY AUTHORITY

TEN thousand bushels of pine cones and other seeds are being harvested by the members of the Civilian Conservation Corps for use in reforestation work in the Tennessee Valley, according to an announcement made by Robert Fechner, director of emergency conservation work. The seeds are being gathered largely in Virginia, West Virginia, North Carolina and Arkansas. The program calls for planting the seeds in nurseries this winter. Later the seedlings will be transplanted in the areas to be reforested by the Tennessee Valley Authority.

Five thousand members of the Civilian Conservation Corps have been assigned to Tennessee Valley work by Director Fechner. These men will be distributed among twenty camps in Tennessee and five in Alabama. One of the major tasks assigned will be that of combatting soil erosion through tree planting, this being part of a general erosion control program to be carried on in the central, southern and western states.

To obtain the amount of seed necessary for the reforestation of the valley, the collection has been apportioned among the four national forests in the states specified on a quota basis. The total harvest will include 600 bushels of yellow poplar seed pods, 4,000 bushels of short-leaf pine, 2,600 bushels of Virginia pine, 2,900 bushels of black locust pods, all capable, under proper care, of producing 2,000,000 yellow poplar, 10,000,000 short-leaf, 8,000,000 Virginia pine and 6,000,000 black locust tree seedlings. Pitch pine cones, of which there is a limited supply in the forests of this region, will be collected in lots of 25 bushels or more.

As soon as the ripe cones are picked, they are shipped to the three southern nurseries of the U. S. Forest Service for drying and seed extraction. These nurseries are at Parsons, West Virginia; Russellville, Arkansas, and Catahoula, Louisiana, which is a new federal nursery. The prepared seeds are forwarded to the Tennessee Valley Authority and probably will be planted in two new nurseries which that organization is planning to establish in the Tennessee Valley.

Although it is often easier to pick cones from trees felled in lumbering operations, most of this year's collections will have to be picked from standing timber. Where it is necessary to climb high trees or ladders the Forest Service has ordered that safety belts be supplied. State and private land camps in the vicinity of the national forests are to be enlisted with those on the national forests during the harvest.

AN AMERICAN DECIMAL-METRIC CODE

PROPOSING that the United States shall make general use of metric weights and measures, an American Decimal-Metric Code has been drafted and urged for adoption, to assist the administration in effecting eco-

nomic and educational improvement under the National Recovery Act. Strong support is expected to be given the proposal by government experts, many of whom have been outspoken for the world-uniform standards. While not sponsoring any specific proposal, President Franklin D. Roosevelt has declared, "I have always favored adoption of the metric system by this nation."

The purpose of the Decimal-Metric Code is "to establish a single standard for the expression of all values, measures, weights, angles, temperatures, etc., which is best adapted for American national and international service." The author of the code, Captain Manly B. Gibson, of Fort Banks, Massachusetts, states that while it is offered primarily in the interest of American school children, its benefits will be shared by practically every man, woman and child in the United States. The code will reduce the time and labor now required for training in elementary mathematics and practical measurements in public schools by approximately fifty per cent. To young Americans and to future generations the code will, it is said, save billions of hours of child-labor now wasted on an unsatisfactory and inefficient educational program.

With the adoption of this code, all civilized nations of economic importance, except Great Britain, will use decimal-metric units. It will give increased efficiency in every phase of American endeavor, with an economy of more than two billion dollars annually. Using this universal single standard for the expression of values, weights and measures, American advertising will find a new and more favorable domestic and foreign market for American products.

Not only is a metric code being urged for adoption under the NRA, but metric advocates throughout the United States are launching a movement to secure liberal legislation in the new session of the Congress providing for general adoption of metric weights and measures. Metric petitions are being sent to the chairman of the Committee on Coinage, Weights and Measures, U. S. House of Representatives, Washington, D. C.

ACTIVITIES OF THE U. S. WEATHER BUREAU

CURTAILMENT in most of its activities characterized the program of the Weather Bureau, U. S. Department of Agriculture, for the fiscal year ending June 30, according to the annual report made public on November 22. In spite of substantial retrenchments, however, normal functions were continued and a new plan for increasing the number of ship's reports during the tropical hurricane season was put into effect.

The bureau also took an active part in the International Polar Year, which began August 1, 1932, and ended August 31, 1933. Special observations were made at a station established for the purpose at Point Barrow, Alaska. The results of these observations, together with observations by all the other meteorological services of the world, will serve as the basis for detailed weather maps on a world-wide scale, from which, it is hoped, valuable aids to forecasting may be developed.

To effect the necessary economies, more than 20 first-order stations were closed, the service at others was cut, and nearly 500 employees were dismissed. In addition, 30 storm-warning, 11 second-order, 5 tobacco, 46 cattle-region, 97 crop-weather, 84 river and rainfall and 7 snowfall stations were closed. The number of places to which daily forecasts are telegraphed was reduced by more than 125, and the distribution of coded telegraph reports was cut drastically. In other cases the issuing of weather maps was either suspended or replaced by card bulletins.

Service to the public, to agriculture and to the industries, carried on as usual, cover the following lines of activity:

About 200 first-order stations, spread over continental United States and the possessions, except the Philippines, provide twice-a-day telegraphic reports and other observations, reports and automatic records, which form the basis of all the bureau's public service. General weather forecasts are issued twice each day for all states, parts of states and larger cities. The stages of the principal rivers are gaged and reports, on which the flood-warning service is based, are prepared.

From June to November hurricane warnings are issued for the benefit of all shipping plying the adjacent oceans, the Gulf of Mexico, the Caribbean Sea and the Great Lakes. More than 1,200 secondary stations, not including any airway stations, furnish simple reports of rainfall, river, weather and crop conditions.

A network of cooperative observers, using government equipment, but serving without compensation, send in daily reports on the temperature, rainfall and state of the weather. Incidental to the daily and weekly reports from 200 first-order and 300 secondary stations, the bureau issues a weekly bulletin of weather and crop conditions. A frost and cold-wave service for the benefit of citrus growers is maintained in Florida, Mississippi, Texas, California, Oregon and Washington. Warnings of temperature and cold waves are issued for shippers of perishable products and livestock and for use in the care and protection of livestock on the range in winter and at shearing time in the spring.

Solar radiation at the earth's surface, the ultimate source of all terrestrial weather and life, is investigated and measured. In accordance with the air commerce act of 1926, the bureau furnishes "such weather reports, forecasts, warnings and advices as may be required to promote the safety and efficiency of air navigation in the United States and above the high seas."