

SCIENCE SERVICE is the non-profit institution for the popularization of science, with trustees nominated by the National Academy of Sciences, National Research Council and the American Association for the Advancement of Science, the E. W. Scripps Estate and the journalistic profession.

The judges of the Science Talent Search are: Dr. Harlow Shapley, director of the Harvard College Observatory and president of SCIENCE SERVICE; Dr. Harold A. Edgerton, vice president, Richardson, Bellows, Henry & Co., New York City; Dr. Stuart Henderson Britt, vice-president and director of research, Needham, Louis and Brorby, Inc., Chicago; and Dr. Rex E. Buxton, psychiatrist, of Washington, D. C. Drs. Edgerton and Britt design the aptitude examination each year.

Complete details of the national and the 25 State Science Talent Searches are available from Science Clubs of America, 1719 N St., N. W., Washington 6, D. C.

Science News Letter, February 9, 1952

METEOROLOGY

Weather Pattern to Be Reversed during February

► THE WEATHER pattern over the nation for February will be almost exactly the reverse of what it was in January. This is the prediction of the U. S. Weather Bureau's Extended Forecast Section.

The weathermen expect that, whereas the East averaged warmer than normal during January, it will be colder than normal in February. Lowest temperatures, as related to what usually happens, can be expected in the Ohio Valley and the Southeast.

Similarly, west of the Continental Divide there will be warmer weather than usual during February. In a belt running from the Dakotas to Texas, the temperatures will average about normal.

Rain and snow amounts will also change around. More than usual is expected in the eastern Gulf states and along the Atlantic seaboard. Less than usual amounts of snow and rain are predicted during February in the Great Lakes region, the northern plains and over the Southwest. Elsewhere about the usual amounts are expected.

The cold weather will come down from the Arctic Ocean propelled by an anticyclonic movement of the winds aloft. It will move alongside of a dip to the north in the west-to-east wind current over the United States between 10,000 and 30,000 feet up.

This anticyclone — a counterclockwise whirling of wind currents—is what made the weather pattern during the past two months remarkably similar to the same months in 1949-50. However it is now much farther north than its older brother went two years ago.

Science News Letter, February 9, 1952

BIOPHYSICS

Food Without Plants

Attempt is being made to convert solar energy into usable chemicals by photosynthesis outside the living cell, AEC's Eleventh Semiannual Report reveals.

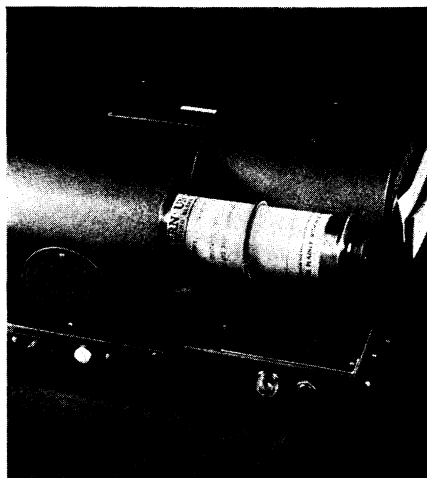
See Front Cover

► AN ATTEMPT is being made as a part of the atomic energy program to make photosynthesis, the conversion of solar energy into usable chemicals, take place outside the living cell.

The University of Utah, under an AEC grant, is engaged in this task, the Commission's Eleventh Semiannual Report presented to Congress reveals.

Plant extracts containing chlorophyll, the green matter of plants, are obtained by applying high pressure to plant material. Previously it was demonstrated that such cell-free extracts can split water into hydrogen ions and release oxygen gas. But all attempts to make them convert carbon dioxide into carbohydrates, as the plants do, have failed. This is the second part of the photosynthetic process. In other laboratories other investigators also are at work on this problem.

There is the possibility of practical applications of this process outside the plant, if it can be accomplished. Scientists foresee the production of food in the future without the aid of the living plant if photosynthesis of this sort is achieved. This may transfer agriculture to food factories in the future.



DESK COMMUNICATION — The Desk-Fax machine gives fast city-to-city Western Union service. Messages are sent and received on specially prepared, electrically recording blanks. (See SNL Feb. 2, 1952, p. 68.)

Discovery of the first compounds that are produced in photosynthesis in living plants has been made in experiments at the University of California Radiation Laboratory, the AEC report says.

By use of radioactive carbon in the carbon dioxide fed to living cells, and a chromatographic analysis of the products of only two seconds exposure to light, the Berkeley group determined that the first stable organic compound a plant produces in photosynthesis is phosphoglyceric acid, which contains three carbon atoms and one phosphorus atom and oxygen and hydrogen. When the light exposure is slightly longer, a chain of reaction is set up that leads to the formation of sugars and other compounds essential to plant life. Second, the plants produced triose phosphates, with three carbon atoms, then fructose phosphates with six carbon atoms.

When photosynthesis has proceeded only two minutes, numerous amino acids needed for protein building and even proteins and fats are produced.

Experiments with radioactively tagged phosphorus are also yielding valuable information about plants. Scientists are learning how conventional fertilizers can be used more efficiently and economically. With radioactive isotopes, nutrients can be traced through the soil, into roots and through plants and to measure the speed of such movement as well.

The U. S. Department of Agriculture at Beltsville, Md., operates a central mixing plant for incorporating tracer isotopes in ordinary fertilizers. On the cover of this week's SCIENCE NEWS LETTER is S. B. Hendricks, shown weighing radioactive phosphate from the atomic pile at Oak Ridge to be compounded into a fertilizer.

American farmers spend 750 million dollars a year for commercial fertilizers. Until recent years, the effects of fertilizers could be told only by comparing measurements of the growth, bulk and yield of fertilized crops. It is believed that research with isotopes has gained more new knowledge of phosphate fertilizers in the last four years than had been gained in many years of other studies, the AEC reports. The U. S. Department of Agriculture, the various state experiment stations and the AEC cooperate in the fertilizer research program.

Science News Letter, February 9, 1952

Winter sprays which destroy large numbers of insect eggs are proving good insurance against insect injury the next season.