

METEOROLOGY

Next Month's Weather

Meteorologists now predict the weather 30 days in advance. Weather data from all parts of the world aid the analysis of hemispheric movements of wind currents.

By WADSWORTH LIKELY

► IN man's never-ending war with the weather, he has always wanted to know what next month's or next season's weather will be.

In times past, men looked for signs in the clouds or even depended on their aching corns. For long-range forecasts of a coming winter, Indians examined the barks of trees.

Only recently has the weatherman been able to say with some assurance what the elements might have in store at some period in the future.

Monthly Predictions

The United States Weather Bureau is now publishing bulletins which predict what the weather will be like for a month in advance.

For instance, in mid-January, the Extended Forecast Section of the Weather Bureau said that, until mid-February, temperatures would be near normal east of the Appalachians, in the southeast and in central California. They were supposed to be below normal in a semi-circular arc running from the Great Lakes down through the midwest and out toward the California-Oregon border, and much below normal in North Dakota, Montana, Idaho and Washington.

However, Jerome Namias, chief long-range forecaster, warns that the temperatures in one particular city are no indication of the accuracy of his long-range predictions. He is talking about whether it will be warm or cool, whether it will rain or be dry, over a large region.

Good Results Claimed

He claims, and the results back him up, that his section's monthly forecasts are consistently better than purely statistical forecasts.

If you want to see the Weather Bureau's considered opinion of what the weather will be like a month in advance, you can subscribe to its "Average Monthly Weather Résumé and Outlook" for \$4.80 per year. The monthly bulletin is not yet generally published because, the Weather Bureau feels, it still is subject to misinterpretation by the layman.

Extended weather forecasts are still relatively new. The monthly bulletins have only been published since July, 1948, and the Weather Bureau has been experiment-

ing on long-range predicting only since 1942.

Useful to Industry

Now, Mr. Namias feels, the monthly extended forecasts, if properly used and when their limitations are realized, can be of great use to industry, agriculture, hydrologists, coal dealers and the like.

Ability to predict the weather a month ahead of time with any reasonable expectation of being right required what amounted to a revolution in the science of meteorology. The revolution began in 1936 at the Massachusetts Institute of Technology.

There, the Swedish meteorologist, Dr. Carl Gustav Rossby, working with Weather Bureau and Agriculture Department experts, launched a theoretical study of weather based on new concepts of why it gets hot and cold, why it rains and snows.

Before Dr. Rossby, weather men had amassed vast amounts of statistics. They had an idea that weather in one place was related to weather in another place and they spent years trying to connect up temperatures in Minneapolis, say, with temperatures in New York. This vast and painstaking effort produced very little.

It was Dr. Rossby's idea that to know what the weather would be in one place, you had to know what the whole weather picture all over the northern hemisphere, and even the world, had been for the past few months. And you had to look at it as one complete picture, not as bits of isolated temperature and precipitation statistics.

It was already known that the wind current moves from west to east in the northern hemisphere. However, the speed with which it moves varies from very slow to 200 miles an hour. And this vast river of weather has a north to south movement as well—long waves covering hundreds of miles.

This current, its speed and its latitudinal movements, are nature's tool for siphoning off heat from the equator and cold from the poles. And in the process, we get our weather.

Analyze Current

Dr. Rossby believed that if meteorologists could analyze the vast, hemispheric movements of this current, if they could detect trends in those movements, they might be able to predict the weather far in advance.

Mr. Namias was one of Dr. Rossby's

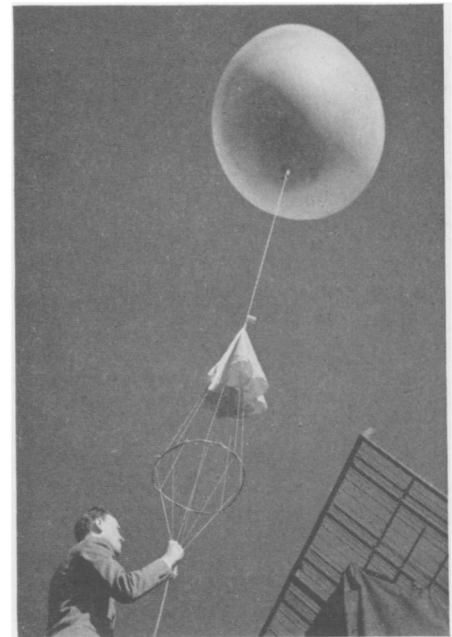
students at M.I.T. Now he heads the Bureau's Extended Forecast Section, and, monthly, he is proving that his teacher was right.

To get the vast picture which Dr. Rossby said was needed, Mr. Namias needs weather data from all over the northern hemisphere. Several times a day, the Bureau receives from weather stations in Europe, in Soviet Russia and Siberia, reports of temperature and precipitation and reports of how the weather is up to 30,000 feet above the earth. United Nations politicians might well take a leaf from the international weatherman's book.

High Altitudes

Mr. Namias doesn't particularly like observations taken much below 10,000 feet. Near the earth, there are too many local variations. By sending up balloons and planes the weathermen are able to get the broad sweep of the wind current which they need to make their predictions.

Mr. Namias emphasizes that there is still a long way to go in meteorology. Why does this current sweep around the earth from west to east? What do sunspots and other changes in the sun have to do with the weather? Some scientists say that all weather is a product of the sun and to



BALLOONS ALOFT—All over the northern hemisphere balloons such as above are being sent aloft—as high as 30,000 feet—to gather data from which weathermen make their long range forecasts.



CHARTED CURRENTS—Jerome Namias, Chief of the Extended Forecast Section, United States Weather Bureau (left), looks over a chart of the northern hemisphere upon which the path and speed of the great weather currents have been indicated. Weather forecasts a month in advance are made from these charts.

predict the weather accurately, you have to predict what the sun is going to do.

Now, in many centers of learning throughout the world, men are trying to find out, not whether it is going to rain tomorrow, but whether it is going to rain on this day next year.

Science News Letter, February 18, 1950

ZOOLOGY

Gray Whales in Pacific Are Increasing

► THE Pacific gray whales are on the increase again. As many as 30 a day have been seen in the coastal shallows as they head for their winter mating grounds.

Dr. Carl L. Hubbs, marine biologist at the Scripps Institution of Oceanography, La Jolla, Calif., has been observing the whale's comings and goings for several years. He reports that the whales are coming back in larger numbers now that they are protected by an international whaling agreement. At one time they seemed headed for extinction.

The Pacific gray whale spends the summer in the Bering sea and then migrates to the waters off the coast of lower California where it remains till March.

Science News Letter, February 18, 1950

AGRICULTURE

Herbicide Kills Weeds, Allows Cotton to Grow

► A WEED killer that kills off the competition but allows the cotton to flourish has shown great promise in tests made at

the University of California College of Agriculture in Davis, Calif.

The herbicide that shows this commercially valuable ability to select between desirable and undesirable plants is called maleic hydrazide. It is a growth-regulating compound.

Drs. H. B. Currier and A. S. Crafts of the botany division found that maleic hydrazide has a rapid lethal effect on barley, which is a grass, but has no noticeable effect on cotton plants. Immediately after spraying, barley stops growing, leaves turn dark green and die, and in about six weeks the entire plant is dead. Cotton plants sprayed with the compound, on the other hand, continue to grow and to flower at exactly the same rate as unsprayed plants.

The two botanists have found that the age of the sprayed plants makes a difference. Even cotton, if it is sprayed too young, will be affected.

This fact is helpful in control of weeds, because if the cotton is allowed to develop,

the weed killer can be sprayed as soon as the weed grasses start to appear. Experiments with water grass and Johnson grass have been successful, the young grass shoots being killed off by the spray.

A more thorough testing of the chemical is being planned. Of particular interest to the investigators is the chemical's selectivity. This is a valuable and useful property in agricultural practice.

Drs. Currier and Crafts announced their preliminary findings in the journal, *SCIENCE* (Feb. 10).

Science News Letter, February 18, 1950

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READ

GIANT BRAINS

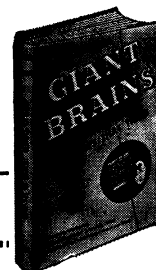
or Machines That Think

By EDMUND C. BERKELEY

Giant Brains tells how a machine will and will not think . . . gives an introduction to punch card machinery . . . describes the first three big "digital" calculators . . . lists some problems we can expect machines to solve . . . and suggests how we may hope to guide the robot machine.

"*Giant Brains* presents exciting achievements and possibilities. The book as a whole is easy to read. It should make an ideal companion volume to Norbert Wiener's much discussed *Cybernetics*."
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