

METEOROLOGY

Computers Predict Rain

Electronic computer has been used experimentally to make quantitative prediction of precipitation. Temperatures, pressures and winds now being forecast by machine.

► ELECTRONIC COMPUTERS can predict in advance of storms how much rain or snow will fall, Dr. Joseph Smagorinsky of the U. S. Weather Bureau in Washington disclosed at the American Meteorological Society meeting in Miami Beach, Fla.

This is the first time precipitation forecasts have been made quantitatively and the first time they have been made by computers, Dr. Smagorinsky said. Previously, weathermen's predictions of amounts of rain or snow have been pretty much educated guesses.

Forecasting precipitation by computer has worked well so far only for large areas, such as two or three counties. The formulas are not yet accurate enough to allow predictions pinpointing snow or rainfall for a particular section of a city.

Also, Dr. Smagorinsky said, it takes about twice as much time on the computer to forecast precipitation as it does to forecast temperatures, pressures and winds, which is now being done experimentally.

Daily predictions of temperatures, wind flow and pressure patterns by computer will be made next year by the Joint Numerical Weather Prediction Unit, operated by the Weather Bureau, the Navy and the Air Force. Delivery of the computer is expected about February, and the unit's members are now planning programs for it.

OPERATIONS RESEARCH

Bet the Horses and Win

► A SCIENTIFIC way to bet the horses and win—"in the long run"—was disclosed at the meeting of the Operations Research Society of America in Washington.

Based on data in the daily racing forms, the method, developed by Herbert Ruderfer of the Celanese Corporation of America, can help you determine the probability that a nag will come through. He has charts that tell how much to bet and where to put your money so that you have the best chance of winning.

One large factor in determining the worth of a horse is missing in racing forms, thus decreasing the accuracy of the system, he said. This is the large variation in the speed of tracks all over the country.

Some tracks in New York, for instance are as much as 2.5 seconds slower than the fastest in the country, and even this variation changes from day to day. He suggested that daily information on the "drag" of each track should be published.

The regular racing fan who "figures the

Dr. George O. Collins Jr., also of the Weather Bureau and a member of the numerical prediction unit, worked with Dr. Smagorinsky on the precipitation prediction problem. They expect to improve the accuracy of their forecasts after gaining more experience with the machine.

Their predictions were made for rain from the great storms of Nov. 5, 1950, and Nov. 24, 1953, using only data available before the event. The forecast made by the computer according to their formulas and the actual amount of rain recorded compared "closely," Dr. Smagorinsky said.

In making their predictions, the two scientists neglected moisture sources, evaporation and possible lack of condensation nuclei. They did take into account humidity readings and large geographical features.

Although now precipitation predictions are run on the computer as a separate step, Dr. Smagorinsky expects to be able to work out formulas for telling the machine how to do such forecasts at the same time that temperatures, winds and pressures are predicted.

For precipitation forecasts, the computer predicts the vertical velocity distribution every three hours. Weathermen find predicting precipitation considerably more difficult than temperatures or winds.

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odds" in his mind, mostly by "intuition," could improve his take by applying the new system, which substitutes mathematics for hunches.

Mr. Ruderfer repeated the old saw that "there is no such thing as a sure thing," but a person who applies his organized betting procedure is almost sure to come out ahead in the long run.

Once a fan determines the probability of winning for each horse, he can tell by consulting the charts which horse is the best bet.

Here are some rules Mr. Ruderfer has formulated:

1. When you bet a long shot, and it is truly a long shot, bet small.

2. Sometimes it is advisable to bet on more than one horse in a race.

Mr. Ruderfer, a betting man himself, always brings a little black book of charts with him to the track.

And he is ahead, he says—so far.

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• RADIO

Saturday, Dec. 11, 1954, 5:00-5:15 p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Conrado F. Asenjo, head of the Department of Biochemistry and Nutrition at the University of Puerto Rico's School of Medicine, will discuss "New Source of Vitamin C."

METEOROLOGY

Weather Aids Forecasts Of Citrus Insect Attacks

► HOW THE weather during one month enables Florida entomologists to forecast citrus insect attacks four months away was described by Dr. Robert M. Pratt, entomologist and pathologist of the University of Florida, at the meeting of the American Meteorological Society in Miami Beach, Fla.

He reported that weather conditions affect the life span and mortality of the insects directly, and also indirectly, through control of the natural enemies of the injurious pests.

Coupling what is known of the annual population cycles of a given insect with how the weather affects future generations has made possible weekly forecasts of what the citrus growers can expect.

During the last fiscal year, the forecasts based on this method of prediction were 83% correct, Dr. Pratt stated.

A cold December, for example, will allow the insect experts to predict an abundance of the six-spotted mite during the succeeding months through May, because it has been found that the temperature in December is directly related to the six-spotted mite population for the next four months.

Similarly, rainfall is a factor in predicting whether heavy or light infestations are to be faced by citrus groves from the citrus red mite. The more rainfall, the fewer are the mites, and the less rainfall, the more mites.

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TECHNOLOGY

Rubber Hose Used To Move Ores

► A HOSE that outwears steel pipe in transporting ten-pound chunks of coal or ore has been designed by B. F. Goodrich engineers. The tubing is lined with abrasion-resisting rubber.

Lumps of ore up to eight inches long are flushed through the hose by a high-pressure stream of water from the mine to the factory and from process to process.

The hose has proved especially useful as a substitute for pipe bends. Abrasive particles cause severe wear at turns in conventional piping systems. Unlike the pipe, the rubber hose can be rotated to distribute the wear at these points.

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