

METEOROLOGY

Five-Day Forecasts Launched By U. S. Weather Bureau

Issued Twice Each Week, They Will Enable People
To Plan Ahead for Business, Farming, Pleasure

YOUR daily newspaper, and perhaps your breakfast-time radio, are now bringing you U. S. Weather Bureau announcements that go something like this:

"Temperature markedly below normal at beginning of period, recovering to near normal by end, possibly to above normal in western part of district. Rain-fall slight in northern sections, but rain indicated at start of period in western portion. Subnormal totals indicated throughout district."

In such prosaic and unexciting language is the newest science-born revolution proclaimed to the world; for this is a sample five-day forecast, such as have just begun to be made twice a week from the ten cities that are designated as district headquarters by the Weather Bureau.

Many Benefits Foreseen

Thousandfold benefits can readily be seen as resulting from a five-day look ahead at what the weather's going to be. If you read a forecast like that on a Wednesday, you can guess that Jimmy, the office boy, will be wanting to go to his grandmother's funeral again on Friday afternoon, when there's a double-header. And you can plan to shoot a little golf on Saturday, yourself. And your wife will phone the cleaners to be sure to get your light suit back in time to wear on Sunday—it's going to be warmer.

Or if you are a farmer, you can decide to haul that load of hogs to town today, when it's cool and may possibly rain, and wait a couple of days to start plowing the south forty, after the rain is over.

Or if you are a general, you'll know that you can go ahead and blitzkrieg all you like—there isn't going to be enough rain to bog down your tanks and artillery and to make bad flying for your bombers and observation planes.

There are thousands of uses, in war and peace, work and play, for these new weather forecasts.

Twice weekly these longer-range looks ahead are sent out by the U. S. Weather

Bureau. The data on which they are based are assembled and interpreted on Tuesdays and Fridays. The Tuesday forecasts cover the period Wednesday-Saturday, the ones on Friday overlap them a day on each end, covering Saturday-Wednesday.

Basic Work in Boston

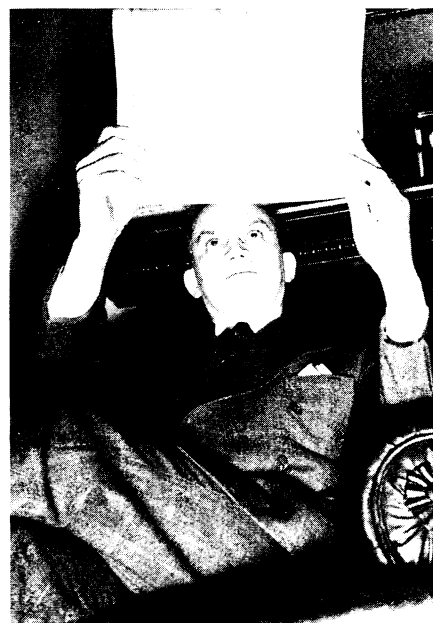
The work is all done at one central station; not in Washington, but in Boston. This is partly because the pioneer investigation leading to the new method was carried on largely at Massachusetts Institute of Technology under the direction of Dr. C. G. Rossby, who was on the Institute faculty before he became assistant chief of the U. S. Weather Bureau, in charge of research.

Boston is one of the district cities of the Weather Bureau, serving the New England area. Others are Washington, D. C., Jacksonville, Chicago, Kansas City, Denver, Salt Lake City, Southern California and San Francisco. For each district a separate forecast is made up and sent on from Boston by wire.

Two telegrams are sent to each district on the forecast days. The first, at not later than 11 a.m., consists of a long series of figures, meaningless to all but the weathermen themselves. This numerical code consists of the basic data gathered out of the air at many observation stations and reduced to terms of air pressure, temperature, etc., for spotting out on a map and connecting with the curving lines that have become so familiar.

The second telegram, filed before 2 p.m., is in plain English and resembles the one quoted at the beginning of this article. It is the interpretation derived from the scientific data by the meteorologists in Boston, and is sent to the forecast headquarters of each district.

The district forecasters will not necessarily issue this second message exactly as they receive it. It is intended for their guidance rather than for mere copying and re-transmission. Local conditions and last-minute developments may make modifications or omissions desirable. These the district man will make at his



A LOOK AHEAD

Commander F. W. Reichelderfer, chief of the U. S. Weather Bureau, leans back to take a good look at one of the maps on which the new five-day forecasts are based.

own discretion. Then the five-day forecast goes in final form to the newspapers and radio stations.

Instructions to the weather men handling the new forecasts call for proper caution in making statements. If there isn't better than a fifty-fifty chance that the forecast will pan out, the forecast is not to be made. If the chances of accuracy are between just an even break and three-to-one, the forecast is to be hedged with the word "indicated." Only when prospects look better than three-to-one is an unqualified prediction to be offered.

Science News Letter, September 7, 1940

PHYSIOLOGY

Very Essence of Life Is Absence of Repose

DO YOU seek rest? Look not among the living, is the admonition of Dr. R. W. Gerard, University of Chicago physiologist, in a new book *Unresting Cells*. The very essence of life, from simplest to most complex, is absence of repose, he points out.

Unresting motion is the mark of living protoplasm, whether in ameba or in man. When motion stops, it is safe to say that the organism (whether ameba or man) is dead. Life takes in the non-living, as food, water, oxygen;

and immediately imparts to the molecules its own unresting properties, rolling them into rings, tying them in strings, turning them for a time to its own ends. When it spews them forth again motionless, they are no longer a part of life.

In the end, Dr. Gerard draws a moral

for human society itself. Living systems, he says, constantly prevail against the second law of thermodynamics, which decrees that all things shall run down and become heterogenous, disorganized. In like manner, despite anarchic tendencies in some groups, human society will nevertheless survive and improve.

Science News Letter, September 7, 1940

PSYCHOLOGY

Predict Hitler's Downfall When Sacrifices Seem Vain

Any Break in Series of Successes Will Weaken Faith of People and Their Acceptance of Deprivation

WIN OR LOSE, Hitler and his cohorts are headed for downfall, Dr. Edward C. Tolman of the University of California predicted in his address as president of the Society for the Psychological Study of Social Issues.

Internal collapse will come in Germany, Dr. Tolman believes, when Hitler's armies fail to march on to new successes. This will be true whether those who oppose Hitler finally remain unconquered or whether they do succumb. Either way fresh victories must cease.

Demands Too Great

Collapse will come because the private in the ranks will not continue to sacrifice most of his primary animal needs, for adequate food, drink, sex, and family life unless he is continually rewarded by the satisfaction of ever renewed success of the Germany of which he feels himself to be an important part.

Hitlerism and Fascism will be defeated, Dr. Tolman said, not by an industrial revolution, but by a psychological revolution—by a new "religion" to take the place of the Nazi religion of nationalism.

A second reason for the downfall of Hitlerism, he sees in the fact that the elite do not practise what they preach to the masses. They do not suffer the same privations that they impose, and do not practise quite the same intensity of subordination to the group that they urge on the common people.

"Perhaps the original leaders—the Hitlers and the Mussolinis—do and can work permanently for the success of the group," he said. "The Hitlers and the

Mussolinis are, however, peculiar. They are driven by childhood and adolescent inferiorities. They can compensate only by the successes of the groups with which they have identified. But the second generation of leaders, who are now being trained, will not be so driven. They will not have started from nothing. They will have been early adopted into the elite."

In the new world order foreseen by Dr. Tolman all the grades of human wants would receive reasonable satisfaction, from the primary needs for food, shelter and sex to those broader desires for the welfare of all humanity.

The first set of needs could even now all be satisfied because of modern technology, he said. The difficulty has been one of distribution. This difficulty will be removed, he predicts, when leaders shift their emphasis from attaining them.

Better Ideals Needed

"If we can but imbue our children, not with the goal of getting rich, but with that of being rational and internally and externally cooperative human beings, the problem of the distribution of material goods will no longer be a problem but a straightforward task upon which leaders and led will naturally cooperate."

The second type of human desire—for success and prestige—can also be satisfied. Through guidance clinics and other psychological measures, it has been made possible to assure even for the feeble-minded the pleasure of doing some task well. When our attitudes toward success change, prestige will come to each not from being better than all

others, but in being the very best that he himself can be.

But man has a third type of needs, which has been played upon by the dictators—the real need for sacrifice, for submerging himself for the sake of the glory of his group or his leader.

Christianity has provided man with the satisfaction of these "superego" needs, but realization of sacrifice in Christian practise has too often meant a neglect of the more primary needs of man, or a promise of their satisfaction only in some future world, Dr. Tolman feels.

None of the needs of man may be ignored in the psychological Utopia of the future.

Men will be given an opportunity for sacrifice and devotion to higher ideals in all sorts of vocational groups and place-groups in which the individual can immerse himself. These larger groups must not stop at a nation, a class, a race, but with the whole of humanity.

To Face Real Foes

"We must not preach Americans against Germans," Dr. Tolman declared, "against Europeans, against Asiatics, against Africans, but all humanity against nature, against disease and misery and ignorance—against battle, murder and sudden death. Our violent aggressions—our wars—will then occur not between one group and another but between the whole of humanity and hostile nature."

How is such a Utopia ever to be attained?

Dr. Tolman has but one answer—education.

"By education," he explained, "I mean what goes on in the nursery school and in the home, in secondary schools and in colleges, in trades unions and in chambers of commerce, in CCC camps and in universal military training camps (if we get them), in the churches and in the market place, in pressure groups and in Congress. In all these institutions we must have everlasting teaching and propaganda always in the direction of the harmonious balancing in all classes of human satisfactions."

"Our present society is going under. The myth of Economic Man has disappeared or is just disappearing. The myth of Heroic Man (dictatorship) has come. But it also is going to disappear. And we here in America have perhaps still time to combat this myth of Heroic Man, not through adopting it ourselves—that will be our ever constant danger—but only, if (now that technology has