form of the simple but exact equation

$$1/A = (1 + F/n)^n, \qquad (2)$$

where n is $= \phi_2/\phi_1$. Thus the odds against a 7-day periodicity as great as that indicated in the table being the result of chance from a population characterized by the variance $V(E)$ are 2,000,000 to 1, i.e., $1/A = (1 + 30.1/11)^{11}$. The F value corresponding to the rows, $F(R) = 5.4$ gives $1/A = 17$ for $\phi_1 = 3$ and $\phi_E = 22$.

The value of SS(C) corresponding to the seven columns amounts to 926 with $\phi = 6$, while for the two degrees of freedom of the 7-day variance, we have SS(7) = 896 which leaves only 30 for the remaining four degrees of freedom or a residual variance of 7.5. Thus, within the columns the F-ratio for the 7-day periodicity is 60 which corresponds to $1/A = 961$. This proves that the 7-day period is very significant but its harmonics of ½ and ⅓ week are negligible.

During this same 28 day period in April, 1950, Lt. W. E. Hubert has found that the periodic correlation coefficients for temperatures at the 850-mb level in excess of CC(28) = 0.5 occurred at Omaha, 0.75; Columbia, Mo., 0.73; Oklahoma City, 0.68; Buffalo, 0.67; St. Cloud, Minn., 0.65; Nashville, Tenn., 0.57; Washington, D. C., 0.52; and Charleston, S. C., 0.50, representative of an area of 1,300,000 square miles. The average F for these nine stations was 16.5 and the average $1/A$ was 10^4. Similar calculations for these stations during a 28 day period from April 3 to April 30, 1949 gave averages $F = 1.2$ and $1/A = 2.7$ as compared to $1/A = 2$ for pure chance.

The steps for evaluating results of periodic seedings should be:

1. Do the selected weather elements show a significant 7-day periodicity measured by F and $1/A$?

2. Determine the corresponding values of F and $1/A$ for similar periods and stations for previous years.

3. By comparing the results of *1* and *2*, are the F-ratios in 1950 so large compared to prior years that it is no longer permissible to brush aside discussion by mere assertions that it cannot be proved that the weather would not have occurred anyway from natural causes?

4. After the statistical proof of the significance of the 7-day periodicities, then and only then is it profitable to discuss the mechanism underlying the periodicities. Perhaps by that time the hypothesis that silver iodide has something to do with it may be seriously entertained even by reputable meteorologists.

CORRESPONDENCE

Addendum to "Upper Atmospheric Nomenclature"

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The following supplement to my article in the October 1950 issue of this BULLETIN should be inserted at the end of the second paragraph on page 289:

Throughout the lower atmosphere, and up to at least 60 km. height, turbulence suffices to mix the permanent constituents effectively, overcoming the diffusive tendency for each to distribute itself independently of the others, according to its molecular weight. (Thermal diffusion also plays a small part, tending to increase the relative concentration of the lighter constituents in the hotter strata.) It is suggested that this whole region be called the *turbosphere*.

The diffusive tendency becomes increasingly effective at greater heights, and it may be (but it is not certain) that at some level diffusion becomes dominant over the turbulent mixing. The name *turbopause* is suggested for this level. From the turbopause upwards, the composition will change materially owing to diffusion (as distinct from photochemical dissociations by sunlight); if the turbopause is not far above 60 km., it may itself be the homopause. If, however, the turbopause is much above 100 km., the level of the homopause will be determined by photodissociation of the oxygen. In that case, it will still be of interest to determine whether, and, if so, at what level, there is a turbopause.

The presence of the ozone layer in the turbosphere shows that photochemical processes may be rapid enough to overcome the mixing tendency even where it is strong: and the same fact is illustrated at higher levels by the atomic oxygen region and by the ionospheric layer.

Pasadena, 17 Nov. 1950.