

thus materially increase the accuracy of weather forecasting. The inaccuracy, as well as the inadequacy, of so-called sea level pressure charts was clearly recognized. Dr. Meisinger chose this big problem as his thesis for the Ph.D. degree. After an exhaustive examination of all available free-air data in this country he found that a close relation exists between the surface wind direction and the mean temperature of the air column up to 2 or 3 kilometers above the station, and he used this relation as the basis of a method for free-air pressure reduction which is described in detail in the *Monthly Weather Review*, Supplement 21. "It is a great piece of work and marks an epoch in the history of hypsometry."

Prof. Marvin paid eloquent tribute to Meisinger the man. "We all loved him, for he was a lovable man." The loss to meteorology is excessive, and the personal loss cannot be expressed.

DR. W. J. HUMPHREYS recalled the profound hush that settled over the Weather Bureau in Washington, when the news of Meisinger's death was first received—eloquent testimony to the high personal regard in which he was held by all of his associates. "He was full of human sympathy and his presence enlivened every assemblage." He excelled as a pianist, and had composed several pieces of merit. Reference was made to the pleasant "teacher and student relations" while Dr. Meisinger was taking advanced work in "Physics of the Air."

In his scientific work he was extremely industrious and resourceful. He sought every bit of information on his specialty, thus piling up for himself a tremendous amount of tedious computation. Many very great difficulties were encountered and many perplexities arose as the work developed. The method must be made serviceable and this required the compilation of lengthy tables. Undaunted, he overcame every obstacle and completed what is undoubtedly a valuable contribution to science—one of real promise to the perplexing problems of weather forecasting. Unlike many students who turn from the subjects of their theses to other questions, Dr. Meisinger continued his investigations along the same line and was in fact engaged in securing additional data for them in the series of balloon flights which ended in his death.

As a part of the Meisinger Memorial Meeting, Mr. W. R. Gregg discussed some outstanding aerological problems.

Some Outstanding Aerological Problems

By W. R. Gregg

(This paper will be published in full in the *Monthly Weather Review*. A brief abstract follows.)

Nine problems are presented, as follows:

1. The diurnal variation of meteorological elements at different heights.
2. Winds and weather along airways.
3. The free air in thunderstorms.
4. Clouds.
5. The free air in the tropics.
6. The free air in the polar regions.

7. The stratosphere.
8. The free air in cyclones and anticyclones.
9. Application of free-air data to forecasting.

Each problem is briefly discussed as to (a) what has already been done, and (b) the data now available for further studies. It is concluded that problems numbered 1 to 4, 8 and 9 can be taken up at once, data being sufficiently for valuable and quite complete discussions. No. 9 is considered most important because of the practical bearing of researches along this line.

Additional data are required before much can be done with problems numbered 5 to 7, although preliminary discussions of No. 5 would be well worth while and would form the groundwork for later investigations when more data have been secured. For No. 6 there is as yet practically no observational material. No. 7 has been very thoroughly discussed, and it is thought that further studies will add little to our knowledge of the subject until they can be based upon more complete and better distributed observations.

The problems presented are recommended to graduate students and others who aspire to compete for grants from the Meisinger Aerological Research Fund.

Discussion—MR. J. PATTERSON commented on the great difficulty of securing free-air data in the polar regions, but was glad to announce that stations are shortly to be opened in northern Canada at which observations would be made with pilot balloons. Referring to Mr. Gregg's statement that the Weather Bureau hopes to make a series of sounding balloon ascensions at 3 or 4 points in a north-south line from North Dakota to Texas, he (Mr. Patterson) felt sure he could promise that the Canadian Service would be able to extend that line northward very nearly to the Arctic Circle.

DR. W. J. HUMPHREYS remarked that a few sounding balloon observations have been made by Dr. G. C. Simpson in Antarctica.

MR. GREGG, in reply, was glad to learn that the Canadian Service would probably be able to make sounding balloon observations simultaneously with those made in the United States. Such a series, especially if it extended for a great distance along a meridian, would yield data of very great value. As to the soundings by Dr. Simpson, these gave interesting results, but were few in number, and unfortunately none of these reached the stratosphere.

The Meisinger Aerological Research Fund

DR. C. F. BROOKS outlined briefly the purpose of this Fund and reported the progress thus far made in raising it. Hardly less keen than the sense of personal loss, when news of Meisinger's death first reached him, was the feeling of regret that his work, so brilliantly begun, would never be completed. The question at once arose, "What can we do, that this work may be continued by others?" After thinking over various means, he concluded that an endowment fund for the award of prizes, scholarships, etc., offered the most promising possibilities. Accordingly