

to be urged on behalf of so confusing a practice. When a man has a new genus to describe it should be his first duty to take care that he does not apply to it a name that has been proposed before, and it is not generally difficult to find this out. Of course the punishment ultimately falls on the offender's own head, for in these days somebody is sure to discover the blunder, and generally before long, but meanwhile the inconvenience may be and often is not inconsiderable.

In conclusion, we have but to wish the Zoological Record Association an increasing sale for their useful annual, and to express our thanks to Mr. Rye and his assistants.

ARCTIC METEOROLOGY

Scientific Results of the United States Arctic Expedition Steamer "Polaris," C. F. Hall commanding. Vol. I. Physical Observations. By Emil Bessels, Chief of the Scientific Department, U.S. Arctic Expedition.

THE United States Government has, with its accustomed liberality to science, published in a bulky volume of about 1,000 pages, under the auspices of the National Academy of Sciences, the results of the various observations of meteorology, astronomy, and magnetism, made by the scientific staff of the *Polaris* during the expedition to the Arctic regions in 1871-73. In the present notice we shall refer only to the barometric observations, and the discussion of them, which occupy altogether forty-three pages of the volume before us.

The barometric observations were made hourly at Polaris Bay, 81° 36' lat. N., 62° 15' long. W., from November, 1871, to August, 1872, and at Polaris House from November, 1872, to May, 1873, and they are published *in extenso* in this volume. These observations we have examined, and it is evident that they have been made with great care, and that, taken as a whole, they form one of the most valuable repositories of facts which we possess illustrative of the meteorology of the Arctic regions. The errors which do occur are of that class which may be regarded as "inevitable" in such a record of observations, viz., typographical errors, transposed or changed figures, and personal errors of observation which are well known to meteorologists, and admit of easy detection and correction.

On turning to the table of the mean hourly values for the different months (p. 18) calculated from the data just mentioned, we are at once struck with the extraordinary character of the hourly curves as disclosed by these figures, inasmuch as they show a repeated abruptness of change and a capriciousness of form which certainly could not be accepted unless on the clearest proof that they represent well-ascertained facts.

In examining the mean hourly values for December, 1871, the first month for which complete observations were made, it is seen that the calculations made from the individual observations are all correct. If we, however, take the trouble to critically examine the observations themselves from hour to hour, it is seen that there occur two uncorrected readings of 29'371 and 29'777 inches, instead of 29'571 and 29'577 inches, and twelve uncorrected readings in which the observers, as occasionally takes place with the best observers, have read the instru-

ment 0'050, 0'100, or 0'150 inch either too high or too low. Correcting, then, these observations, and calculating afresh the hourly values, we obtain the result given in the following table (columns A.), to which are added the hourly values as printed in the volume (columns B.) :—

	A.		B.		A.		B.	
hour.	inches.	inches.	hour.	inches.	inches.	hour.	inches.	inches.
midnt.	29'759	29'759	8 A.M.	29'754	29'749	4 P.M.	29'749	29'749
1 A.M.	'760	'760	9 "	'752	'749	5 "	'750	'748
2 "	'765	'765	10 "	'751	'752	6 "	'750	'750
3 "	'764	'764	11 "	'749	'756	7 "	'750	'750
4 "	'761	'761	noon.	'743	'740	8 "	'745	'744
5 "	'760	'756	1 P.M.	'742	'740	9 "	'738	'743
6 "	'760	'757	2 "	'744	'744	10 "	'735	'735
7 "	'759	'756	3 "	'748	'750	11 "	'734	'734

Thus, from not submitting the observations to a preliminary critical examination before calculating the averages, half of the resulting averages are faulty, and a monthly curve is obtained which completely fails to represent the physical datum for the ascertaining of which this elaborate set of observations were carried on in all the rigours of an arctic winter.

We are the more desirous of urging this matter on the attention of meteorologists, because the same method of hasty and ill-advised discussion of barometrical observations is widely practised; and, it need scarcely be added, results in the publication of generally accepted averages, which more than anything else are seriously obstructive to any real progress in this intricate but vitally important branch of physical inquiry.

The observations for June, 1872, are free from these errors of observation, but notwithstanding this the hourly monthly values which have been deduced from them do not appear to be satisfactory. On calculating, then, the monthly values from the observations of this month, it turns out that only one of the twenty-four means is correct, the other twenty-three being more or less seriously in error. It is to be regretted that the hourly means for the other months of the period also are so much and so frequently in error, those for December, 1872, for instance, giving a curve which in its essential points is the reverse of the correct one, that the whole of the elaborate discussion of the barometric observations made by the scientific staff of the *Polaris* Arctic Expedition must be rejected.

The averages for the different months have been deduced in two ways, viz., from the twenty-four hourly means, and from the thirty or thirty-one daily means of the month. These two sets of averages would of course agree if the calculations were correct. In the printed tables they are made to agree even to the thousandth part of an inch, by simply placing the calculated average of one column under both columns. Thus the monthly average of June, 1872, is, as deduced from the twenty-four printed hourly means 29'888 inches, and as deduced from the thirty printed daily means 29'860 inches, but in the tables 29'888 inches is printed as the mean of both columns. It is thus evident that the reduction of this very important series of barometric observations requires yet to be made—a work which we hope will be yet undertaken, particularly since the summer and the winter means we have computed seem to suggest important connections between these arctic barometric curves and the curves of lower latitudes.