LETTERS TO THE EDITOR.

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The Weather of 1911.

I HAVE received the subjoined letters from Dr. Schmauss at Munich, which may be of interest to your readers. In England in December, 1911, the temperatures up to 8 km. were decidedly below the mean. This is nearly always the case in stormy weather.

In the following table the correlation between the general drift of the atmosphere and the temperature is shown.

N denotes the north component of the drift of the balloon, the positive direction being the north.

E, the drift to the east.

T_0, the surface temperature.

T_4, the temperature at a height of 4 km.

T_8, the temperature at a height of 8 km.

H_c the height of the commencement of the isothermal column.

The observations in England were taken during the four years 1908 to 1911 on some eighty different days. Owing to the practice of the International Commission of nearly always fixing the week for daily ascents in the summer, the preponderance of the observations lies in the summer. Since observations made at neighbouring stations on the same day cannot be considered independent, and since large groups of observations are concentrated into particular weeks, during some of which unusual conditions prevailed, the probable errors are really far larger than the number of observations would indicate.

Correlation Coefficients.

	English. Four years			Continental One year
	Winter	Summer	Combined	
E and T_0 ...	0·18	0·07	0·13	−0·12
E ,, T_4 ...	−0·17	0·12	0·07	−0·28
E ,, T_8 ...	−0·08	0·17	0·16	−0·26
E ,, H_c ...	−0·31	0·08	−0·09	−0·08
N ,, T_0 ...	−0·16	−0·01	0·18	0·26
N ,, T_4 ...	−0·13	−0·16	0·10	0·18
N ,, T_8 ...	−0·17	0·00	0·06	0·21
N ,, H_c ...	−0·26	−0·11	−0·06	0·04
H_c ,, T_0 ...	0·22	0·42	0·43	0·49
H_c ,, T_4 ...	0·60	0·57	0·67	0·75
H_c ,, T_8 ...	0·75	0·72	0·71	0·76
No. of obs.	(46)	(93)	(139)	(80)

It will be seen that the only correlation coefficients large enough to be significant are those showing the connection between the height of the isothermal and the temperatures.

Dr. Shaw's hope, expressed in your issue of December 21, 1911, seems to be fulfilled, for were there any close and systematic connection between the temperatures and the direction of the air currents, or between the latter and the height of the isothermal, it could scarcely fail to appear in the figures. The small values of the coefficients (0·31, with a probable error of 0·1, even if we treat all the observations as independent, is the largest) and the want of agreement between the different groups both lead to the conclusion that there is no connection, or at the best a very slight one.

The connection between the height of the isothermal and the temperature of the air below down to 4 km., and perhaps even to the surface, is very plainly shown, and makes me regret my somewhat rash statement that the surface temperature was more dependent upon the direction of the wind than upon anything else.

The negative value of −0·16 between T_0 and N is certainly curious, and the sign would probably be reversed if there were some hundreds of observations instead of forty-six; but the drift of the balloon is not necessarily the same as the direction of the surface wind, although, as a general rule, especially when the wind is strong, the two agree fairly well. The negative sign indicates that a south wind is colder than a north, and must be taken as a warning not to ascribe any significance to small correlation coefficients.

W. H. DINES.

December 30, 1911.

Kgl. bayer. meteorologische Centralstation, München, den 11 Dezember, 1911.

Es wird Sie im Anschlusse an Ihre Mitteilung in NATURE 88 S. 175 interessieren zu hören, dass unsere September-fahrten über München nahezu die gleichen Verhältnisse aufweisen wie Ihre britischen Aufstiege.

Es war die Temperaturabweichung vom Mittel :—

516	1	2	3	4	5	6	7	8	9	10	11	12	13 km.
+2·9	+4·3	+5·7	+4·4	+4·3	+3·4	+2·3	+2·3	+2·2	+2·4	+1·0	−3·4	−7·4	−6·9

München, den 27 Dezember, 1911.

Auch noch die Dezemberaufstiege haben eine ähnliche Abweichung über München ergeben. Es wurden die Werte der drei Dezemberaufstiege gemittelt und die Abweichungen vom Mittel gebildet.

Es war dieselbe :—

In 1	2	3	4	5	6	7	8	9	10	11 km.
+3·7	+6·3	+5·5	+5·0	+4·0	+4·0	+5·8	+5·7	+3·1	−0·1	−3·3

Der grosse Wärmevorrat der Atmosphäre in diesem Herbste ist darin deutlich ausgesprochen.

A. SCHMAUSS.

SIR EDWARD FRY has asked (NATURE, December 21, 1911, p. 244) whether the unusually warm weather that prevailed in Western Europe last summer extended over the whole earth. It is possible to answer in the negative so far as Egypt is concerned, for the temperature here was below average from June to September. Indeed, on some days London had a higher maximum than Cairo, *e.g.* August 9, Greenwich 100°, Cairo 93°. The result was a retardation of the cotton harvest by some twenty days at the first picking.

As regards the cause of the cooler weather, there is a certain amount of evidence that the amount of solar radiation reaching the lowest stratum of the atmosphere here was less than usual, if any faith is to be placed in the indications of the black-bulb thermometer *in vacuo*. This phenomenon, of course, may be due either to diminished solar activity or to locally increased absorption in the upper strata, or to a combination of both. In any case, Sir Edward Fry's original query brings us face to face with what is probably the ultimate question in meteorology—given unit increase of solar radiation, calculate the effects at the earth's surface. The solution will not be identical for all parts of the earth, and so a small and temporary diminution of radiation may at one place cause increase of temperature, while at another the reverse is the case.

J. I. CRAIG.

Giza, Egypt, December 31, 1911.

English *v.* Continental Microscope Stands.

REFERRING to the interesting article on the merits of English *versus* Continental Microscope Stands in NATURE of December 21, 1911, I notice that whilst reasons are given on both sides for the distinctive peculiarities of the respective models, and a general suggestion is made as to how the present well-recognised types have come about, curiously enough, no reference has been made to what seems to me to be the real origin of the most important differences between the two types—I refer, of course, to the substage arrangements as a whole. Why is it that the English model provides for the exact centring, and frequently for fine adjustment focussing of the substage optical system, whilst the Continental model does not? Why is it that the Continental models, on the other hand, provide rackwork mechanism for moving the iris diaphragm of the condenser out of centre, with means for rotating this whole arrangement—a feature absent in the English model?

These things are clearly the outcome of the different theories which prevailed at one time in England and Germany on the question of microscope illumination. On the Continent, it must be remembered, the general recognition of the utility of substage condensers dates from the time when Abbe worked out his epoch-making theory of