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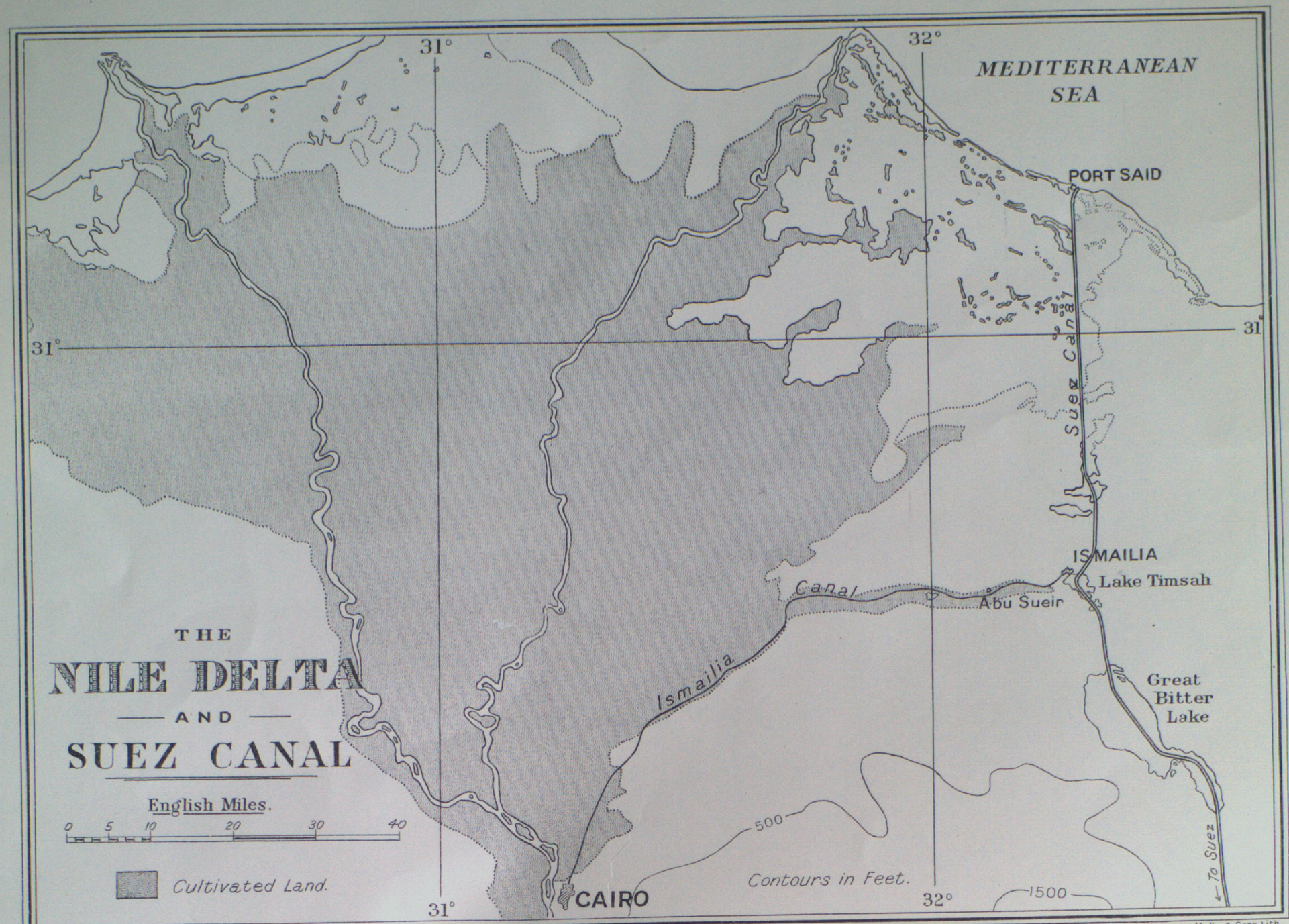

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SOME UPPER-AIR OBSERVATIONS OVER LOWER EGYPT

With special reference to the diurnal variation of temperature and humidity

By S. P. PETERS, B.Sc., A.Inst.P.

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SOME UPPER-AIR OBSERVATIONS OVER LOWER EGYPT WITH SPECIAL REFERENCE TO THE DIURNAL VARIATION OF TEMPERATURE AND HUMIDITY

§ 1—Introductory

The purpose of this *Memoir* is to present the results of a programme of observations of upper-air temperature and humidity over Lower Egypt, made in connection with airship development by special aeroplane ascents carried out by personnel of the Royal Air Force, through the courtesy of the Air Officer Commanding, Royal Air Force, Middle East Area. The observations cover the periods August to October 1925 and March to July 1926. All the ascents and observations during the former period were made by the late Flight-Lieutenant L. H. Browning, M.C., D.F.C., who was then Senior Meteorological Officer, Middle East Area, whilst those in the latter period were made by several different observers.

§ 2—Places and Times of Observation

The aeroplane ascents were made from the Royal Air Force aerodrome at Abu Sueir, but the observations were taken as nearly as possible over Ismailia. Abu Sueir is situated on the Ismailia–Cairo Canal (*Frontispiece*), which runs through a narrow belt of cultivated land from 1 to 3 miles wide; it is about 50 feet above mean sea level. Ismailia is on the shores of Lake Timsah about half-way between Port Said and Suez on the Suez Canal and approximately 8 miles east of Abu Sueir; it is about 30 feet above mean sea level. The surrounding country in the immediate vicinity of Ismailia is desert.

During the months August to October 1925, the ascents took place five times a day on three alternate days a week throughout four weeks within the period commencing Tuesday, August 25, and terminating Saturday, October 17. During the months March to July 1926, the intention had been to obtain ascents on three days a week in alternate weeks, but for various reasons it proved impracticable to adhere rigidly to this arrangement. The actual dates of ascent were as follows:—

1925—August 25, 27, 29; September 8, 10, 12, 29; October 1, 3, 13, 15, 17.

1926—March 1, 3, 5, 12; April 6, 8, 9, 19, 21, 23; May 3, 5, 7, 18, 19; June 9, 10, 11, 21, 22, 25; July 6, 7, 8, 19, 21, 22.

This shows that the ascents in any one week in 1926 prior to the middle of May were usually made on alternate days, whilst subsequently they were, in general, made on consecutive days. There were altogether 39 days on which one or more ascents were made.

The approximate times of commencement of the ascents were 0530, 0700, 1000, 1300 and 1700, " East European (or Cairo) time " (2 hours ahead of G.M.T.), except during March, when ascents were not made at 0530 owing to darkness, and in April, when the first ascent of the day was not commenced until about 0600 or later and the second was postponed until about 0800.

Throughout this *Memoir* Cairo time is adopted.

§ 3—Method of Observation

The aeroplane used for the ascents in 1925 was a Siskin III machine, whilst for those of 1926, a D.H.9a machine was employed.

For recording the air temperature a mercury-in-steel distant-reading thermometer (Negretti and Zambra Mark 1A) was utilised, whilst the wet-bulb

temperature was obtained from an ordinary aeroplane psychrometer. (On September 10 and 12, 1925, both dry and wet-bulb temperatures were obtained from the psychrometer, owing to a breakdown of the distant-reading thermometer, which had to be replaced). The bulb and tube of the distant-reading thermometer were mounted on the port side of the lower plane, the tube being led from the plane up into the cockpit where it connected with the dial of the thermometer. The psychrometer was mounted on a starboard interplane strut.

Pressures were read from a millibar aneroid in the cockpit.

Observations were taken at the following levels :—

(*a*) At the surface from the Stevenson screen, before commencement of ascent, and also in the machine with the propeller revolving.

(*b*) At 1,000 feet altimeter height.

(*c*) At a level where the millibar aneroid read 950 millibars, followed by readings at 50-millibar intervals.

The machine remained about one minute at each level before readings were taken, to allow the thermometers to assume the true air temperature. In four of the five ascents on any given day the flight was not continued above an approximate height of 8,000 feet (750 mb.) ; the remaining ascent (that at about 1000) was made to about 12,000 feet (650 mb.). Observations were taken during descent according to the same plan as on ascent. When inversions of temperature were encountered, special additional readings were taken in order to determine their magnitude and vertical extent, but this arrangement had not come into operation during ascents 1 to 15 (inclusive), i.e., on August 25, 27 and 29, 1925. There is some evidence that some minor inversions have gone unrecorded on account of the difficulty under the conditions of observation of noting all sudden or small changes of temperature.

In addition to noting the readings of the thermometers, the observer also recorded observations of visibility, cloud, height of haze top and bumpiness.

§ 4—Tables of Results

The results obtained are set out in Tables VII–XLIV, there being a separate table for each day's ascents (except March 5). In the upper part of each table are given the observed values of temperature and relative humidity at the various heights, taken on ascent and descent, the surface temperatures entered being readings from the Stevenson screen at Abu Sueir. The heights given are altimeter heights above mean sea level corrected for temperature, and entered to the nearest 10 feet. Values entered in italics represent additional readings taken at an inversion.

In the middle part of each table are given observations of upper wind obtained from single-theodolite, pilot-balloon ascents made at Abu Sueir, during or near to the time of an aeroplane ascent. Wind directions are given as degrees from N. through E. By the side of most of the tables of upper winds are to be found details of the type, amount and height of clouds as observed from the aeroplane ; the heights given are again corrected altimeter heights and are entered to the nearest 100 feet.

At the bottom of each table are to be found the observer's remarks on visibility, bumpiness and general conditions.

In Table I are given values of maximum and minimum surface air temperatures as recorded in the screen at Abu Sueir on days of aeroplane ascents. From a comparison of the values in this table for any particular day, with the highest and lowest surface air temperatures recorded on that day at times of aeroplane ascents, it will be seen that the latter values approach closely to the maximum and minimum temperatures, respectively, so that in nearly every case the ascents thus cover almost the whole diurnal range of surface temperature.

TABLE I—MAXIMUM AND MINIMUM SCREEN TEMPERATURES AT THE SURFACE AT ABU SUEIR ON OCCASIONS OF AEROPLANE ASCENTS.

Dates of ascent	Minimum temperature previous night (2000-0800)	Maximum temperature of day, (0800-2000)	Dates of ascent	Minimum temperature previous night, (2000-0800)	Maximum temperature of day, (0800-2000)
	°F.	°F.		°F.	°F.
1925 Aug. 25	73	103	1926 April 21	60	82
27	69	102	23	53	87
29	72	94	May 3	64	92
Sept. 8	72	97	5	68	100
10	73	95	7	67	110
12	71	100	18	65	98
29	64	93	19	65	102
Oct. 1	68	97	June 9	68	112
3	68	89	10	70	96
13	67	86	11	67	93
15	62	93	21	65	99
17	65	93	22	69	105
1926 March 1	49	70	25	67	91
3	43	67	July 6	68	93
5	65	65	7	68	93
12	48	73	8	68	95
April 6	51	68	19	72	94
8	45	71	21	75	98
9	49	75	22	73	96
19	55	83			

§ 5—DIAGRAMS

The diagrams in Figs. 2, 3, 5–7 give a graphical representation of the temperatures recorded during ascent on each flight. Since the height of Abu Sueir is only 50 feet, on the scale of the diagrams it is almost at mean sea level, so the surface observations are plotted practically on the base line.

The most striking features which are apparent from a cursory inspection of the diagrams are the high frequencies of occurrence of (*a*) morning inversions of temperature and (*b*) lapse-rates approaching, equal to, or even exceeding the dry adiabatic. But before dealing in detail with features revealed by individual ascents, a little space will be devoted to the consideration of mean values of temperature and relative humidity and of lapse-rate and upper wind, and also to extreme values of temperature and lapse-rate.

§ 6—MEAN VALUES OF TEMPERATURE AND RELATIVE HUMIDITY

Owing to the limited number of observations it is undesirable to give means for individual months, and in consequence the months for which data are available have been grouped together in such a way as to permit of the computation of seasonal means, the grouping adopted being :—

(i) April, May as representing spring ;

(ii) June, July, August, September as representing summer ;

(iii) October as representing autumn (the ascent for September 29, 1925 being included here).

March is omitted for the purpose of mean values, partly owing to the fact that no early morning (0500) ascents were made in that month, and also because the days of ascents were confined to the first half of the month, and consequently, may, perhaps, be more appropriate to the winter season than to the spring.

With the above classification the mean values of temperature and relative humidity based on observations during ascent are given in Table II.

TABLE II—MEAN TEMPERATURES IN °F. AND MEAN PERCENTAGE RELATIVE HUMIDITIES, BY SEASONS

(*i*) SPRING

Mean time of commencement of ascent

0555 (11 ascents)			0740 (11 ascents)			1010 (10 ascents)			1310 (10 ascents)			1700 (10 ascents)		
Mean			Mean			Mean			Mean			Mean		
Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %
Surf.	60·1	78	Surf.	68·3	61	Surf.	76·2	45	Surf.	83·8	36	Surf.	80·1	47
1070	66·2	52	1080	68·9	51	1090	70·3	45	1110	76·0	41	1090	74·8	46
1830	67·0	41	1860	67·6	49	1900	66·5	49	1890	71·0	45	1855	71·1	48
3350	63·5	40	3380	63·3	41	3410	62·0	48	3410	63·3	52	3380	65·1	51
4940	57·6	39	4970	57·4	47	5000	56·3	48	5010	57·9	53	4980	58·1	57
6600	52·6	36	6640	52·0	40	6670	51·8	30	6680	51·1	42	6650	50·3	60
8360	45·8	40	8390	46·5	42	8420	45·6	41	8430	46·2	41	8390	45·9	47
						10290	38·5	52						
						12260	30·9	64						

(*ii*) SUMMER

Mean time of commencement of ascent

0535 (19 ascents)			0710 (18 ascents)			1005 (18 ascents)			1305 (17 ascents)			1700 (18 ascents)		
Mean			Mean			Mean			Mean			Mean		
Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %
Surf.	71·5	85	Surf.	75·5	78	Surf.	86·5	50	Surf.	94·3	35	Surf.	93·1	39
1080	73·0	68	1080	73·1	72	1100	78·2	55	1110	86·0	39	1110	85·0	44
1720	72·3	62	1730	71·5	63	1760	74·7	60	1760	81·8	41	1720	81·6	48
3250	72·9	33	3270	72·3	36	3310	72·1	39	3320	73·5	49	3280	75·3	49
4870	69·7	26	4890	69·2	31	4930	68·8	29	4950	68·5	40	4920	68·6	48
6570	63·9	26	6590	64·0	29	6630	64·1	26	6660	64·6	27	6630	64·1	32
8370	57·2	28	8390	58·1	28	8420	57·9	24	8460	58·8	23	8420	58·8	26
						10340	51·9	19						
						12370	44·9	19						

(*iii*) AUTUMN

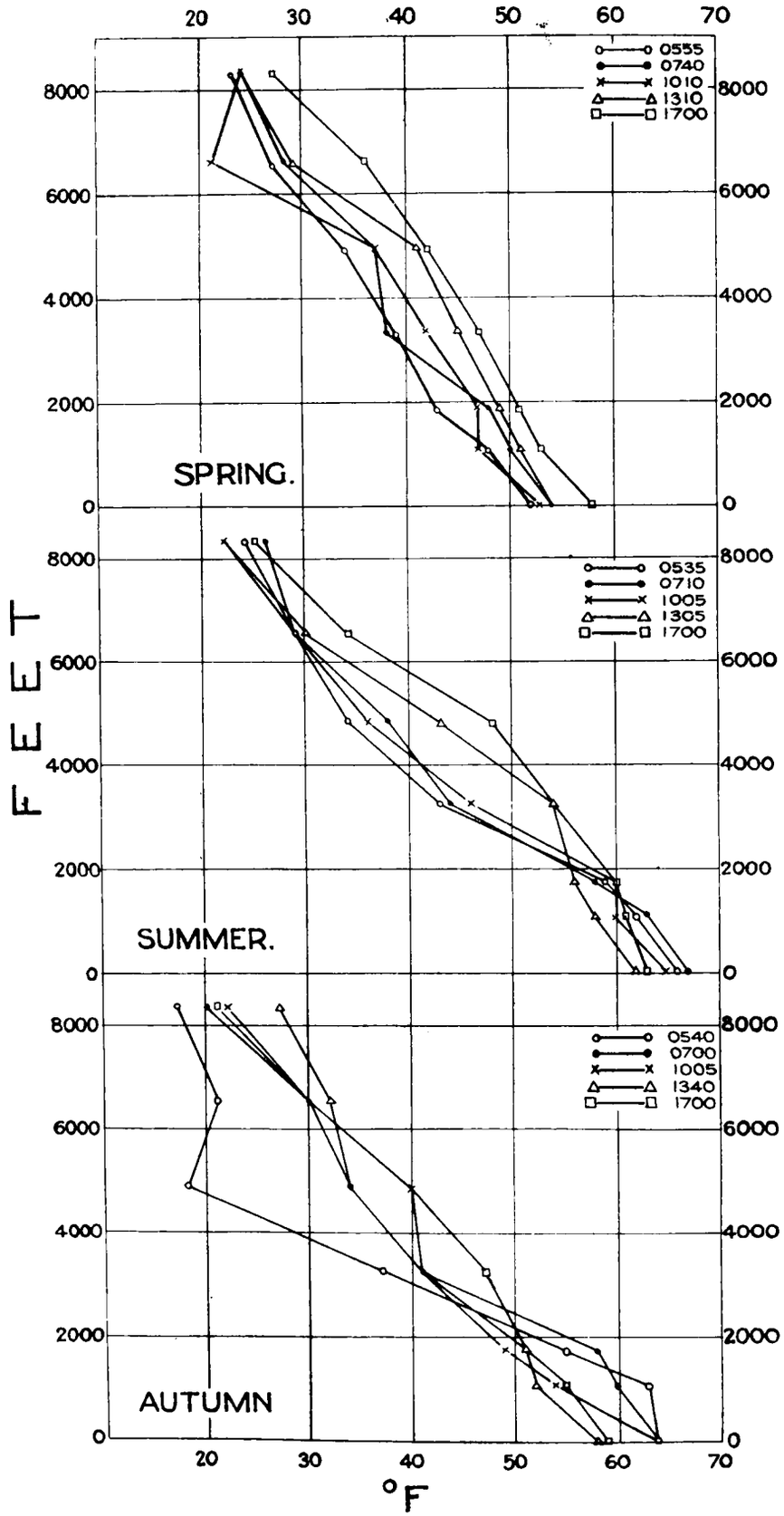
Mean time of commencement of ascent

0540 (2 ascents)			0700 (6 ascents)			1005 (6 ascents)			1340 (6 ascents)			1700 (5 ascents)		
Mean			Mean			Mean			Mean			Mean		
Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %	Height Ft.	Temp. °F.	R.H. %
Surf.	66·5	91	Surf.	68·3	87	Surf.	81·3	56	Surf.	89·0	35	Surf.	88·6	37
1040	69·0	81	1040	71·3	68	1060	75·2	48	1070	80·2	38	1070	82·6	39
1740	66·0	70	1800	69·8	66	1850	73·3	44	1825	77·3	41	1790	79·8	36
3260	66·5	35	3330	70·0	34	3380	70·1	34	3360	72·4	32	3330	73·4	40
4870	65·5	15	4950	65·2	31	5000	64·3	41	5000	67·6	28	4970	66·4	39
6560	60·0	23	6630	58·5	33	6680	58·3	35	6700	60·4	34	6660	60·2	31
8340	52·5	25	8410	51·8	30	8460	50·2	33	8480	53·2	37	8440	52·6	31
						10350	44·0	35						
						12350	37·5	25						

Fig. I.

To face page 7.

DIURNAL VARIATION OF DEW POINT.



The values given in the above table are represented graphically on Fig. 7. From the mean temperature curves for spring (April–May) and summer (June–September) it is evident that above a height of about 3,000 feet the diurnal variation of temperature in those seasons is, on the average, very small. In autumn (October) it would at first appear that an appreciable diurnal variation can be expected up to at least 4,000 feet ; it is important, however, to note that the mean values for this season are based on ascents on six days only and that on four of these days there was no early morning (0530) ascent ; consequently, the resulting curves are less representative of average conditions than are those for the other seasons, and it seems probable that in autumn, as in spring and summer, the diurnal variation of temperature is normally small above 3,000 feet.

The curves of mean relative humidity for April–May indicate that in the early morning there may be fairly high humidity at the surface and a considerable decrease up to 2,000 feet with little change above that height, whilst in the afternoon there are rather low values at the surface with some *increase* up to at least 5,000 feet. In June–September the early ascents again show high surface humidity with a marked decrease extending in this season to 4,000 feet, whilst in the afternoon humidity *increases* from the surface up to about 4,000 feet and falls off above that height. The early morning ascents for October show the same features as for June–September, but in the afternoon there is little variation of mean relative humidity with height. Thus the diurnal variation of relative humidity is normally large near the surface in each of the seasons represented, following that of temperature, but this variation decreases to a minimum, which is about 10 per cent, at a height increasing from about 2,000 feet in spring to 2,500 feet in summer and 3,000 feet in autumn. Above these heights the diurnal variation increases, but in the neighbourhood of 8,000 feet it again falls to a small value. The increase in relative humidity during the day at about 5,000 feet, which is well marked in the mean values for all three seasons, particularly summer (the values for 0540 in autumn are based on 2 ascents only), occurs at a height where, judging from the mean values of Table II, the diurnal variation of temperature is normally very small ; it must, therefore, be largely due to an increase in absolute humidity which probably results from the penetration of moisture from the surface to that height by convection.

The diurnal variation of the dew-point is of interest in connection with that of relative humidity, and for completeness this is depicted for the three seasons in Fig. 1, which has been prepared from mean values of the dew-point computed from those of temperature and relative humidity given in Table II. The curve for 0540 in autumn is based on 2 ascents only, and is, therefore, not comparable with the remaining curves for that season. In spring the diurnal variation tends to increase somewhat in magnitude with height up to about 7,000 feet, the dew-point being higher in the afternoon than in the morning, whilst in summer the diurnal variation increases considerably with height from 2,000 to 5,000 feet, at which height it is about three times as great as at the surface, the dew-point again being higher in the afternoon than in the morning. In the neighbourhood of 8,000 feet, the variation is negligible.

§ 7—Mean Lapse-Rates

In Table III are given mean values of the lapse-rate over various layers, for different times of the day, during the three seasons as defined in the preceding section. The values have been computed from the mean temperatures given in Table II. They are expressed in degrees Fahrenheit per 1,000 feet, a negative value representing an inversion of temperature.

TABLE III—MEAN LAPSE-RATES IN °F. PER 1,000 FEET, BY SEASONS
(DRY ADIABATIC GRADIENT=5·4 °F. PER 1,000 FEET)

Season	Mean time of ascent	HEIGHT (feet) 0—1,000	1,000—2,000	2,000—4,000	4,000—6,000	6,000—8,000	8,000—10,000	10,000—12,000
Spring (April, May)	0555	−5·6	−0·9	2·7	3·4	3·5		
	0740	−0·5	1·6	3·1	3·5	3·1		
	1010	5·4	4·6	3·1	3·1	3·3	3·7	3·9
	1310	7·0	6·5	4·5	3·8	3·2		
	1700	4·9	4·7	4·1	4·5	3·3		
	Mean ..	2·2	3·3	3·5	3·7	3·3	3·7	3·9
Summer (June to Sept.)	0535	−1·3	0·4	0·4	2·9	3·6		
	0710	2·2	1·7	0·4	2·5	3·2		
	1005	7·5	4·8	1·7	2·4	3·2	3·1	3·4
	1305	7·5	6·3	4·5	2·7	2·8		
	1700	7·3	5·4	4·0	3·3	2·8		
	Mean ..	4·6	3·7	2·2	2·8	3·1	3·1	3·4
Autumn (October)	0540	−2·3	2·7	0·1	2·1	3·9		
	0700	−2·9	1·4	0·9	3·5	3·9		
	1005	5·8	2·5	2·6	3·5	4·2	3·5	3·3
	1340	8·3	4·0	3·1	3·5	4·1		
	1700	5·6	4·2	4·1	4·0	4·1		
	Mean ..	2·9	3·0	2·2	3·3	4·0	3·5	3·3

This table shows that above 6,000 feet, the diurnal variation of the lapse-rate is inappreciable; over the layer 4,000 to 6,000 feet it is small in summer, but a little larger in spring, this being a result of the diurnal variation of temperature tending to extend to slightly greater heights in spring than in summer, as shown in Fig. 7 (curves for mean temperatures, April–May, June–September). The value, 2·1, given as the mean lapse-rate at 0540 for the layer 4,000 to 6,000 feet in autumn, is based on two observations only, and the resulting pronounced diurnal variation of lapse-rate thus indicated for this layer is not typical.

Within the layer where definite diurnal variations of temperature occur, which for the present purpose may be taken as 0–4,000 feet, the largest positive values of the lapse-rate appear at the ascents at 1300 local time, except from 1,000 to 4,000 feet in autumn, whilst the largest negative value, indicating the strongest inversions, occurs between the surface and 1,000 feet for the early morning ascents in spring. In autumn surface inversions appear to strengthen between the times of the first two ascents.

It is noteworthy that above 2,000 feet, this being the height beyond which it appears that surface inversions seldom penetrate, the mean lapse-rate is almost invariably steeper in spring than in either summer or autumn (represented only by October), whilst in this season also the relative humidity above 2,000 feet is normally considerably greater than in summer or autumn (Table II). This is in accord with the seasonal variation of rainfall at Ismailia, where rain is largely of convectional type, the variation being such that 16 per cent of the mean annual fall may be expected in the months April to May, whilst June to September are practically rainless and in October only about 4 per cent of the yearly total is usually experienced.

§ 8—Mean Upper Winds

An indication of the diurnal variation of upper winds is given in Table IV, which shows vector mean winds at various heights for the different mean times of pilot-balloon ascents in the three seasons. In computing these, only such days have been used on which ascents at all hours attained the height up to which diurnal variation was being considered; this necessary limitation had the effect of reducing to seven the number of days in spring available for determining diurnal variation up to 3,000 feet, and to five in autumn, whilst for the summer, ten days were available to give diurnal variation to 6,000 feet.

Table IV—Mean Diurnal Variation of Wind at Various Heights, by Seasons, computed from Selected Pilot-Balloon Ascents

Note.—Directions are given as degrees from N. through E.

Mean time of ascent	Surface °	Surface m.p.h.	500 feet °	500 feet m.p.h.	1,500 feet °	1,500 feet m.p.h.	3,000 feet °	3,000 feet m.p.h.	6,000 feet °	6,000 feet m.p.h.
SPRING (April, May) 7 days of ascents										
0642	95	1	92	6	53	10	16	11		
1000	47	3	45	5	48	8	27	9	Insufficient	
1300	31	6	27	8	42	9	29	7	data	
1700	29	13	31	16	26	14	22	11		
SUMMER (June to September) 10 days of ascents										
0659	315	2	16	4	27	6	24	10	353	10
1005	6	4	14	4	23	6	35	7	335	11
1309	353	5	358	5	7	7	355	10	343	9
1705	1	12	357	13	359	12	355	11	342	10
AUTUMN (October) 5 days of ascents										
0425	240	1	33	5	21	8	7	11		
0714	210	1	94	3	62	7	33	9	Insufficient	
0907	294	1	70	1	69	4	61	6	data	
1305	339	3	14	6	352	4	357	5		
1706	346	6	16	12	12	11	351	5		

A striking feature of this table is that in summer and autumn the wind at all heights considered becomes northerly in the afternoon, and in spring, north-north-easterly; at 1700 it is markedly stronger than at 1300. These phenomena are due to the arrival of a sea breeze at Abu Sueir, usually in the late afternoon, which sometimes sets in quite suddenly accompanied by the characteristic features of a cold front. It arrives from a northerly point and its mean speed is frequently greater than that of the wind which it replaces, though it is commonly characterised on the anemograms by markedly less turbulence. It is referred to in a paper by M. A. Giblett *(1) on line squalls. Further references are made to it later in this paper.

§ 9—Extreme Temperatures and Lapse-Rates

In Table V are given the highest and lowest values of temperature recorded at various heights, either on ascent or descent, at the different times of day during the three seasons as previously defined. For the purposes of this table the heights are, for convenience, defined as 1,000 feet altimeter height followed by the heights corresponding to pressures of 950, 900, 850, etc. millibars.

* The numbers in brackets refer to the list of references on p. 25.

TABLE V—HIGHEST AND LOWEST TEMPERATURES, IN °F., RECORDED AT DIFFERENT HEIGHTS, BY SEASONS

(*i*) SPRING

Height	Mean time of commencement of ascent									
	0555		0740		1010		1310		1700	
	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest
1,000 ft.	89	49	88	51	88	52	94	57	89	58
950 mb.	88	47	90	47	87	49	91	53	88	54
900 mb.	82	42	85	42	81	41	82	45	83	46
850 mb.	78	36	75	36	73	34	75	39	74	37
800 mb.	69	29	69	29	67	35	66	30	66	29
750 mb.	59	25	63	30	59	31	58	31	57	26
700 mb.					50	24				
650 mb.					40	15				

(*ii*) SUMMER

Height	Mean time of commencement of ascent									
	0535		0710		1005		1305		1700	
	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest
1,000 ft.	89	66	91	67	96	74	100	79	93	76
950 mb.	89	64	91	65	93	68	97	74	93	73
900 mb.	85	62	85	58	87	62	88	66	88	65
850 mb.	81	58	78	58	79	58	79	58	79	59
800 mb.	71	54	73	54	72	54	74	53	73	53
750 mb.	64	49	66	50	66	50	67	50	66	50
700 mb.					58	47				
650 mb.					51	41				

(*iii*) AUTUMN

Height	Mean time of commencement of ascent									
	0540		0700		1005		1340		1700	
	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest	Highest	Lowest
1,000 ft.	71	68	76	67	82	72	88	78	86	76
950 mb.	68	66	76	66	79	68	83	70	82	74
900 mb.	69	64	75	61	74	60	75	66	76	66
850 mb.	66	64	70	55	69	53	69	66	71	59
800 mb.	62	58	63	51	64	51	64	57	65	57
750 mb.	55	50	57	48	58	48	60	48	56	49
700 mb.					50	39				
650 mb.					42	33				

In Table VI are given extreme values of the lapse-rate over various layers at the different times of day during the three seasons defined as before. These have been obtained by plotting graphically the temperature readings *during ascent* for each ascent, and then reading off the curve the temperatures at the different heights required. The lapse-rates are expressed in degrees Fahrenheit per 1,000

feet, a negative value representing an inversion of temperature. The greatest positive and negative lapse-rates are given, but in cases where there was no negative value, the smallest positive value is given instead.

TABLE VI—EXTREME LAPSE-RATES IN °F. PER 1,000 FEET, BY SEASONS
(DRY ADIABATIC GRADIENT = 5·4 °F. PER 1,000 FEET)

(*i*) SPRING

Height (feet)	Mean time of commencement of ascent									
	0555		0740		1010		1310		1700	
	greatest +	greatest − or least +	greatest +	greatest − or least +	greatest +	greatest − or least +	greatest +	greatest − or least +	greatest +	greatest − or least +
0–1,000	3	−16·5	4·5	−12	7·5	0	8·5	5	6·5	0
1,000–2,000	5	− 5·5	6	− 5	8·5	1	8	5	6·5	2·5
2,000–4,000	5	− 3	5	− 3	5	− 0·5	6	3·5	6	2
4,000–6,000	4·5	2	5	2	4	2	5	2	5	3
6,000–8,000	5·5	2	5	0	5	1	5	1	6	0·5
8,000–10,000					5	1·5				
10,000–12,000					5	3				

(*ii*) SUMMER

Height (feet)	Mean time of commencement of ascent									
	0535		0710		1005		1305		1700	
	greatest +	greatest − or least +	greatest +	greatest − or least +	greatest +	greatest − or least +	greatest +	greatest − or least +	greatest +	greatest − or least +
0–1,000	4·5	−15·5	5·5	− 9·5	13·5	4·5	10	4·5	11	4·5
1,000–2,000	5	− 6	4·5	− 2·5	7·5	2	9	4	8	2
2,000–4,000	4	− 6	4	− 6	5	− 3	6	3	6	1
4,000–6,000	5	− 2	4·5	− 3	5	0	5	− 1	5	1
6,000–8,000	6	1	5	1	5	1	5·5	− 0·5	5	0
8,000–10,000					5	1·5				
10,000–12,000					5	0				

(*iii*) AUTUMN

Height (feet)	Mean time of commencement of ascent									
	0540		0700		1005		1340		1700	
	greatest +	greatest − or least +	greatest +	greatest − or least +	greatest +	greatest − or least +	greatest +	greatest − or least +	greatest +	greatest − or least +
0–1,000	−1	− 4	2	−10·5	6·5	5	8·5	5·5	7·5	3·5
1,000–2,000	3	2	4·5	− 3	5·5	− 1·5	6	4·5	5·5	1·5
2,000–4,000	0·5	0	3	− 2	5	0	5	3	5	1·5
4,000–6,000	3·5	1	5	1	5	2	5	2	5	3
6,000–8,000	4·5	3·5	5	1·5	5	1	5	2	5	2
8,000–10,000					5	3				
10,000–12,000					4·5	1				

From this table it appears that the largest inversion recorded between the surface and 1,000 feet was one of 16·5°F., whilst the steepest superadiabatic gradient over the same height was 13·5°F. Lapse-rates equal to or exceeding the dry adiabatic have been recorded at the hours 1000, 1300, and 1700 over practically all the layers dealt with in each of the three seasons considered.

§ 10—A Study of Ascents on Individual Days

The observations on some individual days will now be examined.

The pressure distribution over Lower Egypt on the first nine days of ascents, viz. :—August 25, 27, 29 ; September 8, 10, 12, 29 ; October 1, 3, 1925, was in general, of the characteristic summer type, i.e., with pressure low to the east or south-east and high to the west or north-west, giving a gradient for winds between NW. and NE. The synoptic situation on other days is, in most cases, referred to under those days.

August 25, 1925 (Table VII).—The most striking feature of the ascents on this day is the pronounced morning inversion in the neighbourhood of 2,000 feet, associated with a layer of St.Cu. cloud at about that height. In the absence of more detailed observations the precise height of the bottom and the top of this inversion, and its exact magnitude cannot definitely be stated, but it is probable that its base approximately coincided with the top of the cloud layer. With the increase of surface heating after sunrise (0533 local time) the cloud commenced to dissipate ; at 0700 it was clearing rapidly, and by 1000 it had disappeared completely, though the inversion persisted until after this time, but at 1300 had been replaced by approximately the dry adiabatic gradient. The surface wind during the night 24–25th was light, whilst the anemogram reveals a fair degree of turbulence.

The formation of St.Cu. cloud at night at Abu Sueir and its dissipation soon after sunrise is of common occurrence during the summer months. In the afternoon the lapse-rate usually equals or exceeds the dry adiabatic from the surface up to a considerable height, but in the evening with a clear sky a surface inversion forms. This inversion is propagated upwards through the agency of eddy motion, and in favourable circumstances it may thereby reach a height where the associated reduction of temperature is sufficient to cause condensation and the development of cloud. As soon as a thin layer of cloud has formed it acts as a radiating surface causing the air immediately above it to become cooled, which cooling, as in the case of cooling at the ground, is propagated upward by eddy motion, and thus results in further condensation and an upward extension of the cloud layer. Immediately above the height affected by eddy motion the temperature will have been unaffected and there will consequently be an inversion. A further effect of the cloud layer is to absorb the outgoing radiation from the ground and emit its own radiation ; this process practically prevents any further fall of temperature at the surface, in consequence of which the surface inversion will be gradually dissipated by turbulence and may thereby be eventually completely destroyed, as had happened by the time of the first ascent on August 25.

It is probably a sequence of events somewhat of this nature, with modifications on different occasions, which gives rise to the commonly occurring St.Cu. cloud of the early morning with an associated lapse-rate of the type shown in the first two ascents on August 25.

August 27, 1925 (Table VIII).—At the time of the two early morning ascents on this day an inversion extended upwards from the surface to a height of about 2,000 feet, and was unaccompanied by a cloud layer. The previous night was cloudless and the surface wind calm throughout. At the time of the first pilot-balloon ascent, at 0345, the wind speed at 500 feet was only 3 m.p.h., compared with 8 m.p.h. at about the same hour on the 25th. It therefore appears probable that turbulence on this occasion was appreciably less than on the 25th, though sufficient to extend the surface inversion up to 2,000 feet, and the absence of cloud can only be attributed to lack of sufficient moisture. The cooling at the surface, which, in these circumstances, could continue unchecked, would ultimately have tended to produce mist or fog, and in this connection it may be noted that at the time of the first ascent the observer reports fog over the Delta cultivation to

north-west, where the humidity might be expected to be higher than over the desert surface in the vicinity of Abu Sueir.

One other feature of the ascents on this day to which reference may be made is the rise in temperature of 5° at about 8,500 feet between the 1300 and 1700 ascents. It is probable that had more detailed observations been made an inversion would have been revealed at 1700 at about this level ; this supposition is supported by the low relative humidity, 13 per cent, observed there at 1700, which is to be compared with 46 per cent at 6,660 feet, and with 33 per cent at 8,470 feet at 1300. The formation of such an inversion is probably the result, at any rate in part, of turbulence of thermal origin, in which associated rising currents are carried by their momentum slightly above their equilibrium position, as suggested by Douglas (2) and Giblett. Other examples of this type of inversion are provided in this series of ascents and attention will be drawn to them in due course. In this particular case it seems likely that an additional factor operating to cause the inversion may have been the existence of subsiding air in the neighbourhood of 10,000 feet, as the lessened temperature gradient indicated between 8,000 and 10,000 feet in the ascent at 1005 suggests the existence of a small inversion between those heights at that time.

August 29, 1925 (*Table IX*).—The early morning ascents of this day resembled those of the 25th in that there was no surface inversion, but a layer of St.Cu. cloud with an inversion existed at about 2,000 feet. The anemogram for the previous night is strikingly similar to that of the night 24–25th and indicates practically the same degree of turbulence. The cloud layer was somewhat thicker on the 29th than on the 25th and had not completely dissipated by the time of the 1000 ascent.

An appreciable diurnal variation in temperature is seen to have occurred at almost all levels up to 8,000 feet. The pronounced increase of temperature which took place above 6,000 feet during the afternoon was no doubt associated with the influx of a westerly current at that height, as indicated by the pilot-balloon observations. It is probable that a small inversion occurred at the lower boundary of this current, which is seen to have been a very dry one, its relative humidity being only about 10 per cent.

September 8, 10, 12, 1925 (*Tables X, XI, XII*).—Each of these days again shows in the early morning ascents the characteristics of those of August 25, namely, an upper-air inversion accompanying a layer of St.Cu. cloud, but on the 8th and 10th this inversion persisted into the afternoon, a considerable time after the accompanying cloud had disappeared. No anemogram is available for the night of the 7–8th, but that for the 9–10th reveals appreciable turbulence, whilst on the night of the 11–12th a little turbulence is indicated up till 0100, when St.Cu. started to form, after which calm conditions prevailed at the surface. Although the limited observations available do not indicate a surface inversion on the morning of the 12th, it is possible that the calm conditions were accompanied by a slight one near the ground, though since the wind speed increased rapidly with height, reaching 11 m.p.h. at 500 feet, it is likely to have been confined to the first 100 feet or so. In this connection it may be noted that in the first ascent fog was observed on the ground to leeward of standing water, as it was likewise observed over the Delta cultivation on August 27 when conditions were calm with a surface inversion.

A further feature of interest on September 12 is the very rapid decrease in temperature from the surface up to about 1,000 feet at 1000. From Table XII it is seen that the difference of temperature between the ground level and 1,060 feet at that time was 14°F., which is nearly three times the dry adiabatic lapse-rate. At the time of descent, about an hour later, the temperature difference had been reduced to 10°F. by virtue of a rise of 4° at the surface and of 8° at 1,060 feet, but even this difference represents nearly double the dry adiabatic rate, and it

persisted into the afternoon, being accompanied, as might be expected, by particularly disturbed conditions, of which the reports of pronounced bumpiness, of gustiness at the surface, and of frequent dust devils are evidence.

September 29, 1925 (*Table XIII*).—This day was characterised by the formation of thick fog shortly after sunrise (0554 local time), as recorded in the notes at the foot of Table XIII. It appears to have persisted for only about an hour and three quarters. An increase of fog in the early morning after sunrise is a common phenomenon, which Willett (3) explains as being a result of the action of the sun's rays in producing hygroscopic nuclei. He quotes the work of Aitken, who found with his kern counter that the purest air off the sea has its kern count increased tenfold by the comparatively brief action of sunshine, while air from a polluted source has the count increased a hundredfold. The air drift on this occasion was from a northerly or north-westerly point, the air having therefore presumably come from over the Mediterranean Sea.

A very marked diurnal variation of temperature in the neighbourhood of 3,000 feet is indicated, where a rise from 64°F. at the time of the first ascent to 76° in the last ascent of the day took place. This would appear to be associated with the replacement of a northerly wind current by an easterly one at that height as shown by the pilot-balloon observations.

A small inversion at about 7,000 feet encountered in the fourth ascent may be of the type described for August 27, a result of thermal turbulence, and although it was not noticed during the last ascent of the day, a pronounced haze top was then met with at that height.

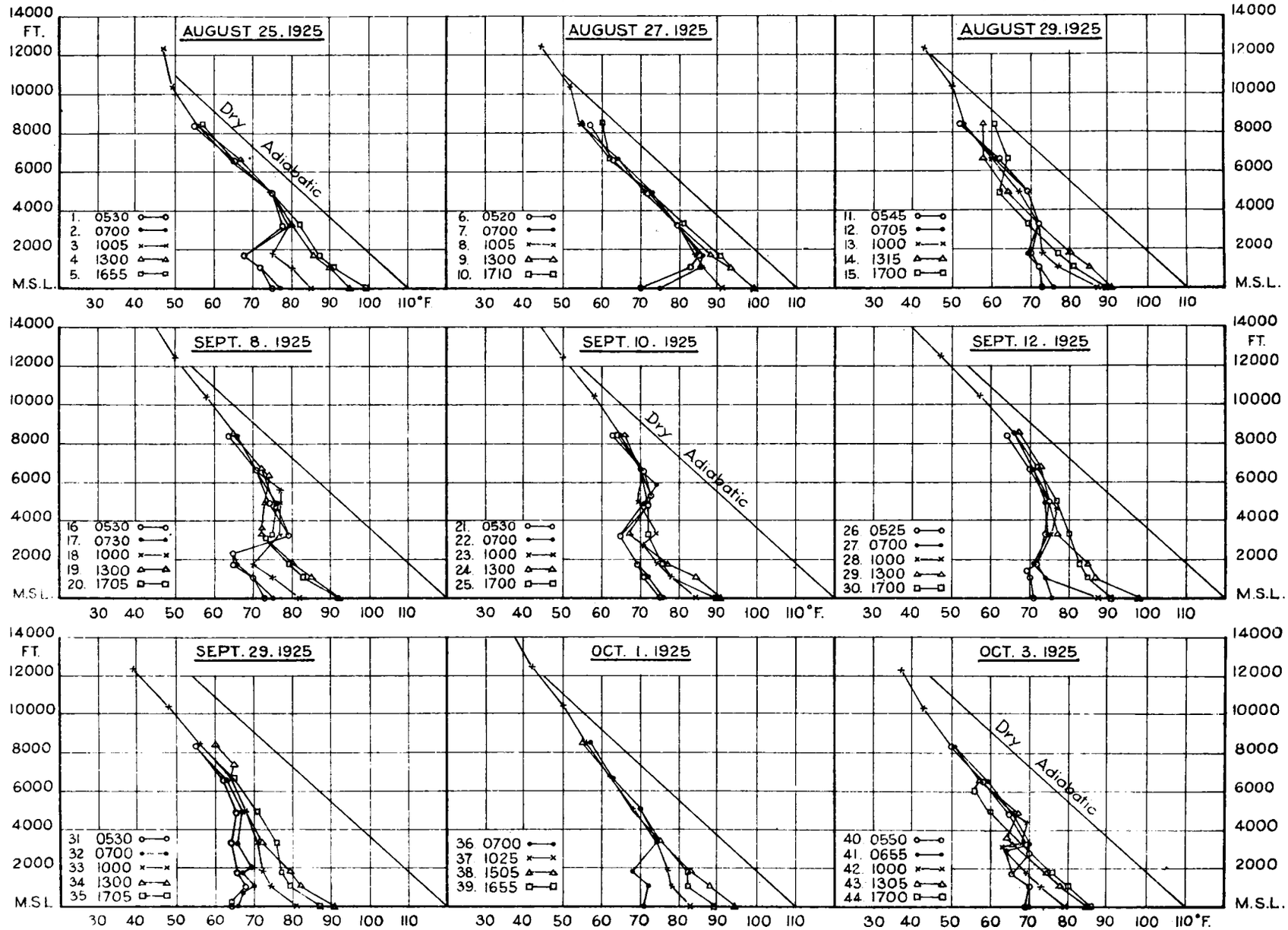
October 1, 1925 (*Table XIV*).—The ascent at 1025 on this day was made in its upper part through a very dry south-westerly wind which replaced the lower north-easterly wind at about 6,000 feet. No inversion was observed at the boundary between these currents, but the lapse-rate was less steep in the upper south-westerly wind than in the north-easterly below (i.e., in the layers of it which were undisturbed by diurnal variation), being only about half the dry adiabatic rate. These conditions may be compared with those obtaining on September 12, when also a north-easterly wind up to 5,000 feet was replaced by a south-westerly one above in which the lapse-rate was nearly equal to the dry adiabatic.

October 3, 1925 (*Table XV*).—The small inversion at about 6,000 feet observed during the 1700 ascent was doubtless caused by thermal turbulence in the manner previously described, for pinnacles of Cu. cloud were seen to be protruding through the haze top which accompanied the inversion, thus giving evidence of the penetration of convection to this height. The upward slope of the haze top from the coast towards the south, except towards the Red Sea, which was observed at 1300, further suggests the existence of active convection over the heated land surface.

October 13, 1925 (*Table XVI*).—At about the time of the first ascent on this day thunderstorms were in progress over the Palestine coast. These storms were apparently occurring in air which arrived behind a cold front that passed over Lower Egypt about 0830 on the 11th. This front was associated with a depression which, on the morning of the 10th, was situated over the desert to south-west of Cairo, whence it moved north-eastwards to Cyprus and there remained stationary, filling up on the 13th. The aeroplane ascents show that over Abu Sueir the upper air conditions on the 13th were not favourable for the genesis of thunder there, on account of the small lapse-rate between 5,000 and 8,000 feet and the dryness of the air.

October 15, 1925 (*Table XVII*).—The inversion appearing at about 10,000 feet in the ascent at 0955 occurred at the transition at that level from a light

Fig. 2. GRAPHS SHOWING DIURNAL VARIATION OF UPPER AIR TEMPERATURE OVER ISMAILIA, LOWER EGYPT (Times are Cairo Time)



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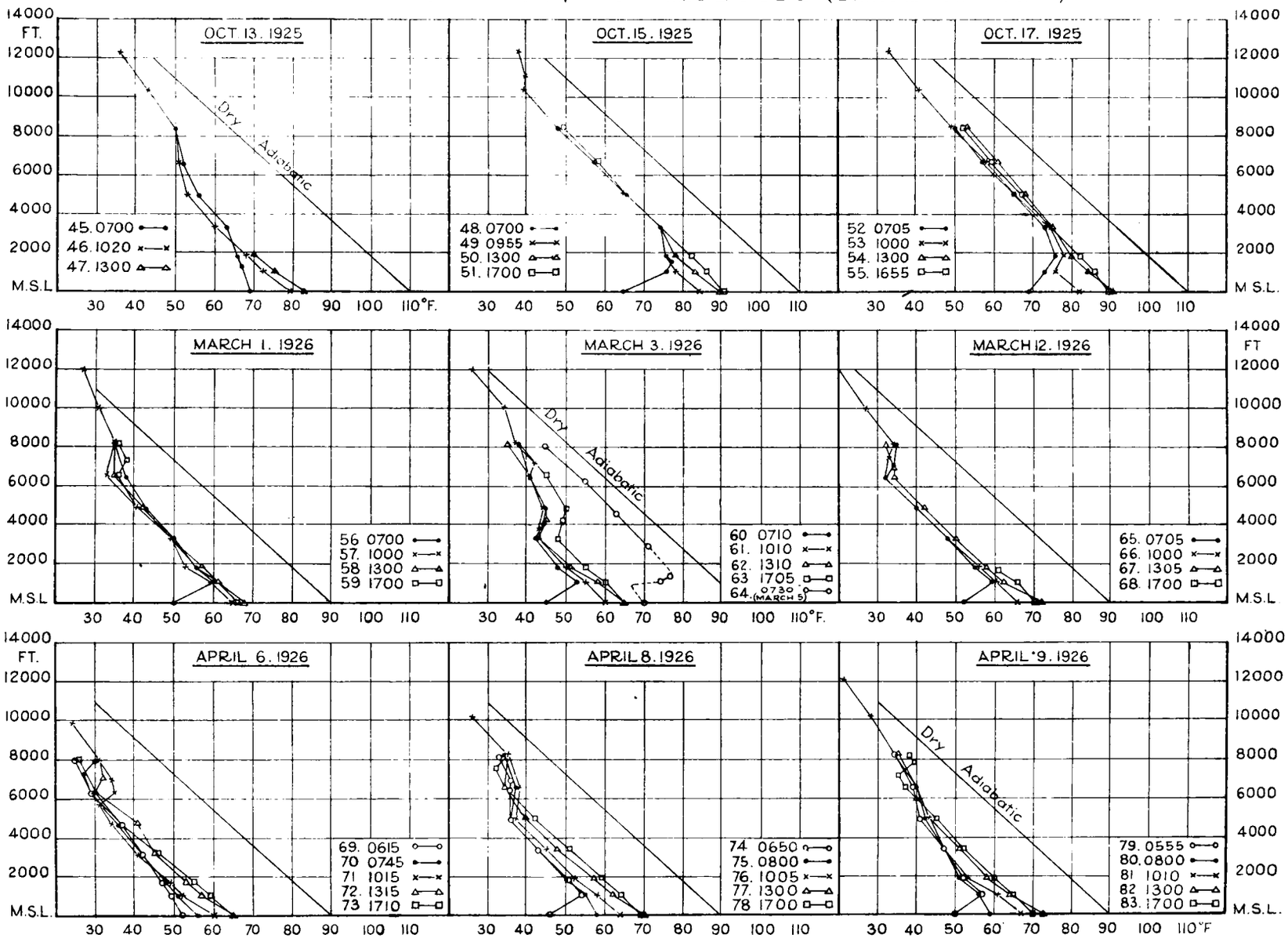
(149) Hs 17738/9284 8 635. 12/32 Gp 921. C & R L^d

Fig. **3.** GRAPHS SHOWING DIURNAL VARIATION OF UPPER AIR TEMPERATURE OVER ISMAILIA, LOWER EGYPT (Times are Cairo Time)



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north-westerly wind below to a westerly wind 20–30 m.p.h. above, which latter extended up to at least 17,000 feet and was potentially several degrees warmer than the north-westerly wind below. By 1300 the wind had become westerly, though less than 10 m.p.h., down to 4,000 feet, but no increase in temperature seems to have accompanied the arrival of this weak westerly current at these lower levels.

March 1, 1926 (*Table XIX*).—There was on this day a depression centred near Cyprus giving westerly winds up to at least 10,000 feet over Lower Egypt. A cold front passed Abu Sueir just after the termination of the 1300 ascent, causing a veer of the wind at the surface from W. to NW. with an accompanying sudden drop of 3°F. in surface temperature. By about an hour later the temperature had risen almost to its former level and the surface wind had backed to WNW. A comparison of the pilot-balloon ascent at 1300 with that at 1700 reveals that the change of wind at the cold front from W. to WNW. was confined to about the first 2,000 feet, but the aeroplane observations show that by 1700 recovery from any fall of temperature in the layers above the surface which may have accompanied the wind change was practically complete. The appearance of relatively warm air above an inversion at about 8,000 feet on this day may represent the commencement of the influx of the warm air which during the next few days penetrated to lower and lower levels simultaneously with the eastward advance of a desert depression.

March 3, 5, 1926 (*Tables XX, XXI*).—The single ascent on March 5, is of special interest on account of the fact that a khamsin depression from the Sahara passed over Lower Egypt on the morning of that day, and it was owing to the associated dust storms that no further ascents were possible.

The depression in question was centred near Tripoli at 0800 on the 3rd, whence by the same hour on the 4th it had moved south-east to a position south-west of Siwa. Its approach to Lower Egypt appears to have been heralded at Abu Sueir by an increase in temperature of from 3° to 5°F., during the afternoon of the 3rd, at all heights between 1,000 and 8,000 feet, that is, inclusive of levels which are not normally subject to diurnal variation of temperature (*see* § 6). This rise in temperature was doubtless due to the inflow of air from lower latitudes, consequent on the development, with the eastward advance of the depression, of a gradient for southerly winds; actually the pilot-balloon observation at 1300 on the 3rd reveals a light southerly wind at 6,000 feet, which at 1700 appears at 4,000 feet, whilst by the morning of the 4th a definite southerly wind exists between 3,000 and 5,000 feet. The first cloud associated with the depression appeared at Abu Sueir during the night of the 3rd–4th, when Ci.St. cloud developed, following an almost cloudless day and evening; by 0800 on the 4th this had given place to A.St. which covered the sky throughout the day, but was unaccompanied by any low cloud; this latter did not develop until the night of the 3rd–4th. The surface wind was light and variable from midnight 3rd–4th, until midnight 4–5th when a moderate increasing south-easterly wind set in abruptly. The cold front of the depression passed Abu Sueir at about 0830 on the 5th, shortly after the termination of the aeroplane ascent. It was accompanied by a veer of wind to W. and a sudden drop in surface temperature from 75° to 68°F., followed by a gradual fall to 49°F., which was reached at 1300. Rain totalling about 5·5 mm. fell between 1130 and 1500.

Although no intermediate reading of temperature was taken between the surface and 1,100 feet, the lapse-rate for the ascent on this day has been indicated on Fig. 3 as equal to the dry adiabatic between the surface and 1,100 feet on account of the very bumpy conditions reported over that layer. This has the effect of revealing a particularly large inversion at the top of this layer, which co-existed with a surface wind of about 30 m.p.h., increasing to over 45 m.p.h. at 1,500 feet. The possible sequence of upper-air temperature changes from the time of the last

aeroplane ascent on the 3rd, which resulted in this striking effect, may be inferred; it is indicated by the series of curves in Fig. 4.

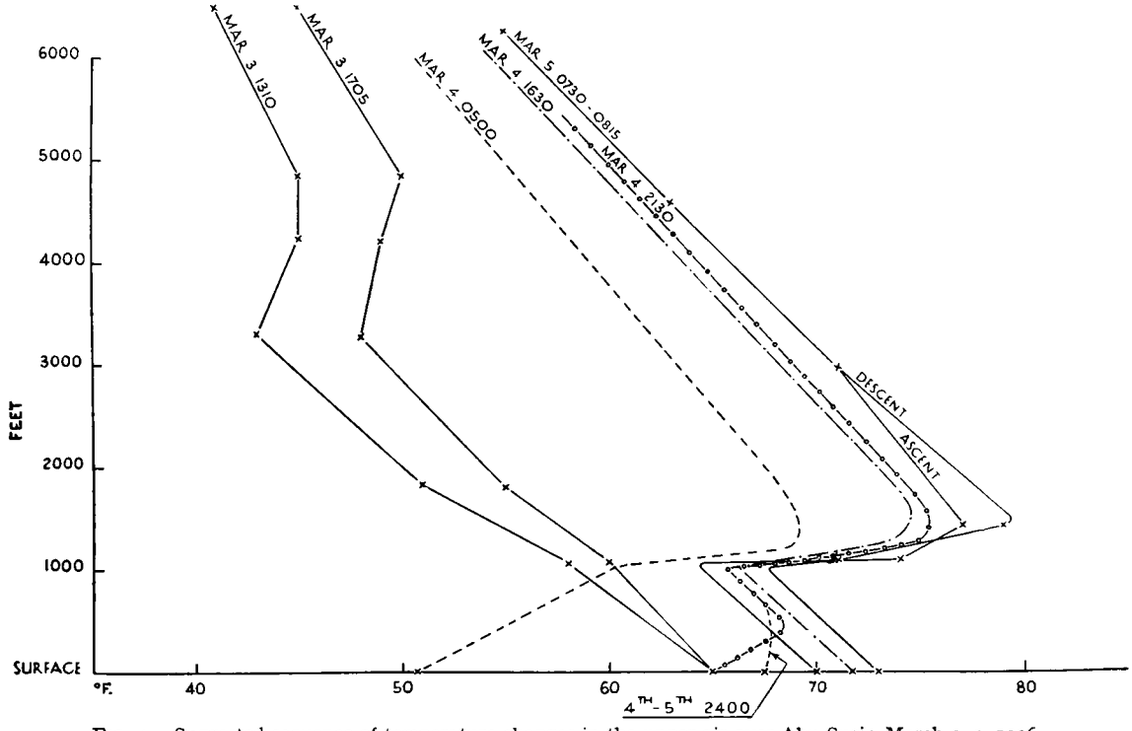

FIG. 4.—Suggested sequence of temperature changes in the upper air over Abu Sueir, March 3–5, 1926. Full-line curves are based on upper-air observations. Other curves are hypothetical.

During the night of the 3rd–4th, the surface temperature at Abu Sueir fell to 49°F., while it is probable that the rise in temperature which set in above 1,000 feet during the previous afternoon continued, in view of the definite establishment of a southerly wind current between 3,000 and 5,000 feet by the morning of the 4th, as previously mentioned. An inversion will thus have been produced over about the first 1,000 feet due to the combined effect of radiation from the surface and the influx of warm air above, while the small inversion existing between 3,000 and 5,000 feet on the 3rd is likely to have disappeared. In the afternoon of the 4th a surface temperature of 72°F. was reached, but owing to the probability of a further rise in upper air temperatures having occurred, it may be assumed that the early morning inversion persisted in the vicinity of 1,000 feet, though with a dry adiabatic gradient up to that height; this inference is supported by the unusual absence of low cloud throughout this day. After sunset on the 4th, the surface temperature fell to 65°F. by 2130, thus again producing a surface inversion; though as the temperature ceased falling at 2130, this inversion is not likely to have penetrated upwards through more than a few hundred feet, above which a lapse-rate practically equal to the dry adiabatic will have persisted up to the second inversion. Between 2200 and midnight, temperature rose 2° or 3° at the surface, resulting in a diminution in intensity of the surface inversion; with the onset at midnight of a SE. wind 15 to 20 m.p.h. at the ground, it may be assumed that this inversion was rapidly destroyed and replaced by a lapse-rate approximating to the dry adiabatic up to the inversion at about 1,000 feet, which was then accompanied by a layer of Nb. cloud.

It thus appears that the strong inversion revealed by the ascent on the morning of the 5th originally developed as a result of a fairly rapid influx of very warm air above 1,000 feet, and was intensified by the formation by radiation of surface inversions at night. Elsewhere (4) the present writer has drawn attention to examples of the occurrence in Iraq of similar pronounced inversions simultaneously with fresh to strong winds.

March 12, 1926 (*Table XXI*).—With a depression centred between Crete and Cyprus, a southerly to south-westerly wind extending up to at least 10,000 feet was experienced over Lower Egypt throughout the day. Apart from a surface inversion in the early morning, the lapse-rate in this current was almost equal to the dry adiabatic up to 6,000 feet, but the air did not contain sufficient moisture to give more than a few thin patches of Cu. cloud.

April 6, 1926 (*Table XXII*).—Fresh south-westerly to westerly winds blowing round a depression centred near Cyprus were experienced at the surface at Abu Sueir on this day, and they reached to a height of 7,000 feet at least, attaining a speed of 55 m.p.h. at 2,000 feet in the middle of the day. During the preceding night the surface wind had not fallen below 5 m.p.h. and the sky appears to have been cloudy throughout, which doubtless accounts for the absence of a surface inversion from the records. A lapse-rate approximately equal to the dry adiabatic extended up to about 6,000 feet and was associated with considerable bumpiness. The inversions encountered above 6,000 feet in the 2nd, 3rd and 4th ascents of the day were associated with layers of St.Cu. or A.Cu. cloud; in the first and last ascents there were cloud layers just above the height reached, and it is probable that inversions were associated with these clouds as in the case of the other ascents.

The upper-air conditions on this day are probably fairly typical of those obtaining in a well-defined current of cold air flowing down over Lower Egypt behind the cold front of an eastward-moving Mediterranean depression. It may be noted that in the neighbourhood of 12,000 feet the temperature was 5° lower than at that height on March 12, and 12° lower than on March 1. The occurrence of lightning, which was observed from Abu Sueir on the evening of April 5 and during the night 5–6th, is probably further evidence of the cold-air characteristics.

April 8, 9, 1926 (*Tables XXIII, XXIV*).—The depression centred near Cyprus on the 6th moved away to the Caspian, and on the 8th light westerly to north-westerly winds were experienced over Lower Egypt, whilst an anticyclone developed over Egypt and persisted for several days. The formation of a surface inversion during the nights 7–8th and 8–9th was favoured by clear skies and almost calm conditions at the surface on both occasions. A considerable rise in temperature took place at and below 5,000 feet on the 8th, whilst temperatures at 10,000 and 12,000 feet were appreciably higher on the 8th and 9th than on the 6th. On the 9th, when the cold air current prevailing on the 6th had been entirely replaced by the light variable or easterly winds of the anticyclone, the lapse-rate was, taken generally, appreciably less than the dry adiabatic. Owing to the light indefinite character of the wind during the morning and early afternoon of the 9th the setting-in of the sea breeze from NNE. during the latter part of the afternoon is clearly shown on the Abu Sueir anemogram. A comparison of the pilot-balloon ascents at 1300 and 1700 indicates that the sea breeze definitely reached to at least 3,000 feet on this occasion, but its arrival at the surface was not accompanied by any sudden fall of temperature, nor does it appear to have been colder than the air which it replaced above the surface. These conditions may be compared with those described for July 7, 1926, when an appreciable drop in temperature was associated with the arrival of the sea breeze.

April 19, 21, 23, 1926 (*Tables XXV, XXVI, XXVII*).—On the 19th and 21st an anticyclone centred just west of Lower Egypt gave northerly to north-easterly winds mainly light in force; by the 23rd the centre of high pressure had moved northwards and a solid north-easterly current, reaching to a height of at least 12,000 feet, flowed over Lower Egypt and attained a speed of 30 m.p.h. at some heights. The nights 18–19th and 22nd–23rd were both cloudless and calm and were accompanied by surface inversions which persisted until after the time of the first ascent. During the night 20th–21st, however, a north-easterly wind, between 5 and 10 m.p.h. at the surface, was maintained, showing on the anemogram a considerable degree of turbulence; St.Cu. cloud formed, accompanied by an

inversion, as described for August 25, 1925, and no surface inversion appeared in the first ascent. The cloud disappeared before 0700, but the associated inversion persisted until later in the day, with very dry air above it.

The small inversion at 10,000 feet, on the 19th, marked the transition from a north-north-westerly wind between 5,000 and 10,000 feet to a westerly wind above 10,000 feet extending to at least 15,000 feet. The lapse-rate in this westerly current was practically equal to the dry adiabatic up to at least 12,000 feet, the maximum height attained in the ascent at 1000, but in the north-easterly current which prevailed on the 23rd it was little more than half the dry adiabatic rate, and the temperature at 12,000 feet was 5° higher than at that height in the westerly wind on the 19th.

The rise in temperature of 6° at about 3,500 feet between 1300 and 1700 on the 23rd is difficult of explanation and it appears likely that in the 1700 ascent an error of observation of 5° was made at this height. Very bumpy conditions were reported up to 3,700 feet, both in the 1300 and 1700 ascents, whereas the existence of an inversion between 2,000 and 3,000 feet, which is indicated at 1700 from the observations as given, would confine such conditions to the layer between the surface and the bottom of the inversion.

May 3, 5, 7, 1926 (*Tables XXVIII, XXIX, XXX*).—An anticyclone was centred over the eastern Mediterranean on the 3rd, giving easterly to north-easterly winds over Lower Egypt. On the 5th a depression of khamsin type was developing over the desert to west of Egypt, and by the morning of the 7th it had deepened considerably and was centred near Siwa, whence it moved north-eastwards, passing over the Nile Delta during the early morning of the 8th. With the approach of this depression and its accompanying easterly to south-easterly winds, as in the case of the khamsin depression of March 5, 1926, temperature rose markedly at all heights up to 12,000 feet, the maximum height attained in the ascents; and the reading of 63°F made at 8,500 feet on May 7, was exceeded at that height on only four days of the present series, viz.:—June 22, September 8, 10 and 12. Unfortunately, no ascent was made beyond 8,500 feet on May 7, but the screen maximum temperature at the surface on that day was 110°F.

In the E. to SE. wind current on the 5th, the lapse-rate was approximately equal to the dry adiabatic up to 5,000 feet, and above that height it was only a little less, whilst considerable bumpiness was reported. At about 1630, however, the sea breeze (1) set in fairly suddenly at the surface from NE., and from a comparison of the pilot-balloon ascent at 1705 with those earlier in the day it appears that it extended up to 5,000 feet, and probably further. At 1,140 feet and above, there was practically no difference in temperature between this current and that which it displaced, but near the surface the sea breeze was a little the cooler and this apparently reduced the instability sufficiently to cause a pronounced decrease in bumpiness, as evidenced by the observer's reports.

May 18, 19, 1926 (*Tables XXXI, XXXII*).—On these two days a depression was centred over the desert to south-west of Lower Egypt which gave rise to khamsin conditions on the 19th and 20th; it passed eastwards over Lower Egypt during the early morning of the 21st. The sky was practically overcast with high or intermediate cloud on the 18th and 19th, and the reports throughout these days of poor vertical visibility with haze top in cloud indicate that the thick dust haze characteristic of khamsin conditions extended from the surface right up to the cloud level; sandstorms occurred at Abu Sueir on the 20th and 21st. Relative humidity was low at all heights. The surface inversion on the morning of the 19th amounted to as much as 18°F. between the surface and 1,100 feet; the surface wind had been practically calm during the greater part of the preceding night and this, combined with the exceptional dryness of the air—the relative humidity at the 0530 ascent was 15 per cent at 1,100 feet (mean of ascent and descent)—favoured the development of this inversion, although much high cloud prevailed.

Fig. 5. GRAPHS SHOWING DIURNAL VARIATION OF UPPER AIR TEMPERATURE OVER ISMAILIA, LOWER EGYPT (Times are Cairo Time)

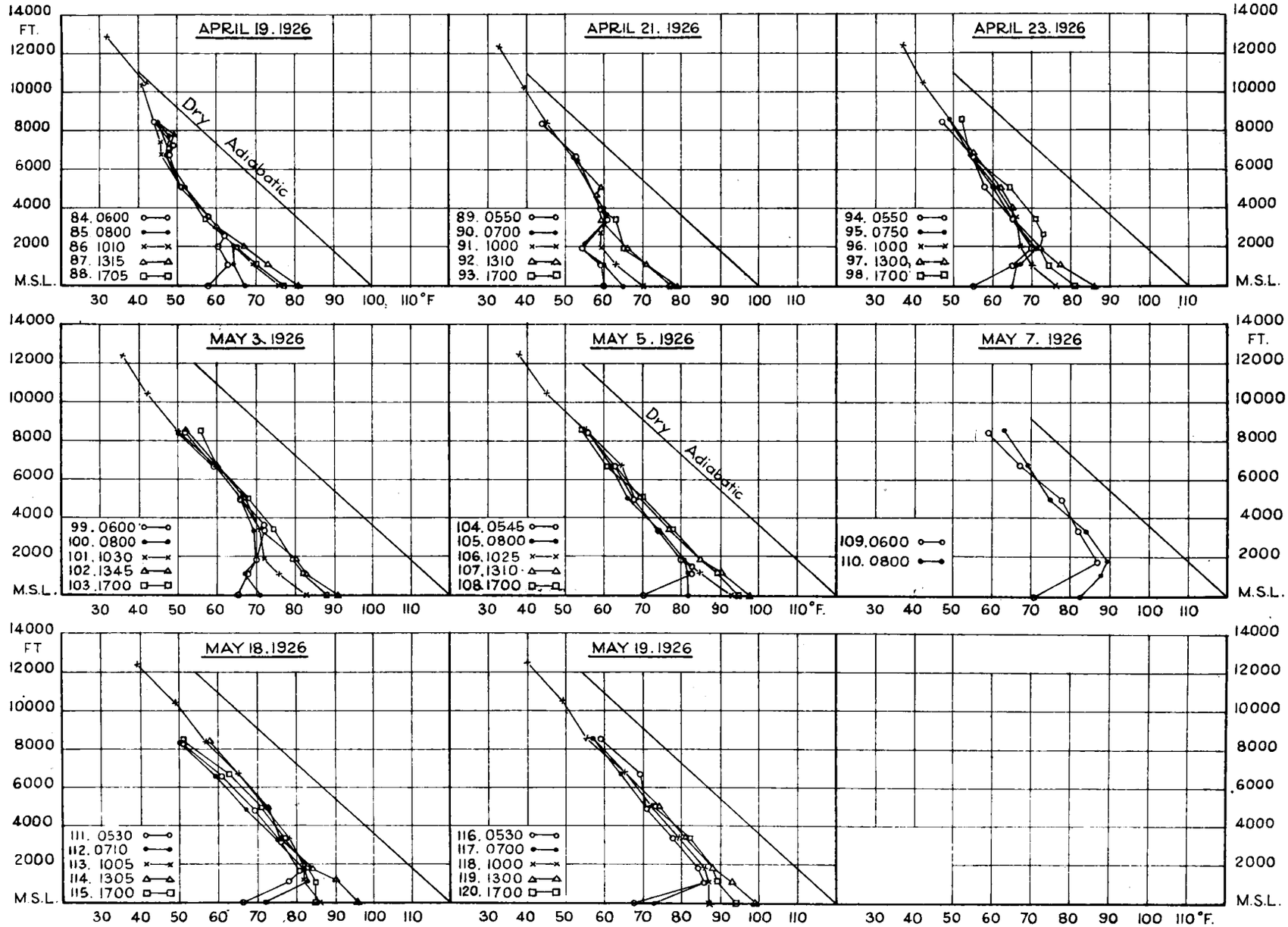

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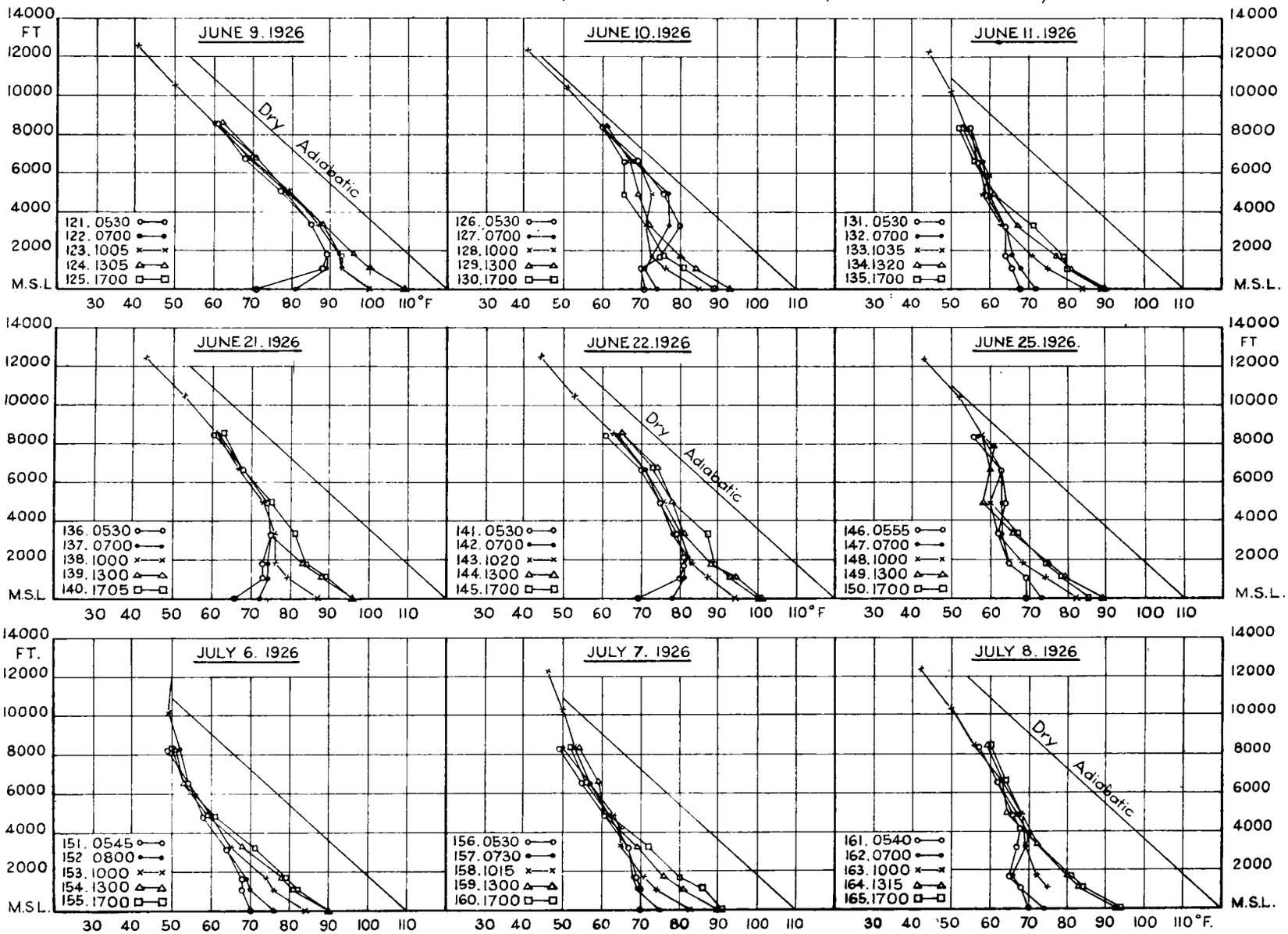
Fig. 6. GRAPHS SHOWING DIURNAL VARIATION OF UPPER AIR TEMPERATURE OVER ISMAILIA, LOWER EGYPT (Times are Cairo Time)



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June 9, 1926 (*Table XXXIII*).—Lower Egypt lay in an area of very small pressure gradient between depressions over Iraq and Abyssinia and an anticyclone over the central Mediterranean. The preceding night was calm, and there was a morning surface inversion, which, at 0530, amounted to 17°F. between the surface and 1,100 feet. This had practically disappeared by 1000, and at 1300 the lapse-rate equalled the dry adiabatic from the surface up to at least the height attained in the ascent. The temperature was unusually high at all heights, the air being drawn, as during the preceding day, from over the Syrian and Arabian deserts; at the surface it had reached 112°F. at about 1500 when the sea breeze set in suddenly from N., accompanied by a rise in surface wind from calm to between 20 and 25 m.p.h., and an abrupt fall in temperature of 6°F. The onset of the wind was accompanied by a dust storm which presumably was that sighted between Port Said and Ismailia during the 1300 ascent. From a comparison of the pilot-balloon observations at 1300 and 1700, it appears that the northerly sea breeze extended upwards to at least 6,000 feet; as regards upper-air temperature, however, the small inversion which is indicated between 1,150 and 1,710 feet on descent, in the 1700 ascent, represents the upper boundary of the layer whose temperature was immediately affected by the arrival of the sea breeze.

June 10, 11, 1926 (*Tables XXXIV, XXXV*).—A definite north-westerly current was flowing over Lower Egypt on these two days, between a depression over Syria and Asia Minor and relatively high pressure over the central Mediterranean. The fall in temperature, which on the preceding day occurred between the surface and about 1,500 feet with the arrival of the sea breeze, appeared at progressively greater heights on the 10th and 11th, with the establishment of a definite current flowing from over the Mediterranean and south-east Europe, the decrease in temperature at about 5,000 feet on the 10th being specially prominent.

June 21, 22, 25, 1926 (*Tables XXXVI, XXXVII, XXXVIII*).—Pressure was low over Iraq and high over the eastern Mediterranean to north of Lower Egypt on the 21st and 22nd, giving a gradient for northerly to north-easterly winds over Lower Egypt. On the 25th, there was a depression to the south-east and an anticyclone to the west of Lower Egypt, giving a gradient for northerly winds.

During the night preceding the early morning ascents of the 21st and 22nd the surface wind was practically calm and an inversion extended up from the surface to a considerable height; on the 25th, however, there was a light wind all night and the inversion did not extend above about 1,000 feet. By the time of the first ascent on the 25th, the surface temperature had risen 2°F. above the night minimum and the surface inversion was in process of dissipation. There was on this day an inversion in the neighbourhood of 5,000 feet associated with Cu. cloud and a haze top at the same approximate level; the height of the cloud, the haze top and the inversion increased simultaneously throughout the day.

July 6, 7, 8, 1926 (*Tables XXXIX, XL, XLI*).—On these three days the synoptic distribution over Lower Egypt was of the characteristic summer type with pressure low to the east and high to the west, giving a gradient for northerly to north-westerly winds.

On all three days the temperature at the surface had risen 2°F. from its night minimum value by the time of the first ascent, so that isothermal conditions or a small surface inversion probably existed between the surface and 1,000 feet prior to the first ascent on each day. There are, however, no anemobiagrams available for these days to indicate the surface wind conditions. The lapse-rate up to 8,000 feet equalled or exceeded the dry adiabatic during the hot part of the day on the 6th and 7th and was accompanied by considerable Cu. cloud and bumpiness.

It is recorded that on the morning of the 7th a layer of low-lying St. cloud covered the desert, but not the cultivation. The wind on this occasion was light westerly, and it seems likely that the air in passing over the Delta had picked up

moisture ; on its arrival over the bare, dry surface of the desert, the temperature of which on a clear night would normally fall lower than that of the cultivation (5), the upward propagation of cooling by turbulence was effective in producing a cloud layer at about 1,000 feet.

At 1,700 feet a fall in temperature of 5°F. and at 1,120 feet one of 4°F., took place between the times of ascent and descent at 1700 on the 7th. This appears to have been due to the arrival of the sea breeze at these heights, preceding its onset at the surface at about 1750, shortly after the termination of the ascent, when a rapid fall in temperature of 3°F. occurred. Unfortunately, in the absence of an anemogram for this day it is not possible to judge the strength of the sea breeze, but it seems to have reached to at least 3,260 feet where the temperature fell 2°F. between the times of ascent and descent.

July 19, 21, 22, 1926 (*Tables XLII, XLIII, XLIV*).—The pressure distribution continued of the summer type described for July 6, 7, 8.

Inversions accompanied by cloud layers were encountered at about 2,000 feet in the first two ascents on all three days. The small inversion at 6,500 feet in the last ascent on July 19, appears to be of the type referred to under August 27, being a result of thermal turbulence.

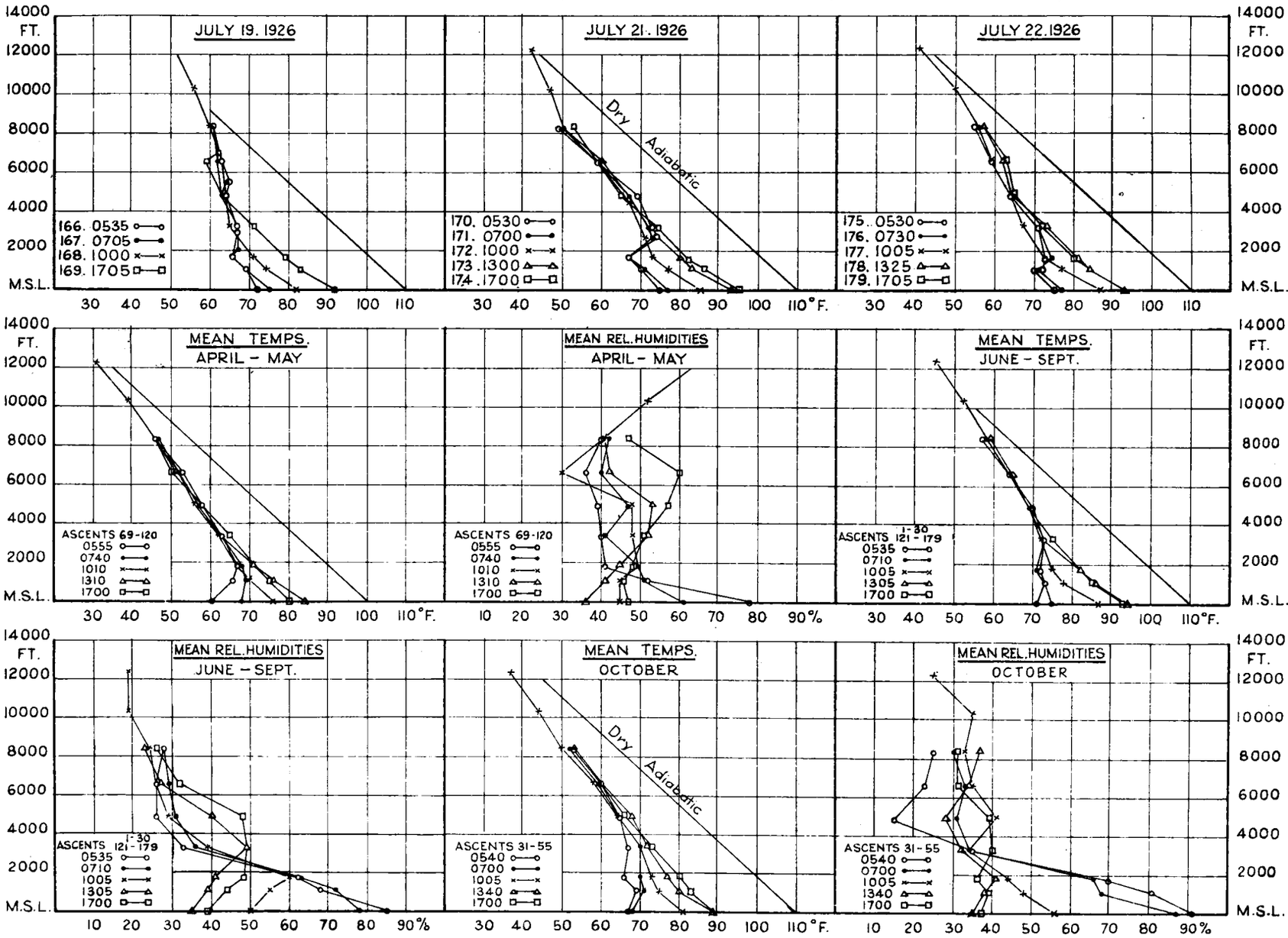
§ 11—Haze Tops

Observations regarding the height of haze top, which were made in the majority of ascents, reveal the following features :—

(*a*) The height of the haze top is by no means invariably associated with a recorded inversion, but the cases where there is no evidence of such an inversion are nearly all when the haze top was at a height of over 7,000 feet. (In this connection a lapse-rate which appears from the observations to be isothermal over a certain height is regarded as an inversion, on the assumption that a small inversion is very likely to have existed in such a case though not of sufficient magnitude for it to have been observed). Wigand (6) and Mal (7) have suggested that the discontinuities of temperature associated with haze layers are the result of radiation absorbed by and emitted from the dust and hygroscopic particles of the layers themselves. Such discontinuities would, in many cases, however, be too small to be observed during an aeroplane ascent, especially during the early stages of their formation, so that it is possible that certain of the haze tops which appear to be unaccompanied by an inversion may have been attended by one so slight as to have escaped detection ; in any case there are several instances of a definite decrease in the lapse-rate over a height which includes that of the haze top, with which small inversions may have been associated or may eventually have developed. Kopp (8) states that while he found from observations at Lindenburg, which appear to have been obtained on self-recording instruments, that low, strong and opaque haze layers were always connected with significant temperature inversions, the higher weaker haze layers often showed no accompanying variation in the lapse-rate.

(*b*) A cloud layer, or isolated cloud, of St.Cu. or Cu. type occurs near the haze-top level in a number of cases. Kopp (8) concluded from his results that haze layers often precede the formation of a cloud layer, and he instances a case of the development of a layer of Cu. cloud at a haze and inversion layer. Similarly, Georgii (9) found as a result of numerous observations that the existence of a dense haze layer was generally followed by the formation of cloud, usually of St.Cu. type, at that level. Willett (3) points out, however, that there is no reason for assuming that the visible dust particles of the haze layer have acted as nuclei of condensation for cloud formation, since the same forces which tend to

Fig. 7. GRAPHS SHOWING DIURNAL VARIATION OF UPPER AIR TEMPERATURE OVER ISMAILIA, LOWER EGYPT (Times are Cairo Time)



(149) Ps 17738/9284 M 625. 12/32. Q 921. C & R Ltd.

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gather these visible particles into a definite layer are also likely to collect together the invisible hygroscopic nuclei, which are now generally accepted as being the nuclei that really count in ordinary condensation processes. It may be noted that on August 25, 1925, (Table VII), a haze top was encountered at about 6,000 feet at the 1300 ascent with a cloudless sky, and that at the 1655 ascent scattered Cu. cloud was observed at about that height, though by that time the haze boundary at that level had disappeared. Similarly, on August 27, 1925 (Table VIII) a haze top existing between 9,000 and 10,000 feet in the early morning was followed by the development of a small isolated lump of A.Cu. cloud at 9,500 feet, which was observed at 1300, though it had apparently disappeared by 1700.

(*c*) Haze tops which appear at or near a recorded inversion are found almost as frequently near, or at, the top of the inversion as at its base. Actually, however, in nearly every case of a haze top near the bottom of an inversion the latter was an early morning one of considerable magnitude, with its base not much above about 3,000 feet, and the existence of a haze top at that level was doubtless due to the " lid " effect of the inversion preventing further upward diffusion of dust from the surface. Wigand(6) in discussing the results of some observations made during free balloon ascents, divides haze layers into two types, namely, (i) layers of relatively cold and damp air due to the presence of water droplets sufficiently large and numerous to cause a haze effect, and (ii) the dust haze layers coincident with dry inversion layers which have their greatest density in the upper portion of the inversion layer. The former type may result in the formation of Ci.St. or A.St. cloud and an example appears to be afforded by the observations on October 15, 1925 (Table XVII), when at 0700 light mist was observed extending to a considerable height, generally becoming thicker with height, with the haze top high, whilst at 1000 thick haze (or mist) was recorded near the top of the ascent with haze top at about 12,000 feet. Throughout the day there was some Ci. or Ci.St. cloud, and at 2000 A.St. cloud, which had presumably formed near the level of the haze top, was observed from the surface. As regards Wigand's second type of haze layer, Willett(3) puts forward an explanation of the vertical distribution of dust in such a layer in terms of turbulence and wind velocity based on the normal conditions of lapse-rate and wind prevailing up to, and through, an anticyclonic subsidence inversion. It is not possible to test the general applicability of his theory to the present observations, as more reliable and detailed upper-wind data than are provided by the single-theodolite pilot-balloon ascents would be necessary ; but it is hardly to be anticipated that it would provide a complete explanation owing to the prevalence of dust from the African deserts, which results in the formation of haze layers under alternative conditions to those of an anticlonic subsidence inversion. There is, however, definite evidence in a considerable proportion of the cases where a haze top was encountered near the top of an inversion layer that the latter was accompanied by marked wind discontinuities, and it seems very probable that in these instances the actual position of the haze top was largely determined by the varying conditions of turbulence obtaining within and above the inversion layer as a result of the wind stratification.

(*d*) Striking changes in the height of the haze top occurred within the course of a day on certain days ; this was particularly the case on June 25, 1926 (Table XXXVIII), when the height of the haze top in the five ascents is given as 2,600, 4,200, 5,700, 6,800, 8,300 feet, respectively. On this day Cu. cloud was observed at 4,200 feet in the early morning ascents ; in the later ascents on that day it was found at successively greater heights on account of the upward penetration of convection, with which the rise in the height of the haze top, following that of cloud, was evidently likewise associated. Kimball and Hand (10), in their experimental investigation of the dust content of the atmosphere, similarly found that with a clear sky in the morning there is more dust near the ground and less between 2,000 and 7,000 feet than in the afternoon, and they attributed the increase at high levels later in the day to convection.

§ 12—Bumpiness

The qualitative terms which have been used in describing the degree of bumpiness experienced may be divided into four classes :—

Class A. Very slight bumps.

Class B. Slight bumps.

Class C. Bumps, or considerable bumps, or bumps moderate, or rather bumpy, or fairly bumpy.

Class D. Bad bumps, or very bumpy.

Certain features which emerge from a study of the recorded observations may be briefly considered.

(*a*) *Bumpiness extending upwards from the surface.*—On 30 days out of 37 on which aeroplane ascents were made at or about the hours 1000, 1300 and 1700, i.e., at the time of day when vertical convection is most active, some degree of bumpiness was experienced from the surface up to a varying height during one or more of these three ascents. This height was usually about 3,000 or 4,000 feet, but in several extreme cases it approached or slightly exceeded 8,000 feet, the greatest value being 8,500 feet, which was recorded on May 18, 1926, at the 1300 ascent (Table XXXI). The records of bumpiness appear to have been fairly systematically made, and it, therefore, seems likely that appreciable bumpiness was absent on the occasions for which there are no entries concerning bumps.

(*b*) *Bumpiness in the upper air.*—There are some records of bumpiness being encountered at isolated heights in the upper air, but not extending down to the surface. On May 18, 1926 (Table XXXI), very bumpy conditions were reported between about 9,000 and 10,000 feet in the early morning ascents, and this constitutes the greatest height at which bumps were recorded during this series of ascents. They have, however, been encountered up to at least 12,000 feet over Lower Egypt(11), and also at 12,000 feet over Iraq(12).

(*c*) *Diurnal variation of bumpiness.*—The number of days with bumpiness (of any degree of intensity) recorded at the various times of ascent are given in the following table :—

Local time (approx.)	05–06h.	07–08h.	10h.	13h.	17h.
No. of days	4	11	19	19	15

From this it appears that bumpiness is rare in the early morning, attains a maximum about midday, and falls off towards evening.

From a tabulation of the degrees of bumpiness recorded at the different times of day, it emerged that on 64 per cent of the ascents at 0700–0800, bumpiness was reported as very slight or slight (classes A and B above) ; in 74 per cent of the ascents at 1000 it was moderate (class C above) ; in 60 per cent of the ascents at 1300 it was bad (class D above) ; while in 60 per cent of the ascents at 1700 it was slight (class B above). It thus appears that the intensity of bumpiness follows a diurnal variation similar to that of its frequency. Of the four occasions on which bumpiness was reported at the early ascent (0500-0600), i.e., August 27, 1925 (Table XXVII), April 6, 1926 (Table XXII), April 23, 1926 (Table XXVII) and May 18, 1926 (Table XXXI) two were in class D (very bumpy), one in class C (moderate bumps), and one in class B (slight bumps).

(*d*) *Height of haze top and upper limit of bumpiness.*—Since haze tops commonly accompany an inversion of temperature or, at any rate, mark the upper limit of

convection, it is to be expected that they will also indicate the height above which bumpiness is not likely to occur. Throughout this series of ascents there were only three occasions on which bumpiness was encountered above a definite haze top, and in each of these cases it was slight or very slight and was recorded as occurring at one particular level only, and not over a definite layer. The occasions in question were :—August 29, at 1700 (Table IX) ; September 8, at 1000 (Table X) ; and September 10, at 0700 (Table XI).

§ 13—Summary

It may be convenient briefly to summarise the results of these ascents from the point of view of their bearing on three features of the meteorology of Lower Egypt :—

(*a*) The formation of inversions at night in the lower layers of the atmosphere.

(*b*) The sea breeze, as experienced at Abu Sueir and Ismailia.

(*c*) Khamsin depressions.

(*a*) *The formation of inversions.*—An inspection of the early morning ascents throughout the series shows that in a very large majority of cases an inversion occurred either upwards from the surface or at a height of a few thousand feet. If the dates with these two types of inversion are tabulated, excluding occasions on which an inversion of each type was present, a definite seasonal variation is revealed. This is exhibited in the following table in which the number of days per month with each of the two types of early morning inversion is expressed as a percentage of the total number of days per month with early ascents :—

	March	April	May	June	July	August	Sept.	October
Inversion to surface ..	75	66	100	66	17	33	25	80
Inversion not to surface	25	17	0	17	66	67	75	0

It thus appears that although the total number of occasions dealt with is comparatively small, those with surface inversions definitely preponderate from March to June and in October, whilst from July to September the other type is more frequent.

When considering conditions on individual days it was found that inversions upwards from the surface tended to occur on cloudless nights when the surface wind remained practically calm, whereas inversions of the other type were commonly accompanied by a cloud layer and were associated with light winds which, from the anemograms, appeared to have an appreciable degree of turbulence ; the process of formation of this type was discussed under August 25, 1925 (§ 10). The seasonal variation of the two types, if its character may be taken as truly represented by the table above, would, therefore, require that during the months July to September the wind near the surface during the night should, in general, be more turbulent than from March to June, when calm nights should be frequent. In order to ascertain the actual surface wind conditions obtaining during nights preceding aeroplane ascents the anemograms were examined and it was found that in almost every case where an inversion did not extend down to the surface the wind was from some direction between N. and W., which is the prevailing direction during the months June–September (inclusive), whilst with inversions upwards from the surface, the wind, when not calm, was from a direction between N. and W. on only 2 occasions out of 22. It therefore appears that inversions

not reaching to the surface are associated with occasions when the air drift is from over the Nile Delta cultivation, and this suggests that the air in passing over the cultivation not only picks up a certain amount of moisture but also, by virtue of the existence of obstacles on the ground compared with the uniform smoothness of the desert surface, is rendered sufficiently turbulent to result in the replacement of a surface inversion forming over the Delta by one in the free air, with accompanying cloud layer, as already described. This process is no doubt facilitated when the air reaches the desert from the cultivation by virtue of the greater cooling of the desert surface on a clear night than that of the cultivation; this point was discussed under July 7, 1926 in § 10.

(*b*) *The sea breeze.*—This has already been referred to in § 6 (iii), and in dealing with ascents on certain individual days. The features revealed by the ascents regarding the minimum vertical extent of the sea breeze and changes of temperature at its onset are collected here :—

April 9, 1926. Height at least 3,000 feet. No temperature change.

May 5, 1926. Height at least 5,000 feet. Slight fall of temperature near surface.

June 9, 1926. Height at least 6,000 feet. Fall of temperature of about 6°F. at surface and up to over 1,000 feet. No temperature change above about 1,800 feet.

July 7, 1926. Height at least 3,200 feet. Falls of temperature 2°F. at 3,260 feet, 5°F. at 1,700 feet, 4°F. at 1,120 feet.

The height to which a sea breeze extends in temperate latitudes seldom exceeds about 2,000 feet, but in a hot climate, such as that of Lower Egypt, where the diurnal variation of temperature over the land is very marked and where there may consequently be a big contrast between day temperatures over land and over the neighbouring sea, the conditions are favourable for the sea breeze to extend to considerably greater heights, apparently to at least 6,000 feet in exceptional cases, as on June 9, 1926, when the surface temperature reached a maximum of 112°F. at Abu Sueir, whilst at Port Said the maximum was only 88°F.

(*c*) *Khamsin depressions.*—Khamsin depressions passed over Lower Egypt on March 5, May 8, May 21, 1926. The ascents on each of the days March 3, May 5, 7, 18, 19, revealed features resulting from the approach of these depressions. On March 3, a marked increase in temperature occurred during the afternoon at all heights between 1,000 and 8,000 feet, and likewise on May 5 and 7 increasingly high temperatures were recorded at all heights up to 12,000 feet. On May 18 and 19 thick dust haze extended from the surface up to the cloud level in the neighbourhood of 10,000 feet. No ascents shortly after the passage of a khamsin depression are available.

I am indebted to Mr. C. S. Durst, B.A., and to Mr. A. F. Crossley, B.A., of the Meteorological Office, for certain helpful criticisms, and to Mr. D. Bailey for careful preparation of the diagrams.

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OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE VII—AUGUST 25, 1925. TIME STANDARD:—CAIRO TIME.

ASCENT No. 1.
Left Ground 0530 Landed 0605

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·2	Surf.	75	80	75	83
	1040	72	100	70	90
950	1700	68	51	67	95
900	3230	78	21	78	21
850	4870	75	17	74	17
800	6570	66	24	65	23
750	8370	55	37	55	37

Upper Wind 0340

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	292	2
500	304	8
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. St. Cu. 10/10, from 1,000—1,700 ft.

Haze top nil.

ASCENT No. 2.
Left Ground 0700 Landed 0740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·0	Surf.	77	77	78	72
	1040	72	95	71	90
950	1700	68	95	70	95
900	3240	79	20	78	24
850	4880	75	31	**74**	19
800	6580	65	30	65	27
750	8370	56	34	56	34

Upper Wind 0718

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	270	1
500	293	4
1,500	325	9
3,000	349	17
6,000	—	—
10,000	—	—

Cloud. St. Cu. 5/10, from 1,700—2,000 ft.

Cloud clearing rapidly.
Visibility becoming good at low heights.
Haze top nil.

ASCENT No. 3.
Left Ground 1005 Landed 1055

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·2	Surf.	85	55	90	42
	1070	80	61	80	54
950	1730	75	67	78	57
900	3280	79	12	80	21
850	4930	74	19	75	15
800	6630	65	23	66	5
750	8400	56	30	56	26
700	10330	49	23	47	11
650	12370	47	10	47	10

Upper Wind 1008

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	270	6
1,500	337	9
3,000	22	19
6,000	38	14
8,000	50	19

Cloud. Nil.

Very bumpy 0—3,200 ft. and at 12,400 ft. (slight).
Haze top 12,900 ft.

ASCENT No. 4.
Left Ground 1300 Landed 1332

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·6	Surf.	95	35	97	35
	1100	90	39	88	41
950	1730	86	38	86	43
900	3300	80	29	79	45
850	4940	75	20	75	17
800	6660	67	22	66	21
750	8460	56	30	56	30

Upper Wind 1311

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	337	5
500	321	10
1,500	340	11
3,000	2	15
6,000	41	19
10,000	59	12

Cloud. Nil.

Very bumpy 0—3,800 ft.
Thick haze to 5,800 ft., and slight haze above, with top apparently about 13,000 ft.
Haze top 5,800 ft.

ASCENT No. 5.
Left Ground 1655 Landed 1740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1006·5	Surf.	99	25	95	39
	1090	91	33	88	37
950	1690	87	33	84	39
900	3270	82	14	82	10
850	4910	75	25	74	22
800	6630	66	21	66	24
750	8440	57	31	57	31

Upper Wind 1707

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	22	3
500	2	19
1,500	353	18
3,000	349	22
6,000	25	11
10,000	—	—

Cloud. Cu. 1/10 at 6,400 ft. (distant).

Bumpy 0—3,200 ft.
Scattered Cu. cloud to S.W. at 6,400 ft. Generally hazy, top not located.

TABLE VIII—AUGUST 27, 1925. TIME STANDARD:—CAIRO TIME.

ASCENT No. 6.
Left Ground 0520 Landed 0600

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·1	Surf.	70	83	70	84
	1060	83	21	84	21
950	1690	85	12	85	14
900	3240	79	23	79	20
850	4890	72	19	72	23
800	6580	63	28	63	28
750	8390	57	15	57	15

Upper Wind 0345

Ht. feet.	Dir. °	Speed m.p.h.
Surf	—	Calm
500	315	3
1,500	23	9
3,000	341	7
6,000	324	5
8,000	11	6

Cloud. St. 1/10, from Surface (distant).

Fog over Delta cultivation to N.W.
Bumpy at 8,600 ft.
Haze top about 9,400 ft.

ASCENT No. 7.
Left Ground 0700 Landed 0735

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·5	Surf.	75	80	78	75
	1060	85	18	85	18
950	1720	86	13	86	15
900	3270	79	17	79	25
850	4920	73	21	72	25
800	6630	64	29	63	28
750	8430	55	29	55	29

Upper Wind 0720

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	270	1
500	268	5
1,500	328	5
3,000	344	8
6,000	267	7
10,000	95	8

Cloud. St. 1/10, from Surface (distant).

Haze top 9,000 ft.

ASCENT No. 8.
Left Ground 1005 Landed 1055

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·0	Surf.	91	39	96	33
	1090	86	40	87	32
950	1750	84	23	84	36
900	3310	79	20	78	21
850	4960	71	28	71	25
800	6660	64	0	63	0
750	8460	54	37	54	31
700	10370	52	19	52	15
650	12400	44	14	44	14

Upper Wind 1007

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	270	4
1,500	328	6
3,000	300	4
6,000	261	6
10,000	99	6

Cloud. Nil.

Slightly bumpy 0—3,200 ft.
Pronounced dust haze; thickest at top (12,700 ft).

ASCENT No. 9.
Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·4	Surf.	99	31	101	22
	1110	93	24	92	22
950	1750	88	26	88	23
900	3320	79	36	80	31
850	4960	71	0	71	0
800	6670	64	26	64	26
750	8470	55	33	55	33

Upper Wind 1312

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	315	2
500	326	7
1,500	344	6
3,000	319	5
6,000	135	2
10,000	75	4

Cloud. A. Cu. 1/10 about 9,500 ft.

Very bumpy 0—4,300 ft.
One small isolated lump of A. Cu. at about 9,500 ft.
Haze top 9,500 ft.

ASCENT No. 10.
Left Ground 1710 Landed 1755

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·5	Surf.	99	22	98	18
	1090	93	19	93	23
950	1730	91	20	89	24
900	3300	81	27	81	27
850	4960	72	42	72	32
800	6660	62	46	62	42
750	8460	60	13	60	13

Upper Wind 1710

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	337	10
500	311	17
1,500	318	12
3,000	317	7
6,000	81	3
10,000	297	5

Cloud. Nil.

Bumpy 0—4,300 ft.
Thick dust haze.
Haze top 9,000 ft.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE IX—AUGUST 29, 1925. TIME STANDARD :—CAIRO TIME.

ASCENT No. 11. Left Ground 0545 Landed 0620

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·8	Surf.	73	95	75	84
	1040	72	90	71	95
950	1770	70	100	70	91
900	3310	72	54	72	54
850	4930	69	29	68	38
800	6610	62	23	61	26
750	8430	52	38	52	38

Upper Wind 0350

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	295	5
1,500	305	7
3,000	319	11
6,000	353	9
10,000	—	—

Cloud. St. Cu. 10/10, from 1,300—2,500 ft.

Haze top above 9,300 ft.

ASCENT No. 12. Left Ground 0705 Landed 0743

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·8	Surf.	76	85	77	80
	1050	72	90	72	90
950	1770	69	91	69	95
900	3320	72	58	72	58
850	4940	69	83	68	73
800	6630	61	37	60	40
750	8420	53	43	53	35

Upper Wind 0711

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	292	4
500	322	7
1,500	351	4
3,000	360	5
6,000	—	—
10,000	—	—

Cloud. St. Cu. 5/10, from 1,900—2,500 ft.

Haze top above 11,300 ft.

ASCENT No. 13. Left Ground 1000 Landed 1045

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·1	Surf.	87	57	86	58
	1070	77	71	78	63
950	1800	73	78	74	70
900	3340	72	50	69	69
850	4970	67	52	66	55
800	6660	60	44	60	36
750	8440	53	39	54	31
700	10350	50	20	49	19
650	12360	43	13	43	13

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	337	2
500	352	7
1,500	319	11
3,000	317	9
6,000	273	21
10,000	311	8

Cloud. St. Cu. 2/10, at 4,200 ft.

Haze top 10,100 ft.
Bumpy 0—2,100 ft.

ASCENT No. 14. Left Ground 1315 Landed 1420

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·1	Surf.	91	39	92	36
	1090	85	47	84	46
950	1790	80	36	81	46
900	3350	72	58	72	66
850	4970	64	71	64	71
800	6670	58	65	58	65
750	8460	58	13	58	13

Upper Wind 1308

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	327	14
500	313	13
1,500	319	17
3,000	319	23
6,000	255	13
8,000	257	24

Cloud. Nil.

Haze top above 8,700 ft.

ASCENT No. 15. Left Ground 1700 Landed 1745

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·4	Surf.	90	42	87	53
	1080	81	58	80	54
950	1760	77	63	76	63
900	3310	69	82	68	82
850	4930	62	80	62	75
800	6620	64	13	63	11
750	8420	61	7	61	7

Upper Wind 1711

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	22	14
500	19	27
1,500	9	21
3,000	343	17
6,000	259	15
8,000	269	25

Cloud. St. Cu. 2/10, from 6,500—7,200 ft. Cu. 1/10 at 8,300 ft.; isolated. Ci. 3/10.

Haze top 6,800 ft.
Slight bumps 0—4,200 ft. and at 8,300 ft.
Very hazy in upper air.
High cloud approaching from W.

TABLE X—SEPTEMBER 8, 1925. TIME STANDARD :—CAIRO TIME.

ASCENT No. 16. Left Ground 0530 Landed 0605

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·4	Surf.	73	84	73	78
	1050	70	77	68	86
950	1730	65	95	66	90
930	*2330*	*65*	*86*	*65*	*90*
900	3260	79	0	79	0
850	4890	74	5	74	8
800	6600	71	3	70	5
750	8400	64	3	64	3

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. St. Cu. 9/10, from 1,900—2,200 ft.

Cloud clearing and rising.
Inversion of 14° commenced at 930 mb. and ended at 900 mb.
Haze top 2,200 ft.

ASCENT No. 17. Left Ground 0730 Landed 0807

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·4	Surf.	75	75	76	77
	1040	70	81	69	90
950	1730	66	90	66	95
920	*2640*	*65*	*90*	—	—
900	3270	79	5	78	7
850	4900	76	7	76	3
800	6600	71	3	70	5
750	8420	66	8	66	8

Upper Wind 0706

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	11	4
500	344	8
1,500	349	9
3,000	357	9
6,000	315	2
10,000	90	5

Cloud. St. Cu. 6/10, from 2,000 to 2,300 ft.

Slight bumps near ground.
Mist to cloud level from ground.
Inversion of 14° from 920 mb. to 890 mb.
Haze top 2,300 ft.

ASCENT No. 18. Left Ground 1000 Landed 1105

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·7	Surf.	82	61	86	48
	1070	75	31	76	26
950	1760	70	73	73	66
900	3310	77	3	78	1
850	4960	77	0	76	1
830	*5630*	*77*	*0*	*75*	*0*
800	6670	71	3	72	1
750	8480	66	2	66	2
700	10420	58	6	58	2
650	12470	50	7	50	3
600	14660	43	7	43	7

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	12	6
500	336	5
1,500	356	8
3,000	349	9
6,000	279	7
10,000	121	3

Cloud. St. Cu. 1/10, at 3,400 ft. in distance to N.

Slight bumps 0—3,200 ft. Very slight bumps at 7,400 ft.
Inversion of 7° from 950 mb. to 900 mb., thence isothermal to 830 mb.
Haze top 4,500 ft. rising rapidly.

ASCENT No. 19. Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·6	Surf.	92	37	94	36
	1090	85	39	84	41
950	1790	80	45	82	40
900	3340	72	50	73	51
890	*3650*	*72*	—	—	—
850	4980	73	3	73	3
810	*6340*	*74*	—	—	—
800	6690	72	4	72	4
750	8510	65	10	65	10

Upper Wind 1305

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	360	8
500	342	7
1,500	337	11
3,000	333	8
6,000	343	6
9,000	338	6

Cloud. Nil.

Bumpy 0—4,200 ft.
Inversion of 2° from 890 to 810 mb.
Haze increasing with height to above 8,600 ft.

ASCENT No. 20. Left Ground 1705 Landed 1730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·1	Surf.	92	45	90	42
	1080	83	52	—	—
950	1740	79	63	—	—
905	*3140*	*73*	—	—	—
900	3290	75	39	—	—
855	*4770*	*76*	—	—	—
850	4930	74	7	—	—
800	6650	72	7	—	—
750	—	—	—	—	—

Upper Wind 1719

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	340	14
500	347	16
1,500	330	13
3,000	320	11
6,000	332	7
8,000	250	13

Cloud. Nil.

Slight bumps 2,100—4,200 ft.
Inversion of 3° from 905 to 855 mb.
Haze top about 6,400 ft., but irregular in various directions.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XI—SEPTEMBER 10, 1925.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 21.

Left Ground 0530 Landed 0610

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·1	Surf.	75	79	76	77
	1050	71	—	71	—
950	1740	69	95	69	100
900	3240	65	38	73	34
850	4860	72	5	72	8
840	*5200*	73	—	—	—
800	6580	71	3	71	6
750	8390	63	10	63	10

Upper Wind 0400 Ht. feet.	Dir. °	Speed m.p.h.	Cloud
Surf.	292	3	St Cu. 10/10, from 2,300—2,900 ft.
500	335	11	
1,500	8	9	
3,000	—	—	
6,000	—	—	
10,000	—	—	

Inversion of 8° from 900—840 mb.
Haze top 2,900 ft

ASCENT No. 22.

Left Ground 0700 Landed 0735

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·5	Surf.	76	75	79	70
	1050	72	77	73	78
950	1750	69	81	70	77
900	3280	65	100	73	20
850	4900	71	10	73	12
820	*5920*	*74*	—	—	—
800	6620	70	8	73	1
750	8430	65	7	65	7

Upper Wind 0720 Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	292	4	St. Cu. 9/10, to 6/10, clearing rapidly ; 2,700—3,300 ft.
500	335	7	
1,500	360	7	
3,000	6	12	
6,000	79	7	
10,000	204	9	

Inversion of 9° from 900—820 mb.
Considerable changes in temperature at same level over slightly different localities.
Very slight bumps 7,300 ft.
Haze top 3,300 ft.

ASCENT No. 23.

Left Ground 1000 Landed 1110

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·7	Surf	84	54	87	52
	1070	78	63	80	54
950	1810	74	70	74	70
920	*2720*	*71*	—	—	—
900	3340	74	22	70	53
850	4970	69	17	69	13
800	6690	71	6	70	5
750	8500	65	7	63	7
700	10430	58	2	57	5
650	12470	50	3	49	5
600	14660	42	0	42	0

Upper Wind 1000 Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	320	3	St. Cu. 1/10, at 5,300 ft. to N., distant.
500	337	5	
1,500	355	7	
3,000	53	8	
6,000	320	6	
10,000	234	10	

Inversions from 920—900 mb and from 850—800 mb.
Clouds near coast.
Haze top 6,500 ft. sloping upwards from coast.

ASCENT No. 24.

Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·3	Surf.	91	43	93	40
	1090	84	44	84	44
950	1770	77	56	78	57
900	3320	67	55	73	44
850	4960	72	5	71	7
840	*5290*	*73*	—	—	—
800	6660	70	2	70	2
750	8480	66	2	66	2

Upper Wind 1312 Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	360	8	Nil.
500	354	11	
1,500	355	11	
3,000	360	10	
6,000	341	7	
10,000	257	7	

Inversion of 6° from 900—840 mb. on ascent, but not observed on descent.
Very bumpy 0—3,200 ft.
Much haze in upper air ; haze top above 8,800 ft.

ASCENT No. 25.

Left Ground 1700 Landed 1800

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·3	Surf.	90	44	86	52
	1070	78	71	77	71
950	1730	76	73	76	59
900	3270	72	51	72	54
850	4920	72	5	71	6
800	6630	70	2	69	4
750	8440	64	4	64	4

Upper Wind 1710 Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	360	20	St. Cu. 1/10, very distant, up Palestine coast.
500	7	21	
1,500	357	19	
3,000	315	13	
6,000	19	7	
10,000	275	7	

No inversion.
Very hazy generally.
Slight bumps 200—4,200 ft.
Gusty near ground.
Haze top 7,000 ft.

TABLE XII—SEPTEMBER 12, 1925.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 26.

Left Ground 0525 Landed 0605

P. mb.	Ht. feet.	Ascent T °F	Ascent R.H %	Descent T. °F	Descent R.H. %
1012·2	Surf.	71	87	73	89
	1040	70	—	73	91
960	*1470*	*69*	—	—	—
950	1770	72	65	72	95
900	3310	74	29	75	27
850	4940	75	3	74	2
800	6650	70	14	70	14
750	8460	64	11	64	11

Upper Wind 0403 Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	—	Calm	St. Cu. 7/10, from 1,500—1,700 ft.
500	53	21	
1,500	49	18	
3,000	49	—	
6,000	—	—	
10,000	—	—	

Inversion of 6° from 960—850 mb.
Fog on ground to leeward of standing water.
Haze top 1,800 ft.

ASCENT No. 27.

Left Ground 0700 Landed 0740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H %	Descent T. °F.	Descent R.H %
1013·0	Surf.	76	86	79	80
	1060	74	86	75	82
950	1800	71	91	72	86
900	3350	75	24	76	23
850	4990	74	7	75	3
800	6700	71	12	70	14
750	8510	66	17	66	17

Upper Wind 0711 Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	45	3	St. Cu. 3/10, from 1,800—2,300 ft.
500	70	15	
1,500	63	21	
3,000	61	33	
6,000	73	12	
10,000	—	—	

Inversion of 4° from 950—900 mb.
Very slight bumps 5,900—6,300 ft.
Haze top indefinite.

ASCENT No. 28.

Left Ground 1000 Landed 1105

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H %	Descent T. °F.	Descent R.H %
1012·2	Surf.	88	49	92	38
	1060	74	78	82	48
950	1800	72	73	78	71
900	3350	76	14	76	20
860	*4660*	*77*	*2*	—	—
850	5000	75	3	74	5
800	6700	71	12	70	11
750	8540	66	11	64	15
700	10460	57	15	56	17
650	12500	47	18	46	21
600	14670	36	25	36	25

Upper Wind 1006 Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	22	15	Nil.
500	48	15	
1,500	53	17	
3,000	67	27	
6,000	235	5	
10,000	235	18	

Inversion of 5° from 950—860 mb. on ascent had smoothed out on descent.
Bad bumps at 2,600 ft.
Slight bumps at 6,800 ft.
Considerable haze at 14,500 ft.

ASCENT No. 29.

Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H %
1011·1	Surf.	98	24	99	23
	1090	87	35	87	35
950	1820	85	32	84	31
900	3370	77	44	77	32
850	5030	75	3	75	3
800	6750	73	11	72	10
750	8600	67	13	67	13

Upper Wind 1302 Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	22	15	Nil.
500	55	15	
1,500	47	20	
3,000	55	15	
6,000	90	5	
10,000	—	—	

Very bumpy 0—4,300 ft.
Gusty at surface with frequent dust devils.
Haze top very high.

ASCENT No. 30.

Left Ground 1700 Landed 1740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H %
1011·0	Surf.	91	41	89	44
	1070	85	45	83	49
950	1800	83	30	82	29
900	3360	80	7	79	8
850	5020	77	5	76	9
800	6740	72	4	70	8
750	8580	66	5	66	5

Upper Wind 1711 Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	22	19	Nil.
500	21	25	
1,500	31	27	
3,000	42	25	
6,000	83	7	
10,000	340	12	

Gusty with slight sand rising on ascent.
Slightly bumpy 500—4,200 ft.
Haze top above 8,800 ft.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XIII—SEPTEMBER 29, 1925.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 31.
Left Ground 0530 Landed 0610

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·5	Surf.	64	91	62	94
	210	*64*	—	—	—
	1040	68	—	70	86
950	1750	66	55	68	81
900	3260	64	41	67	33
850	4870	66	10	65	9
800	6560	62	7	62	7
750	8350	55	13	55	13

Upper Wind 0403

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	39	5
1,500	43	10
3,000	13	15
6,000	203	2
8,000	194	9

Cloud. St. 7/10, from 50—200 ft. St. Cu. 3/10, from 1,300—1,500 ft.

Much shallow fog in neighbourhood.
Fog forming on return.
Inversion of 4° from 200—1,000 ft.
Inversion of 2° from 900—850 mb.

ASCENT No. 32.
Left Ground 0700 Landed 0740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·3	Surf.	66	96	67	99
	720	*67*	—	—	—
	1040	70	86	70	86
950	1760	67	90	68	86
940	*2060*	*69*	—	—	—
900	3280	66	47	67	43
850	4900	67	5	67	5
800	6600	63	5	62	7
750	8400	55	17	55	17

Upper Wind 0740

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	270	2
500	3	5
1,500	61	11
3,000	34	18
5,000	59	7
10,000	—	—

Cloud. St. 10/10, from 0—600 ft. St. Cu. 3/10, from 1,900—2,700 ft.

Thick fog 0—600 ft. at start, with no clear patches ; almost clear on return.
Inversion of 3° from 700—1,000 ft.
Inversion of 2° from 950—940 mb.

ASCENT No. 33.
Left Ground 1000 Landed 1055

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·9	Surf.	81	64	87	46
	1060	74	33	—	—
950	1830	72	43	—	—
900	3360	71	14	—	—
850	4980	68	15	—	—
800	6680	64	16	—	—
750	8460	56	15	56	11
700	10370	48	13	47	15
650	12380	39	26	39	26

Upper Wind 1003

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	45	2
500	57	5
1,500	53	10
3,000	86	13
6,000	173	7
10,000	203	25

Cloud. St. Cu. 1/10, at 3,700 ft. ; distant to W.N.W.

Fog cleared.
No inversions.
Haze top above 12,800 ft.

ASCENT No. 34.
Left Ground 1500 Landed 1540

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·4	Surf.	91	38	92	41
	1070	82	39	82	39
950	1810	79	38	77	49
900	3350	72	37	70	49
850	4980	68	35	68	32
800	6690	64	16	64	16
780	*7390*	*65*	—	—	—
750	8470	60	16	60	16

Upper Wind 1320

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	22	2
500	27	11
1,500	63	1
3,000	77	5
6,000	197	9
10,000	205	21

Cloud. Nil.

Rather bumpy 0—4,200 ft.
Inversion of 1° from 800—780 mb.

ASCENT No. 35.
Left Ground 1705 Landed 1750

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·4	Surf.	87	45	83	58
	1070	79	50	76	59
950	1760	77	54	74	63
900	3320	76	40	74	45
850	4960	71	21	69	29
800	6660	65	11	64	13
750	8450	56	15	56	15

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	360	12
500	30	17
1,500	31	19
3,000	113	3
6,000	293	3
10,000	207	16

Cloud. Nil.

Pronounced haze top at 7,100 ft. though no inversion noted.

TABLE XIV—OCTOBER 1, 1925.

TIME STANDARD :—CAIRO TIME.

Early Morning Ascent impossible owing to aircraft trouble.

Upper Wind 0430

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	351	11
1,500	41	11
3,000	33	18
6,000	327	5
8,000	238	11

Cloud.

ASCENT No. 36.
Left Ground 0700 Landed 0740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1014·6	Surf.	71	91	75	64
	1040	72	86	72	86
950	1850	68	95	69	86
900	3380	74	23	75	24
850	5020	70	23	70	21
800	6700	63	25	63	28
750	8500	57	5	57	5

Upper Wind 0720

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	59	5
1,500	85	7
3,000	49	15
6,000	245	7
9,000	215	14

Cloud. St. Cu. 8/10, from 1,800—2,600 ft. rising and clearing.

Inversion of 1° from 0—1,000 ft.
Inversion of 6° from 950—900 mb.
Slight bumps at 6,200—6,700 ft.

ASCENT No. 37.
Left Ground 1025 Landed 1145

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1014·5	Surf.	83	61	90	77
	1070	78	57	82	45
950	1890	77	33	79	41
900	3430	74	29	74	26
850	5060	68	21	69	17
800	6750	62	31	63	15
750	8540	56	15	58	0
700	10460	50	4	50	12
650	12470	42	3	42	3
600	14630	36	2	37	21
550	16910	30	30	30	30
500	19440	24	16	24	16

Upper Wind 1016

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	37	4
1,500	51	7
3,000	69	15
6,000	308	6
10,000	229	10

Cloud. St. Cu. 1/10, distant. Ci. 2/10 above 20,000 ft.

No inversion. No defined haze top, though haze was apparent at 19,800 ft.

ASCENT No. 38.
Left Ground 1505 Landed 1540

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·1	Surf.	94	25	95	24
	1080	88	27	88	25
950	1840	83	30	83	27
900	3390	75	36	75	33
850	5040	69	19	69	19
800	6750	63	32	62	31
750	8540	55	25	55	25

Upper Wind 1305

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	347	5
500	349	7
1,500	49	5
3,000	15	9
6,000	251	17
10,000	221	11

Cloud. A. St. 1/10, distant.

Very bumpy 0—4,200 ft.

ASCENT No. 39.
Left Ground 1655 Landed 1730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·3	Surf.	89	35	86	43
	1070	82	36	82	36
950	1800	82	17	82	17
900	3340	75	27	76	23
850	4980	68	21	68	21
800	6680	62	34	62	34
750	8470	55	25	55	25

Upper Wind 1711

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	360	13
500	359	24
1,500	360	17
3,000	358	14
6,000	325	10
10,000	237	19

Cloud. Ci. St. 3/10, distant to N.W.

Haze top about 8,900 ft.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XV—OCTOBER 3, 1925.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 40.

Left Ground 0550 Landed 0625

P. mb.	Ht feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·3	Surf.	69	92	69	98
	1040	70	81	71	77
950	1730	66	85	66	90
915	*2800*	*70*	—	*70*	—
900	3260	69	28	69	28
850	4870	65	21	64	24
800	6500	58	38	58	34
750	8330	50	36	50	36

Upper Wind 0438

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	247	5
500	290	13
1,500	317	11
3,000	318	15
6,000	279	5
8,000	243	5

Cloud. St. Cu. 9/10, from 2,100—3,000 ft. Ci. 2/10, distant.

Inversion of 1° 0—1,040 ft
Inversion of 4°, 950—915 mb.
Misty to 3,000 ft.; very clear above.
Haze top 3,000 ft.

ASCENT No. 41.

Left Ground 0655 Landed 0730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·8	Surf.	70	89	72	87
	1040	70	77	70	81
950	1760	66	95	66	95
910	*2970*	*64*	—	66	—
900	3270	70	26	70	26
850	4890	66	23	66	13
800	6570	59	35	58	39
750	8350	51	37	51	37

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.		
500		
1,500	No	
3,000	Ascent	
6,000		
10,000		

Cloud. St. Cu. 7/10, from 2,100—2,900 ft. Ci. 3/10 distant

Inversion of 6°, 910—900 mb.
Mist clearing.
Haze top 2,900 ft.

ASCENT No. 42.

Left Ground 1000 Landed 1110

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·0	Surf.	79	62	84	48
	1060	73	69	75	66
950	1770	69	77	69	77
905	*3140*	*63*	—	—	—
900	3300	68	37	67	44
865	*4420*	*69*	—	—	—
850	4900	66	56	66	59
800	6590	58	34	58	30
750	8370	50	36	50	31
700	10260	43	29	42	33
650	12280	37	23	37	23

Upper Wind 1010

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	297	5
1,500	282	8
3,000	274	11
6,000	257	5
10,000	215	9

Cloud. St. Cu. 5/10, from 2,800—3,400 ft.

Inversion of 6° from 905—865 mb.
Upper air clear towards coast, but very hazy inland.

ASCENT No. 43.

Left Ground 1305 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·4	Surf.	85	39	87	42
	1060	78	57	78	60
950	1770	74	58	74	58
900	3310	66	32	66	36
890	*3600*	*64*	—	*64*	—
850	4910	67	21	66	19
800	6600	57	37	57	37
750	8380	50	36	50	36

Upper Wind 1306

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	292	6
500	321	6
1,500	311	12
3,000	307	15
6,000	198	7
10,000	249	20

Cloud. St. Cu. 2/10, from 5,200—5,400 ft. Ci. St. 1/10, distant.

Inversion of 3° from 800—850 mb.
Haze top 5,400 ft., distinct slope from coast upwards towards South, except towards Red Sea.

ASCENT No. 44.

Left Ground 1700 Landed 1730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F	Descent R H %
1010·5	Surf.	86	47	84	51
	1070	80	54	78	—
950	1770	76	60	75	—
900	3310	68	77	66	81
850	4920	60	79	59	85
815	*6080*	*56*	—	*55*	—
800	6580	57	29	59	65
750	8370	51	15	51	15

Upper Wind 1712

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	315	10
500	307	11
1,500	307	15
3,000	328	13
6,000	258	8
10,000	—	—

Cloud. Cu. 3/10, from 4,200 — 8,500 ft. Ci. 2/10 distant.

Inversion of 1° from 815—800 mb., increasing.
Haze top 6,600 ft.; very sharply defined with pinnacles of Cu. cloud penetrating it. Cu. cloud very black inside.

TABLE XVI—OCTOBER 13, 1925.

TIME STANDARD :—CAIRO TIME.

No Early Morning Ascent.

Upper Wind 0430

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	236	4
500	283	11
1,500	313	18
3,000	311	18
6,000	281	23
8,000	299	14

Cloud.

ASCENT No. 45.

Left Ground 0700 Landed 0737

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1013·7	Surf.	69	82	72	75
	1030	67	76	69	72
950	1800	66	71	66	75
900	3320	63	66	61	69
850	4920	56	73	55	78
800	6570	52	46	51	45
750	8340	50	13	50	13

Upper Wind 0700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	237	7
500	289	14
1,500	325	14
3,000	309	16
6,000	287	21
10,000	285	20

Cloud. Cu. 2/10, distant to N., S.E., and S.W. Cu. Nb. 1/10, distant to N.E.

No inversion.
Heavy anvil Cu. Nb. distant to N.E. over Palestine coast, where thunderstorms were reported at 0800.
Haze top about 7,000 feet.

ASCENT No. 46.

Left Ground 1020 Landed 1105

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1015·5	Surf.	79	53	80	49
	1040	72	57	74	50
950	1870	68	64	69	60
900	3380	60	84	61	74
850	4980	53	83	54	83
800	6640	51	40	51	40
750	8420	50	9	50	9
700	10280	43	13	43	9
650	12270	36	15	36	15

Upper Wind 1020

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	292	10
500	297	9
1,500	306	5
3,000	297	5
6,000	—	—
10,000	—	—

Cloud. Cu. 7/10, from 4,300 — 6,600 ft. Cu. Nb. 1/10, distant to E.N.E.

Bumpy 0—5,800 ft.
Cu. Nb still in sight moving E. over Palestine.
Haze top 5,800 ft.

ASCENT No. 47.

Left Ground 1300 Landed 1311

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1014·4	Surf.	83	44	—	—
	1060	75	51	—	—
950	1860	70	57	—	—
	Forced	Landing.			

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	315	9
500	327	6
1,500	319	10
3,000	325	12
5,000	323	13
10,000	—	—

Cloud. Cu. 6/10.

No Late Afternoon Ascent.

Upper Wind 1702

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	292	9
500	357	9
1,500	346	12
3,000	319	11
6,000	279	25
8,000	313	26

Cloud.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XVII—OCTOBER 15, 1925. TIME STANDARD :—CAIRO TIME.

No Early Morning Ascent.

Upper Wind 0430

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	77	13
1,500	67	8
3,000	117	4
6,000	350	9
10,000	273	30

Cloud.

ASCENT No. 48.
Left Ground 0700 Landed 0735

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1013·8	Surf.	65	82	69	66
	1040	76	26	76	35
960	*1520*	77	—	—	—
950	1830	76	21	76	24
900	3360	74	15	74	15
850	4990	66	33	66	33
800	6680	57	42	57	42
750	8460	48	65	48	65

Upper Wind 0705

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	100	3
500	124	13
1,500	106	13
3,000	108	7
6,000	349	9
10,000	293	25

Cloud. Ci. 3/10.

Inversion of 12° from surface to 960 mb.
Light mist extending to considerable height, generally becoming thicker with height.
Haze top high.
Slight bumps 5,200—7,000 ft.

ASCENT No. 49.
Left Ground 0955 Landed 1050

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1014·5	Surf.	84	43	86	36
	1060	78	25	79	22
950	1890	76	24	78	17
900	3430	74	15	74	15
850	5050	65	36	65	36
800	6740	57	46	57	46
750	8520	48	65	48	65
700	10390	39	79	40	67
670	*11550*	*40*	—	—	—
650	12340	38	14	38	14

Upper Wind 0953

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	154	3
500	157	5
1,500	185	5
3,000	337	3
6,000	347	7
10,000	279	26

Cloud. Ci. St. 2/10.

Inversion of 1° from 670—650 mb.
Thick haze (or mist) near top of ascent.
Haze top 12,200 ft.

ASCENT No. 50.
Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1013·3	Surf.	90	31	92	28
	1070	83	23	84	22
950	1850	78	29	80	22
900	3400	74	29	74	26
850	5030	66	37	66	33
800	6730	57	51	57	51
750	8500	48	70	48	70

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	45	2
500	51	5
1,500	9	5
3,000	342	5
6,000	265	7
10,000	257	15

Cloud. Ci. St. 6/10.

No inversion.
Slight bumps 0—3,200 ft.
Rather hazy at 5,300—8,300 ft.
Haze top not reached.

ASCENT No. 51.
Left Ground 1700 Landed 1735

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·7	Surf.	91	25	89	28
	1080	86	17	85	20
950	1830	82	21	81	21
900	3370	74	29	74	29
850	5020	66	41	66	37
800	6710	58	43	58	38
750	8480	49	55	49	55

Upper Wind 1710

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	67	1
500	35	11
1,500	44	11
3,000	49	7
6,000	241	8
10,000	—	—

Cloud. Ci. 5/10.

No inversion.
Slight bumps 7,900—8,100 ft.
Less hazy.

TABLE XVIII—OCTOBER 17, 1925. TIME STANDARD :—CAIRO TIME.

No Early Morning Ascent.

Upper Wind 0430

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	93	9
1,500	49	8
3,000	14	13
6,000	343	19
10,000	318	17

Cloud.

ASCENT No. 52.
Left Ground 0705 Landed 0740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1013·3	Surf.	69	85	74	79
	1050	73	57	73	65
950	1830	76	23	76	17
900	3360	73	28	73	25
850	4980	66	29	66	29
800	6660	57	46	57	46
750	8430	50	45	50	45

Upper Wind 0705

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	123	2
500	119	12
1,500	75	9
3,000	53	13
6,000	360	17
8,000	341	15

Cloud. St. Cu. 1/10, from 0—100 ft. A. St. 5/10, at about 10,000 ft. Ci. Cu. 2/10.

Inversion of 7° from 0—1,830 ft.
Billowy patches of fog to leeward of standing water.
Haze top nil.

ASCENT No. 53.
Left Ground 1000 Landed 1050

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1013·7	Surf.	82	51	85	40
	1060	76	49	79	50
950	1850	78	25	78	20
900	3390	74	26	74	23
850	5020	66	37	67	31
800	6700	58	43	58	38
750	8470	49	60	49	55
700	10360	41	73	41	67
650	12350	33	70	33	70

Upper Wind 1005

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	95	1
500	137	5
1,500	102	8
3,000	59	8
6,000	326	16
10,000	307	15

Cloud. A. St. 3/10, at about 14,000 ft. Ci. 1/10.

Inversion of 2° from 1,060—1,850 ft.
Exceptional visibility throughout.
Haze top nil.

ASCENT No. 54.
Left Ground 1300 Landed 1340

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·7	Surf.	91	32	92	28
	1080	84	30	84	30
950	1820	80	33	80	33
900	3370	75	27	75	27
850	5020	68	28	68	28
800	6710	61	33	60	36
750	8490	53	39	53	39

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	45	3
1,500	329	3
3,000	357	3
6,000	296	11
10,000	308	27

Cloud. A. Cu. 6/10.

Bumpy 0—3,200 ft.
Slight bumps 6,300—8,300 ft.
Visibility deteriorating and clouds increasing.

ASCENT No. 55.
Left Ground 1655 Landed 1730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·2	Surf.	90	32	89	35
	1080	86	37	85	—
950	1770	82	29	82	—
900	3330	74	29	73	31
850	4960	67	31	67	31
800	6660	59	39	58	43
750	8440	52	47	52	47

Upper Wind 1703

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	67	3
1,500	306	3
3,000	231	5
6,000	321	19
8,000	327	15

Cloud. Nb. 6/10, from 6,300 — 9,400 ft.

Rain general, N.E. to N.W.
Visibility good East to West through South.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XIX—MARCH 1, 1926.

TIME STANDARD :—CAIRO TIME.

No Early Morning Ascent.

ASCENT No. 56.

Left Ground 0700 Landed 0750

P. mb	Ht. feet	Ascent T. °F	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1015·4	Surf.	50	77	57	55
	1060	60	39	60	42
950	1810	56	46	56	45
900	3290	50	57	49	55
850	4850	43	58	42	67
800	6460	38	60	35	69
750	8170	35	33	35	33

Upper Wind 0700

Ht feet.	Dir. °	Speed m.p.h.
Surf.	205	5
500	227	19
1,500	253	25
3,000	260	27
6,000	277	25
10,000	254	36

Cloud: St. 2/10, from 2,100 — 3,100 ft. St. Cu. 2/10, from 7,500—8,000 ft.

Haze top 7,500 ft.

ASCENT No. 57.

Left Ground 1000 Landed 1100

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1016·6	Surf.	65	45	67	52
	1070	59	67	59	65
950	1880	53	79	53	82
900	3360	49	63	47	80
850	4910	41	75	41	45
800	6530	33	—	33	87
750	8230	35	50	35	50
700	10060	31	59	31	52
650	12000	27	83	27	83

Upper Wind 1005

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	264	17
500	256	20
1,500	264	29
3,000	263	15
6,000	271	26
10,000	259	40

Cloud: St. Cu. 3/10, A. Cu. 3/10, from 4,100 — 11,900 ft.

Haze top 9,000 ft.
Up—bumps to 1,600 ft.
Down—bumps from 2,400 ft.
Clouds becoming lower and thicker.

ASCENT No. 58.

Left Ground 1300 Landed 1340

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1016·0	Surf.	68	—	70	46
	1070	61	61	62	52
950	1840	57	69	57	59
900	3320	49	69	49	72
850	4880	42	75	43	58
800	6500	35	92	35	75
750	8200	35	17	35	17

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	270	15
500	255	12
1,500	261	15
3,000	269	21
6,000	269	18
10,000	—	—

Cloud: St. Cu. 8/10, from 5,100 — 10,000 ft.

Very bumpy between 600 ft. and 1,200 ft.
Clouds thickening.

ASCENT No. 59

Left Ground 1700 Landed 1740

P. mb	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1015·8	Surf.	66	43	60	55
	1070	61	52	61	46
950	1850	56	61	56	53
900	3320	49	74	49	65
850	4880	41	87	41	79
800	6500	36	54	35	61
775	*7330*	*38*	*17*	—	—
750	8190	36	22	36	22

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	315	14
500	295	13
1,500	297	14
3,000	270	13
6,000	251	19
8,000	270	23

Cloud: St. Cu. 6/10, from 7,100 — 7,500 ft.

Haze top 7,600 ft.
Very thin clouds between 7,100 and 7,500 ft
No bumps.
Inversion between 800 and 750 mb.

TABLE XX—MARCH 3, 1926.

TIME STANDARD :—CAIRO TIME.

No Early Morning Ascent

ASCENT No. 60.

Left Ground 0710 Landed 0820

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1018·5	Surf.	45	83	53	71
	1050	53	55	53	53
950	1850	48	67	49	63
906	*3240*	—	—	42	—
900	3300	42	77	43	75
880	*4000*	*44*	*11*	*44*	—
850	4850	45	14	45	16
800	6470	41	16	41	16
750	8180	38	32	38	32

Upper Wind 0440

Ht. feet	Dir. °	Speed m.p.h.
Surf.	340	6
500	18	14
1,500	43	12
3,000	66	10
6,000	329	5
8,000	227	15

Upper Wind 0700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	12	3
500	30	17
1,500	45	18
3,000	69	16
6,000	354	3
8,000	289	7

Cloud.

Haze top 7,000 ft.

ASCENT No. 61.

Left Ground 1010 Landed 1135

P. mb.	Ht feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1018·4	Surf.	60	81	62	56
	1060	55	59	56	55
950	1870	50	75	50	69
900	3350	43	78	43	75
885	*3800*	*43*	—	—	—
850	4890	44	17	45	19
800	6520	41	57	42	44
780	*7180*	*42*	—	—	—
750	8220	37	46	38	41
700	10050	34	25	34	39
650	12010	26	56	26	56

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	45	14
500	64	9
1,500	51	13
3,000	59	17
6,000	90	4
10,000	245	17

Cloud.

Haze top 7,000 ft.
Up—bumps to 3,000 ft.
Down—bumps from 4,000 ft. to ground

ASCENT No. 62.

Left Ground 1310 Landed 1405

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1017·2	Surf.	65	38	67	36
	1070	58	62	60	45
950	1850	51	81	52	61
900	3320	43	82	44	69
870	*4240*	*45*	—	—	—
850	4860	45	22	46	10
800	6490	41	58	41	40
750	8210	35	47	35	47

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	67	10
500	61	9
1,500	53	21
3,000	53	21
6,000	166	7
10,000	236	15

Cloud.

Haze top 6,500 ft.

ASCENT No. 63.

Left Ground 1705 Landed 1755

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H %	Descent T °F.	Descent R H %
1015·0	Surf.	65	43	63	49
	1080	60	58	58	54
950	1810	55	66	55	53
900	3300	48	74	49	57
870	*4220*	*49*	—	—	—
850	4860	50	22	50	20
800	6500	45	27	45	25
750	8220	38	38	38	38

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	40	15
500	36	18
1,500	47	13
3,000	80	12
6,000	263	7
10,000	263	21

Cloud.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XXI—MARCH 12*, 1926.

TIME STANDARD :—CAIRO TIME.

MARCH 5, 1926
ASCENT No. 64.
Left Ground 0730 Landed 0815

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
999·6	Surf.	70	34	73	31
	1100	74	30	71	38
950	1420	77	26	79	25
900	2960	71	35	71	31
850	4580	63	47	63	38
800	6250	55	56	55	48
750	8030	45	68	45	68

Upper Wind 0700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	169	29
500	157	28
1,500	181	46
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

Haze top 2,100 ft.
Other ascents on this day impossible owing to duststorms.
Very bumpy up to 1,100 ft.
During the flight, surface wind changed SE. to SW.

ASCENT No. 65.
Left Ground 0705 Landed 0810

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1015·7	Surf.	52	60	57	52
	1070	59	34	60	33
950	1810	55	40	56	33
900	3290	48	53	49	48
850	4850	40	67	40	64
800	6440	32	78	32	83
780	*7100*	*34*	—	*34*	—
750	8130	35	20	35	20

Upper Wind 0700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	182	12
500	201	19
1,500	225	17
3,000	234	17
6,000	228	27
10,000	237	21

Cloud.
Small Cu. from 1,100 — 5,100 ft.

Small banks of lenticular A. Cu. lying over Sinai desert.

ASCENT No. 66.
Left Ground 1000 Landed 1115

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1015·9	Surf.	66	33	69	28
	1070	60	39	61	31
950	1840	56	43	57	37
900	3330	48	50	49	35
850	4870	40	67	41	75
800	6480	32	84	32	79
770	*7480*	*33*	—	*34*	—
750	8160	34	53	34	39
700	9970	27	55	28	54
650	11950	20	70	20	70

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	180	15
500	193	25
1,500	210	16
3,000	228	21
6,000	217	23
10,000	223	22

Cloud.

Small patches of Cu. cloud between 1,100 and 5,100 ft.; very thin.

ASCENT No. 67.
Left Ground 1305 Landed 1355

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1013·5	Surf.	72	25	72	25
	1090	62	37	64	25
950	1800	58	42	59	31
900	3280	50	52	51	48
850	4850	42	66	43	33
800	6470	34	63	34	67
785	*6940*	*34*	—	*34*	—
750	8140	32	75	32	75

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	219	18
500	219	18
1,500	215	17
3,000	211	10
6,000	219	19
10,000	—	—

Cloud.

ASCENT No. 68.
Left Ground 1700 Landed 1725

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·6	Surf.	70	16	69	23
	1080	66	41	66	41
950	1670	61	42	61	42
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	220	17
500	224	21
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

* Except Ascent No. 64.

TABLE XXII—APRIL 6, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 69.
Left Ground 0615 Landed 0705

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·6	Surf.	52	81	53	77
	1050	49	76	49	74
950	1720	47	73	48	63
900	3180	42	84	42	51
850	4710	37	67	37	53
800	6310	29	90	29	86
750	8000	25	74	25	74

Upper Wind 0615

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	237	11
500	243	20
1,500	257	27
3,000	253	31
6,000	243	30
10,000	—	—

Cloud.
St. Cu. from 4,000 — 5,000 ft.
A. Cu. from 8,100 — 8,300 ft.

Very bumpy to 4,000 ft.

ASCENT No. 70.
Left Ground 0745 Landed 0825

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·3	Surf.	56	65	58	59
	1050	51	71	51	68
950	1720	48	73	47	67
900	3190	42	84	42	56
850	4730	36	85	36	73
800	6320	29	89	29	88
770	*7310*	*27*	—	—	—
750	7990	30	26	30	26

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.
A. Cu. from 7,300 — 7,500 ft.

Bumpy to 5,000 ft.

ASCENT No. 71.
Left Ground 1015 Landed 1130

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1013·4	Surf.	60	49	62	41
	1060	52	60	54	45
950	1750	49	57	50	43
900	3210	41	79	43	54
850	4750	34	83	35	83
820	*5690*	*31*	—	*32*	—
800	6330	35	3	35	45
780	*7000*	*34*	—	*34*	—
750	8030	31	50	31	50
700	9840	24	95	25	52
650	11750	15	68	15	68

Upper Wind 1015

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	248	24
500	241	34
1,500	245	37
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.
St. Cu. from 5,500 — 6,500 ft.
A. Cu. from 6,500 — 7,400 ft.

Bumpy to 5,000 ft.

ASCENT No. 72.
Left Ground 1315 Landed 1400

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·8	Surf.	65	40	66	36
	1070	57	51	57	38
950	1770	53	54	53	37
900	3250	45	69	45	49
850	4800	41	57	41	43
800	6410	30	47	30	51
780	*7060*	*32*	—	—	—
750	8100	31	27	31	27

Upper Wind 1305

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	250	23
500	261	40
1,500	257	53
3,000	238	24
6,000	—	—
10,000	—	—

Cloud.
A. Cu. from 7,000 — 7,500 ft.

Bumpy.

ASCENT No. 73.
Left Ground 1710 Landed 1750

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·6	Surf.	65	33	64	36
	1060	59	38	58	34
950	1740	55	45	54	29
900	3210	46	57	47	30
850	4770	37	79	38	51
800	6370	30	82	29	84
750	8060	26	80	26	80

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	270	20
500	251	29
1,500	254	32
3,000	261	21
6,000	—	—
10,000	—	—

Cloud.
St. Cu. from 8,000 — 8,700 ft.

Very bumpy.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XXIII—APRIL 8, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 74.

Left Ground 0650 Landed 0730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1018·7	Surf.	46	84	49	75
	1050	54	56	55	49
950	1880	51	60	51	41
900	3340	43	76	43	51
850	4870	36	60	37	62
800	6480	36	48	37	50
785	*6980*	*36*	*39*	—	—
750	8170	33	45	33	45

Upper Wind 0700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	250	5
500	262	15
1,500	289	13
3,000	285	11
6,000	325	12
10,000	336	16

Cloud. Cu. (very thin) from 6,500—7,000 ft.

Haze top 7,000 ft.

ASCENT No. 75.

Left Ground 0800 Landed 0840

P. mb	Ht. feet.	Ascent T °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1019·7	Surf.	58	56	61	53
	1060	55	56	56	50
950	1920	50	68	51	41
900	3380	43	85	43	51
850	4920	36	80	37	74
800	6540	37	52	38	51
750	8250	34	57	34	57

Upper Wind —

Ht feet	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. Cu. (thin) from 6,000 — 7,000 ft.

Haze top 7,500 ft.

ASCENT No. 76.

Left Ground 1005 Landed 1105

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1020·6	Surf.	64	48	66	45
	1070	58	57	60	44
950	1960	52	63	54	45
900	3430	45	79	45	51
850	4970	37	100	38	73
800	6600	38	20	38	42
750	8300	35	33	34	50
700	10120	26	68	27	65
650	12030	18	77	18	77

Upper Wind 1000

Ht feet.	Dir. °	Speed m.p.h.
Surf.	270	4
500	270	7
1,500	290	9
3,000	295	13
6,000	344	11
10,000	325	9

Cloud. St. Cu. from 6,000 — 6,600 ft.

Haze top 6,000 ft.

ASCENT No. 77.

Left Ground 1300 Landed 1340

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1019·8	Surf.	70	40	69	43
	1080	62	52	63	42
950	1960	57	64	57	51
900	3440	48	77	48	93
850	5000	40	100	39	69
800	6600	34	75	34	83
750	8320	35	43	35	43

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	250	4
500	277	7
1,500	276	7
3,000	263	7
5,000	258	11
10,000	—	—

Cloud St. Cu. from 5,700 — 7,700 ft.

Haze top 6,300 ft.
Very bumpy to 2,100 ft.
Bumpy 2,100—5,600 ft.

ASCENT No. 78

Left Ground 1700 Landed 1745

P. mb.	Ht feet.	Ascent T. °F.	Ascent R.H %	Descent T. °F.	Descent R H %
1018·4	Surf.	69	43	68	45
	1080	64	42	63	49
950	1900	59	54	58	58
900	3400	51	67	51	63
850	4960	42	84	43	65
800	6580	34	—	36	68
770	*7570*	*32*	—	—	—
750	8220	35	33	35	33

Upper Wind 1700

Ht feet.	Dir. °	Speed m.p.h.
Surf.	335	1
500	331	10
1,500	315	8
3,000	320	8
5,000	305	11
10,000	—	—

Cloud. St. Cu. from 5,600 — 8,500 ft.

TABLE XXIV—APRIL 9, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 79.

Left Ground 0555 Landed 0635

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1019·6	Surf.	50	89	53	85
	1050	57	72	56	74
950	1910	52	87	52	86
900	3380	47	85	47	77
850	4930	41	73	41	45
800	6550	39	43	38	32
750	8250	34	57	34	57

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

Haze top 8,700 ft.

ASCENT No. 80.

Left Ground 0800 Landed 0840

P. mb.	Ht. feet	Ascent T. °F.	Ascent R H %	Descent T. °F	Descent R H %
1020·6	Surf	59	73	63	62
	1060	56	90	57	75
950	1950	51	97	52	87
900	3430	47	—	47	75
850	4980	42	65	42	40
800	6600	40	30	40	32
750	8310	34	44	34	44

Upper Wind 0700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	45	6
1,500	63	8
3,000	6	3
6,000	180	3
10,000	333	7

Cloud Very thin, from 6,500 — 7,000 ft.

Haze top 7,500 ft.

ASCENT No. 81.

Left Ground 1010 Landed 1110

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1020·6	Surf.	67	55	68	53
	1070	61	71	62	52
950	1970	53	87	56	55
900	3440	47	91	48	55
850	5000	43	65	41	61
800	6620	40	32	40	46
750	8340	34	67	35	55
700	10160	28	62	29	57
650	12100	21	84	21	84

Upper Wind 1000

Ht. feet	Dir. °	Speed m.p.h.
Surf.	5	1
500	11	7
1,500	64	9
3,000	75	5
6,000	—	—
10,000	—	—

Cloud. St. Cu., from 5,100 — 7,000 ft.

Haze top 7,000 ft.

ASCENT No. 82.

Left Ground 1300 Landed 1350

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1019·2	Surf.	73	43	72	47
	1070	64	72	65	38
950	1950	58	55	60	43
900	3440	51	72	52	60
850	5000	43	86	44	69
820	*5960*	*40*	—	—	—
800	6580	40	23	39	22
750	8300	35	36	35	36

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	17	8
1,500	65	8
3,000	83	5
4,000	90	3
5,000	81	3
10,000	—	—

Cloud. St. Cu from 6,600 — 7,100 ft.

Haze top 6,100 ft.
Top of inversion at 810 mb.

ASCENT No. 83.

Left Ground 1700 Landed 1750

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1017·1	Surf.	70	44	69	47
	1070	65	55	64	49
950	1880	60	60	58	59
900	3370	52	76	53	65
850	4920	45	86	46	77
800	6560	37	91	38	85
760	*7860*	*39*	—	—	—
750	8200	38	18	38	18

Upper Wind 1700

Ht feet	Dir. °	Speed m.p.h.
Surf.	11	10
500	35	17
1,500	28	18
3,000	17	17
4,000	45	3
5,000	40	9
10,000	—	—

Cloud. St. Cu. from 5,300 — 7,200 ft.

Inversion 780—760 mb.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XXV—APRIL 19, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 84.
Left Ground 0600 Landed 0650

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1020·9	Surf.	58	—	—	—
	1070	63	87	63	42
980	*1150*	*63*	—	—	—
950	2010	61	32	64	23
930	*2610*	*62*	—	—	—
900	3510	58	47	58	42
850	5100	51	40	51	42
800	6740	48	32	49	20
785	*7260*	*49*	—	—	—
750	8490	44	22	44	22

Upper Wind 0615

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	115	8
500	117	18
1,500	79	15
3,000	351	23
6,000	353	24
10,000	257	24

Cloud.

Haze top above 9,000 ft.

ASCENT No. 85.
Left Ground 0800 Landed 0840

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1020·7	Surf.	67	—	—	—
	1070	64	49	65	40
950	2010	64	32	64	32
900	3520	58	52	57	50
850	5100	52	47	52	51
800	6750	47	22	47	21
770	*7790*	*48*	*9*	—	—
750	8480	45	17	45	17

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

ASCENT No. 86.
Left Ground 1010 Landed 1145

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1020·6	Surf.	76	—	—	—
	1100	69	33	71	29
950	2040	64	37	65	32
900	3540	58	49	59	41
850	5110	51	30	52	37
800	6780	46	23	48	31
780	*7410*	*46*	—	—	—
750	8490	44	8	46	32
700	10340	41	38	41	38
698	*10400*	*42*	—	—	—
650	12300	32	55	32	55

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	90	1
500	81	7
1,500	49	10
3,000	24	13
6,000	341	29
10,000	269	14

Cloud.

Haze top 12,500 ft.
Bumpy to 5,200 ft.
Inversion of 1° from 790—780 mb.

ASCENT No. 87.
Left Ground 1315 Landed 1400

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1019·4	Surf.	81	—	—	—
	1100	73	42	74	30
950	2010	67	48	67	39
900	3520	60	52	60	49
850	5110	51	62	51	54
800	6780	47	33	47	15
775	*7640*	*49*	*10*	—	—
750	8510	45	14	45	14

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	8	9
500	53	9
1,500	27	13
3,000	354	17
6,000	348	21
8,000	332	10

Cloud.
Cu. on horizon.

Very bumpy to 2,100 ft.
Bumpy to 8,000 ft.

ASCENT No. 88.
Left Ground 1705 Landed 1755

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1018·2	Surf.	77	85	69	93
	1100	70	52	68	55
950	1990	65	55	64	56
900	3490	57	62	58	63
850	5050	52	60	52	67
800	6710	47	42	50	16
790	*7030*	*48*	—	—	—
750	8420	45	14	45	14

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	22	17
500	17	16
1,500	9	15
3,000	341	8
6,000	341	11
10,000	303	23

Cloud.
Cu. on horizon.

Haze top 9,600 ft.

TABLE XXVI—APRIL 21, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 89.
Left Ground 0550 Landed 0620

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1017·6	Surf.	60	94	62	79
	1060	59	78	58	78
950	1900	54	89	54	88
900	3400	61	14	61	13
850	4990	59	12	59	7
800	6640	53	13	52	10
750	8400	44	22	44	22

Upper Wind 0615

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	34	6
500	48	13
1,500	54	19
3,000	39	13
6,000	—	—
10,000	—	—

Cloud.
St. Cu., from 2,600 — 2,900 ft.

ASCENT No. 90.
Left Ground 0700 Landed 0750

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1017·9	Surf.	65	67	68	59
	1070	60	78	61	71
950	1930	54	93	55	81
940	*2200*	*55*	—	—	—
900	3410	61	18	61	13
890	*3720*	*61*	—	—	—
850	5000	60	8	60	7
800	6670	52	12	52	12
750	8410	44	28	44	28

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

Haze top 5,300 ft.

ASCENT No. 91.
Left Ground 1000 Landed 1055

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1017·9	Surf.	70	60	73	55
	1080	63	67	65	55
950	1950	59	76	61	57
925	*2690*	*59*	*24*	—	—
900	3440	61	15	62	0
850	5010	59	8	59	0
800	6690	52	12	52	3
750	8440	45	11	45	14
700	10310	39	10	39	26
650	12300	33	73	33	73

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	45	3
500	49	9
1,500	45	9
3,000	45	14
6,000	25	12
10,000	305	3

Cloud.

Haze top 8,200 ft.
Bumpy to 3,100 ft.

ASCENT No. 92.
Left Ground 1310 Landed 1400

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1016·7	Surf.	79	42	80	38
	1100	71	39	72	45
950	1920	66	47	67	58
900	3450	59	42	63	27
860	*4700*	*58*	—	—	—
850	5020	59	5	60	3
800	6700	52	10	52	10
750	8450	45	12	45	12

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	5	7
500	32	6
1,500	42	7
3,000	27	9
6,000	335	5
8,000	279	3

Cloud.

ASCENT No. 93.
Left Ground 1700 Landed 1740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1015·7	Surf.	77	43	74	52
	1090	71	48	69	49
950	1900	65	56	64	46
900	3410	63	16	64	9
850	5000	59	16	59	6
800	6700	52	23	52	10
750	8450	45	13	45	13

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	23	15
500	24	13
1,500	24	18
3,000	27	13
6,000	9	11
10,000	301	3

Cloud.

Haze top 7,700 ft.
Slightly bumpy to 3,200 ft.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XXVII—APRIL 23, 1926. TIME STANDARD :—CAIRO TIME.

ASCENT No. 94.
Left Ground 0550 Landed 0630

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1017·9	Surf.	55	93	60	89
	1060	65	44	65	46
950	1920	70	13	70	16
900	3420	65	23	65	23
850	5010	58	26	59	19
800	6690	55	10	54	11
750	8450	47	22	47	22

Upper Wind 0615

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	67	15
1,500	57	27
3,000	42	32
6,000	37	13
10,000	—	—

Cloud.

Slight bumps to 4,100 ft.

ASCENT No. 95.
Left Ground 0750 Landed 0835

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1018·3	Surf.	65	80	68	74
	1070	66	32	64	61
980	*1080*	67	—	—	—
950	1940	71	24	71	22
900	3480	65	22	66	24
850	5070	60	23	60	23
800	6740	54	17	54	13
750	8510	49	20	49	20

Upper Wind —

Ht feet	Dir. °	Speed m.p.h.
Surf	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

Bumpy to 3,700 ft.

ASCENT No. 96.
Left Ground 1000 Landed 1120

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1018·7	Surf.	76	54	81	46
	1100	70	37	74	36
950	2000	67	43	69	37
900	3500	66	24	66	22
850	5100	61	25	62	10
800	6800	54	23	55	10
750	8550	49	7	49	20
700	10420	42	7	42	28
650	12400	37	20	37	29

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	45	13
500	55	13
1,500	53	21
3,000	39	30
6,000	55	22
10,000	41	25

Cloud.

Haze top above 12,200 ft.
Bumpy to 3,700 ft.
Visibility poor on account of haze.

ASCENT No. 97.
Left Ground 1300 Landed 1355

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1017·5	Surf.	80	30	86	36
	1110	77	27	77	28
950	1990	72	31	72	33
900	3500	65	29	66	28
880	*4100*	65	—	—	—
850	5090	62	21	63	24
800	6780	55	10	55	15
750	8550	49	11	49	11

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	45	25
500	45	27
1,500	46	30
3,000	49	25
6,000	—	—
10,000	—	—

Cloud.

Haze top 6,400 ft.
Inversion of 1° from 885 to 880 mb.
Very bumpy to 3,700 ft.
Downward visibility poor owing to haze.

ASCENT No. 98.
Left Ground 1700 Landed 1750

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1016·2	Surf.	81	44	78	49
	1100	74	43	72	38
950	1920	72	25	70	27
925	*2680*	*73*	—	—	—
900	3450	71	28	72	20
850	5080	64	24	63	30
800	6770	54	36	54	38
750	8550	52	11	52	11

Upper Wind 1700

Ht feet	Dir. °	Speed m.p.h.
Surf.	37	21
500	37	29
1,500	46	23
3,000	48	30
6,000	56	21
10,000	—	—

Cloud.

Haze top 7,500 ft.
Very bumpy to 3,700 ft.

TABLE XXVIII—MAY 3, 1926. TIME STANDARD :—CAIRO TIME.

ASCENT No. 99.
Left Ground 0600 Landed 0650

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·7	Surf.	65	92	66	90
	1070	68	45	68	45
950	1800	70	22	70	27
900	3340	72	3	73	5
890	*3650*	*72*	—	—	—
850	4950	66	28	66	28
800	6630	59	37	59	34
750	8410	52	45	52	45

Upper Wind 0615

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	67	6
500	84	17
1,500	79	23
3,000	19	23
6,000	10	20
8,000	357	7

Cloud.

St. Cu. and A. Cu. from 6,300 — 10,400 ft.

Precipitation felt at 6,300 ft.

ASCENT No. 100.
Left Ground 0800 Landed 0840

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1013·5	Surf.	71	72	76	56
	1070	67	62	69	54
950	1850	70	36	71	33
900	3380	69	13	71	17
850	4980	66	35	65	38
800	6660	59	47	58	49
750	8420	50	64	50	64

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

ASCENT No. 101.
Left Ground 1030 Landed 1130

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1013·0	Surf.	83	43	87	40
	1100	76	30	—	—
950	1880	72	38	79	11
900	3410	71	42	73	43
850	5030	66	50	67	45
800	6730	59	57	59	54
750	8500	50	72	50	67
700	10400	42	86	42	86
650	12400	36	80	36	80

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

ASCENT No. 102.
Left Ground 1345 Landed 1440

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·2	Surf.	91	42	91	42
	1120	83	49	87	40
950	1850	80	51	79	54
900	3400	71	65	69	67
850	5000	67	77	68	59
800	6720	60	80	58	82
750	8510	52	95	52	95

Upper Wind 1330

Ht feet.	Dir °	Speed m.p.h.
Surf.	43	6
500	38	12
1,500	31	17
3,000	29	20
6,000	13	18
10,000	—	—

Cloud

ASCENT No. 103.
Left Ground 1700 Landed 1805

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·3	Surf.	88	83	83	55
	1070	82	73	79	57
950	1840	79	57	77	58
900	3400	74	67	74	60
850	5000	68	73	68	65
800	6710	60	80	60	70
750	8500	56	89	56	89

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	37	10
500	35	11
1,500	47	15
3,000	27	15
6,000	4	15
10,000	8	17

Cloud.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XXIX—MAY 5, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 104.
Left Ground 0545 Landed 0700

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·8	Surf.	70	55	76	52
	1100	83	24	83	44
960	*1500*	*83*	*23*	—	—
950	1800	80	26	80	42
900	3360	74	35	74	48
850	4990	68	46	68	49
800	6690	63	46	63	46
750	8490	56	51	56	51

Upper Wind 0615

Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	115	2	
500	127	18	
1,500	111	15	
3,000	95	12	
6,000	10	24	
8,000	4	25	

Patches of fog up to 8,400 ft.

ASCENT No. 105.
Left Ground 0800 Landed 0900

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·2	Surf.	82	40	89	30
	1120	82	52	83	—
950	1820	81	52	81	—
900	3390	74	63	74	—
850	5000	66	77	66	—
800	6700	62	71	61	—
750	8490	56	75	56	75

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	—	—	
500	—	—	
1,500	—	—	
3,000	—	—	
6,000	—	—	
10,000	—	—	

ASCENT No. 106.
Left Ground 1025 Landed 1245

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·7	Surf.	93	28	96	26
	1120	85	45	88	41
950	1850	81	49	83	47
900	3410	74	55	74	55
850	5020	68	63	69	57
800	6740	64	63	64	55
750	8520	55	74	56	65
700	10420	45	87	46	70
650	12440	38	90	38	90

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	136	6	
500	115	9	
1,500	119	12	
3,000	110	13	
4,000	111	14	
10,000	—	—	

Bumps up to 5,400 ft.

ASCENT No. 107.
Left Ground 1310 Landed 1350

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·8	Surf.	98	28	99	26
	1140	90	42	90	43
950	1840	85	49	86	47
900	3410	77	58	79	51
850	5050	69	69	69	59
800	6760	63	67	63	61
750	8550	55	77	55	77

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	90	6	
500	117	4	
1,500	105	7	
3,000	109	8	
5,000	106	10	
10,000	—	—	

Very bumpy up to 1,700 ft.
Bumpy from 1,700 to 7,000 ft.

ASCENT No. 108.
Left Ground 1700 Landed 1740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·9	Surf.	95	27	93	28
	1140	89	57	88	55
950	1800	85	65	85	57
900	3390	78	70	78	56
850	5010	70	74	71	62
800	6720	61	90	62	71
750	8510	54	92	54	92

Upper Wind 1705

Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	45	18	
500	49	15	
1,500	59	17	
3,000	77	11	
5,000	29	13	
6,000	24	14	

Slightly bumpy up to 5,400 ft.

TABLE XXX—MAY 7, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 109.
Left Ground 0600 Landed 0700

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·1	Surf.	71	62	75	57
	1100	—	—	89	15
950	1750	87	13	88	17
900	3320	82	17	81	22
850	4950	78	16	75	23
800	6670	67	25	67	—
750	8460	59	33	59	33

Upper Wind 0615

Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	135	1	
500	115	16	
1,500	135	21	
3,000	144	17	
6,000	161	12	
8,000	168	8	

ASCENT No. 110.
Left Ground 0800 Landed 0905

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·1	Surf.	83	48	90	41
	1110	88	25	87	81
950	1780	89	26	90	65
900	3340	84	29	85	49
850	4990	75	34	75	40
800	6720	69	40	69	40
750	8520	63	44	63	44

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.	Cloud.
Surf.	—	—	
500	—	—	
1,500	—	—	
3,000	—	—	
6,000	—	—	
10,000	—	—	

NO ASCENTS.

ENGINE OF AEROPLANE

UNSERVICEABLE.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XXXI—MAY 18, 1926. TIME STANDARD :—CAIRO TIME.

ASCENT No. 111.
Left Ground 0530 Landed 0640

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1006·5	Surf.	66	65	72	56
	1090	78	25	81	25
950	1680	81	15	81	21
900	3200	76	24	76	24
850	4820	69	27	69	23
800	6520	61	27	61	28
750	8300	51	39	51	39

Upper Wind 0445

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	81	6
1,500	96	4
3,000	124	8
6,000	—	—
10,000	—	—

Cloud. A. Cu. from 10,300 ft. upwards.

Haze top merged in clouds.
Vertical visibility very poor.
Very bumpy 9,300—10,300 ft.

ASCENT No. 112.
Left Ground 0710 Landed 0800

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·5	Surf.	72	58	77	54
	1100	83	13	84	14
950	1700	82	19	81	12
900	3260	75	25	75	20
850	4890	67	30	68	17
800	6580	59	32	60	29
750	8350	50	43	50	43

Upper Wind 0715

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	67	1
500	28	2
1,500	315	9
3,000	338	15
6,000	348	27
8,000	337	49

Cloud. A Cu. A. St. from 10,400 ft. upwards.

Haze top merged in cloud.
Vertical visibility very poor.
Very bumpy 9,300—10,400 ft.

ASCENT No 113.
Left Ground 1005 Landed 1120

P. mb.	Ht feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·0	Surf.	86	33	95	20
	1120	82	25	86	21
950	1780	82	16	83	17
900	3320	78	19	79	20
850	4900	72	25	73	24
800	6690	65	30	67	28
750	8480	57	33	59	32
700	10380	49	30	48	43
650	12390	39	43	39	43

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	324	5
1,500	353	10
3,000	310	14
6,000	294	20
10,000	—	—

Cloud. A. St. from 12,400 ft. upwards.

Haze top above 12,400 ft.
Vertical visibility very poor.

ASCENT No. 114.
Left Ground 1305 Landed 1345

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·4	Surf.	96	19	96	22
	1140	90	16	90	12
950	1740	84	19	87	16
900	3320	76	25	78	22
850	4970	73	24	73	22
800	6680	65	30	65	29
750	8480	58	34	58	34

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	358	3
500	345	12
1,500	15	5
3,000	338	6
6,000	—	Calm
10,000	—	—

Cloud. A. St. from 8,500 ft. upwards.

Haze top in cloud.
Vertical visibility very poor.
Up—Considerable bumps at 5,400 feet, increasing in intensity to 8,500 feet.
Down—Bad pumps continuously all the way.

ASCENT No. 115.
Left Ground 1700 Landed 1740

P mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·9	Surf	85	42	83	44
	1110	85	16	86	27
950	1790	83	27	86	25
900	3360	77	28	78	29
850	4990	71	29	73	30
800	6700	63	39	63	37
750	8480	51	57	51	57

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	22	8
500	45	20
1,500	356	9
3,000	320	11
5,000	321	15
10,000	—	—

Cloud A. St. above 8,500 ft.

Haze top in cloud.
Vertical visibility very poor.

TABLE XXXII—MAY 19, 1926. TIME STANDARD : CAIRO TIME.

ASCENT No. 116.
Left Ground 0530 Landed 0610

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·8	Surf.	68	61	70	53
	1100	86	10	87	20
950	1800	84	18	85	22
900	3370	78	27	79	27
850	4980	71	31	73	30
800	6710	69	20	65	29
750	8500	59	29	59	29

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. Ci. Ci. St., above 8,400 ft.

Haze top in cloud.
No bumps.
Vertical visibility very poor.

ASCENT No. 117.
Left Ground 0700 Landed 0750

P mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·4	Surf.	73	49	77	44
	1100	86	18	87	21
950	1820	84	19	85	23
900	3400	78	23	79	23
850	5010	71	32	71	28
800	6720	64	33	65	—
750	8520	57	39	57	39

Upper Wind 0630

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	105	6
1,500	99	11
3,000	143	6
6,000	302	8
10,000	—	—

Cloud. Above 8,400 ft.

Haze top in cloud.
No bumps.
Vertical visibility very poor.

ASCENT No. 118.
Left Ground 1000 Landed 1105

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·3	Surf.	87	36	93	34
	1120	87	22	88	24
950	1840	86	22	87	22
900	3410	79	27	81	25
850	5050	72	29	72	29
800	6760	65	37	67	33
750	8560	56	51	57	44
700	10490	49	40	50	40
650	12500	40	39	40	39

Upper Wind 1005

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	67	1
500	103	7
1,500	139	12
3,000	161	12
6,000	315	9
8,000	288	7

Cloud. A. St., above 12,500 ft.

Haze top in cloud.
Vertical visibility very poor.

ASCENT No. 119.
Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·0	Surf.	99	30	100	28
	1140	93	24	94	26
950	1820	88	27	91	25
900	3400	81	28	82	29
850	5050	74	33	75	31
800	6780	65	46	66	39
750	8560	57	58	57	58

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	45	1
500	67	4
1,500	261	3
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. A St., above 8,500 ft.

Haze top in cloud.
Vertical visibility very poor.

ASCENT No. 120.
Left Ground 1700 Landed 1740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·7	Surf.	94	30	91	35
	1130	89	35	88	39
950	1790	88	38	87	41
900	3350	82	40	83	39
850	5000	73	46	74	43
800	6710	65	54	66	51
750	8510	57	63	57	63

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	19	13
1,500	346	10
3,000	324	13
5,000	281	17
10,000	—	—

Cloud. A. St., above 8,500 ft.

Haze top in cloud.
Vertical visibility very poor.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XXXIII—JUNE 9, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 121.
Left Ground 0530 Landed 0615

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·2	Surf.	71	72	77	61
	1100	88	17	89	26
950	1800	89	18	89	24
900	3370	85	17	85	25
850	5010	77	25	77	28
800	6730	68	33	68	33
750	8540	61	38	61	38

Upper Wind 0330

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	108	15
1,500	85	23
3,000	71	20
6,000	48	12
8,000	50	13

Cloud.

ASCENT No. 122.
Left Ground 0700 Landed 0745

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·2	Surf.	81	52	86	46
	1110	89	26	91	25
950	1810	89	27	91	24
900	3400	85	27	84	24
850	5030	78	32	76	29
800	6760	69	37	69	34
750	8560	60	41	60	41

Upper Wind 0700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	110	7
1,500	98	18
3,000	96	24
6,000	88	22
10,000	—	—

Cloud.

ASCENT No. 123.
Left Ground 1005 Landed 1105

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·2	Surf.	100	22	105	20
	1150	93	19	96	23
950	1800	92	15	93	22
900	3380	87	16	87	20
850	5030	79	21	79	22
800	6780	69	25	70	24
750	8600	60	33	60	32
700	10510	50	37	51	32
650	12530	41	45	41	45

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	70	1
500	110	9
1,500	124	14
3,000	101	17
6,000	96	15
10,000	46	12

Cloud.

ASCENT No. 124.
Left Ground 1305 Landed 1345

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·8	Surf.	109	20	111	7
	1150	100	19	100	19
950	1790	96	16	97	15
900	3400	88	25	88	21
850	5050	79	29	79	32
800	6800	71	35	70	29
750	8610	62	39	62	39

Upper Wind 1305

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	143	6
1,500	88	5
3,000	65	8
6,000	77	13
10,000	—	—

Cloud.

Dust storm sighted between Port Said and Ismailia travelling very slowly in a southerly direction.

ASCENT No. 125.
Left Ground 1700 Landed 1740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1006·5	Surf.	100	28	99	31
	1150	93	39	92	42
950	1710	93	40	93	32
900	3310	88	29	88	29
850	4990	79	35	79	34
800	6710	71	39	71	37
750	8520	61	48	61	48

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	22	16
500	6	15
1,500	357	17
3,000	360	12
6,000	338	6
10,000	—	—

Cloud.

Slightly bumpy to 1,400 ft.

TABLE XXXIV—JUNE 10, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 126.
Left Ground 0530 Landed 0610

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·9	Surf.	71	87	72	89
	1080	70	77	71	79
950	1710	75	60	75	27
900	3260	80	18	80	19
850	4900	76	26	79	14
800	6610	69	22	69	22
750	8400	60	33	60	33

Upper Wind 0330

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	270	3
500	307	14
1,500	323	13
3,000	338	17
6,000	357	14
10,000	—	—

Cloud.

An extensive bank of very low cloud observed 5 miles S.W. of Tel-el-Kebir, stretching away to horizon.
Haze top very undefined.

ASCENT No. 127.
Left Ground 0700 Landed 0735

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·0	Surf.	74	84	76	77
	1090	71	60	71	77
950	1720	73	33	73	29
900	3280	77	20	78	22
850	4900	77	19	77	18
800	6610	68	28	69	23
750	8410	60	26	60	26

Upper Wind 0705

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	315	9
500	312	13
1,500	313	8
3,000	285	12
6,000	288	30
10,000	—	—

Cloud.

Very low-lying bank of cloud stretching from N.W. to S. along horizon.
Haze top very undefined.

ASCENT No. 128.
Left Ground 1000 Landed 1100

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·5	Surf.	85	48	86	47
	1100	76	55	78	95
950	1750	73	58	74	100
900	3300	71	50	71	—
850	4910	73	75	75	91
800	6620	69	100	69	96
750	8430	60	—	60	90
700	10340	51	—	50	94
650	12350	41	—	41	—

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	337	2
500	297	7
1,500	325	5
3,000	295	13
6,000	275	36
8,000	270	38

Cloud.

ASCENT No. 129.
Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·2	Surf.	93	34	93	34
	1130	84	35	83	37
950	1740	80	39	80	51
900	3300	72	41	72	44
850	4910	69	13	73	13
800	6640	67	13	67	16
750	8440	61	24	61	24

Upper Wind 1305

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	315	10
500	315	35
1,500	319	32
3,000	331	6
6,000	—	—
10,000	—	—

Cloud.

ASCENT No. 130.
Left Ground 1700 Landed 1735

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1006·9	Surf.	89	44	87	47
	1130	81	48	80	44
950	1700	76	53	76	49
900	3260	71	54	70	46
850	4880	66	40	67	34
800	6600	66	15	65	14
750	8400	60	16	60	16

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	11	18
500	6	23
1,500	343	21
3,000	317	20
6,000	—	—
10,000	—	—

Cloud.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XXXV—JUNE 11, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 131.
Left Ground 0530 Landed 0605

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·8	Surf.	68	84	70	88
	1070	66	90	66	85
950	1730	64	80	66	71
900	3240	64	54	63	40
850	4830	59	34	58	33
800	6510	57	35	56	20
750	8290	55	21	55	21

Upper Wind 0405

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	247	3
500	279	12
1,500	296	16
3,000	297	13
6,000	—	—
10,000	—	—

Cloud

ASCENT No. 132.
Left Ground 0700 Landed 0740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·3	Surf.	72	79	75	72
	1080	68	86	67	90
950	1770	66	63	65	75
900	3290	64	37	58	58
850	4870	60	31	60	27
800	6550	58	18	60	14
750	8320	55	20	55	20

Upper Wind 0705

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	281	3
500	303	9
1,500	303	18
3,000	286	15
6,000	338	20
10,000	333	33

Cloud.

ASCENT No. 133.
Left Ground 1035 Landed 1135

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·8	Surf.	84	47	88	39
	1100	75	57	77	40
950	1740	71	54	73	40
900	3280	63	64	65	55
850	4880	58	47	58	45
820	*5860*	*60*	—	—	—
800	6520	58	15	56	16
750	8310	54	27	54	25
700	10220	50	7	49	8
650	12240	44	6	44	6

Upper Wind 1030

Ht. feet	Dir. °	Speed m.p.h.
Surf.	315	7
500	328	8
1,500	329	20
3,000	328	16
6,000	314	18
10,000	325	28

Cloud.

Bumpy to 4,200 ft
Some Cu. cloud on coast to E., at about 6,200 ft.

ASCENT No. 134.
Left Ground 1320 Landed 1400

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·1	Surf.	90	38	90	38
	1110	81	42	82	37
950	1750	77	48	75	44
900	3290	67	59	70	42
850	4900	61	73	61	55
800	6600	57	—	54	26
750	8360	53	32	53	32

Upper Wind 1330

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	316	14
500	306	16
1,500	325	18
3,000	306	21
6,000	295	19
10,000	—	—

Cloud.

Haze top 7,800 ft.
Bad bumps to 7,800 ft.

ASCENT No. 135.
Left Ground 1700 Landed 1730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·4	Surf	89	37	87	43
	1120	80	35	81	33
950	1720	79	35	76	41
900	3280	71	46	68	46
850	4890	61	57	61	48
800	6600	56	24	57	14
750	8360	52	27	52	27

Upper Wind 1700

Ht feet.	Dir. °	Speed m.p.h.
Surf.	315	19
500	323	14
1,500	329	12
3,000	325	17
6,000	281	14
8,000	292	6

Cloud.

Haze top 8,300 ft.
Slight bumps to 8,300 ft.

TABLE XXXVI—JUNE 21, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 136
Left Ground 0530 Landed 0605

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·9	Surf.	66	84	69	79
	1080	73	29	73	29
950	1780	73	21	74	22
	2660	—	—	76	—
900	3310	75	10	75	10
850	4930	74	16	74	18
800	6650	68	29	67	25
750	8440	61	33	61	33

Upper Wind—

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10 000	—	—

Cloud

No bumps.

ASCENT No. 137.
Left Ground 0700 Landed 0735

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·2	Surf.	72	72	74	67
	1090	74	36	74	33
950	1800	74	28	75	21
900	3330	75	7	75	7
850	4900	74	19	73	19
800	6680	68	27	66	24
750	8480	62	21	62	21

Upper Wind 0620

Ht. feet	Dir. °	Speed m.p.h.
Surf.	22	2
500	71	12
1,500	77	15
3,000	45	18
6,000	353	35
10,000	—	—

Cloud

No bumps.

ASCENT No. 138.
Left Ground 1000 Landed 1120

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·6	Surf.	87	40	90	40
	1110	79	34	83	23
950	1810	76	30	81	21
900	3380	76	5	74	23
850	5000	73	19	74	6
800	6710	67	21	69	16
750	8520	61	24	62	18
700	10430	53	40	54	29
650	12450	43	77	43	77

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	40	6
500	63	11
1,500	75	15
3,000	63	13
6,000	356	35
10,000	354	32

Cloud.

Haze top 6,400 ft
No haze to 2,100 ft.
Up—moderate bumps to 2,600 ft.
Down—Bad bumps from 2,600 ft. to surface.

ASCENT No. 139.
Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·2	Surf.	96	28	97	31
	1130	88	20	88	11
950	1820	83	22	82	19
900	3380	75	27	74	21
850	5020	74	19	74	17
800	6730	68	23	66	24
750	8550	62	29	62	29

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	45	7
500	45	6
1,500	46	9
3,000	11	18
6,000	339	22
10,000	—	—

Cloud.

ASCENT No. 140.
Left Ground 1705 Landed 1730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·9	Surf.	96	33	95	34
	1130	89	30	87	25
950	1770	84	31	84	23
900	3330	81	17	81	8
850	4980	75	25	75	17
800	6710	68	27	68	20
750	8520	63	30	63	30

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	56	10
500	37	18
1,500	39	19
3,000	37	13
6,000	7	23
8,000	335	19

Cloud.

Haze top 8,500 ft.
Haze bottom 5,400 to 6,400 ft.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOON.

TABLE XXXVII—JUNE 22, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 141.
Left Ground 0530 Landed 0600

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·8	Surf.	69	83	74	67
	1100	80	26	80	26
950	1710	81	22	82	16
	2150	*81*	—	—	—
900	3290	79	20	77	24
850	4900	75	17	75	14
800	6620	70	25	69	21
750	8450	61	34	61	34

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

ASCENT No. 142.
Left Ground 0700 Landed 0730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·9	Surf.	78	59	81	56
	1100	81	27	82	23
950	1730	81	20	82	13
	2160	*82*	—	—	—
900	3300	78	21	77	21
850	4930	75	16	75	14
800	6660	71	23	68	26
750	8490	64	24	64	24

Upper Wind 0625

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	67	4
500	75	15
1,500	72	15
3,000	51	17
6,000	11	30
10,000	337	32

Cloud.

Very slight bumps at 6,300 ft.

ASCENT No. 143.
Left Ground 1020 Landed 1130

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·2	Surf.	94	33	97	33
	1130	87	22	89	15
950	1790	83	27	85	20
900	3340	80	24	80	21
850	4990	76	14	76	12
800	6710	71	22	72	19
750	8510	63	27	65	22
700	10460	53	35	55	27
650	12500	44	37	44	37

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	90	4
500	69	9
1,500	62	14
3,000	56	17
6,000	12	30
10,000	4	36

Cloud.

Haze top above 12,500 ft.
Bumps to 2,200 ft.

ASCENT No. 144.
Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·1	Surf.	101	28	102	27
	1150	94	18	94	16
950	1790	88	23	88	18
900	3360	81	24	80	23
850	5000	78	17	77	19
800	6760	74	20	71	20
750	8590	65	25	65	25

Upper Wind 1305

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	67	5
500	81	7
1,500	70	8
3,000	36	17
6,000	5	29
8,000	346	35

Cloud.

ASCENT No. 145.
Left Ground 1700 Landed 1725

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1006·8	Surf.	100	26	99	25
	1150	93	22	92	17
950	1740	89	28	89	21
900	3310	87	20	84	15
850	4970	78	21	78	16
800	6720	73	22	72	19
750	8540	65	27	65	27

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	48	12
500	33	7
1,500	33	9
3,000	28	13
6,000	347	33
10,000	—	—

Cloud.

TABLE XXXVIII—JUNE 25, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 146.
Left Ground 0555 Landed 0625

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·2	Surf.	69	78	72	72
	1090	69	74	69	77
950	1800	65	83	65	85
900	3310	62	53	63	60
850	4900	64	12	64	19
800	6600	63	9	63	12
750	8380	56	12	56	12

Upper Wind 0625

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	314	2
500	326	7
1,500	6	11
3,000	360	12
6,000	279	13
10,000	251	15

Cloud.

Cu. at 4,200 ft.

No bumps.
Haze top 2,600 ft

ASCENT No. 147.
Left Ground 0700 Landed 0725

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·9	Surf.	73	67	75	64
	1090	69	77	69	81
950	1800	65	73	66	81
900	3310	63	44	61	64
850	4900	63	18	67	10
800	6610	63	9	63	10
750	8390	57	49	57	49

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

Cu. at 4,200 ft.

No bumps.
Haze top 4,200 ft.

ASCENT No. 148.
Left Ground 1000 Landed 1050

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1012·2	Surf.	82	49	84	44
	1100	74	62	74	58
950	1820	68	76	68	71
900	3350	62	89	62	80
850	4940	60	23	61	20
800	6640	63	8	63	8
750	8430	58	6	57	5
700	10340	52	7	51	1
650	12350	43	22	43	22

Upper Wind 1005

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	337	8
500	341	11
1,500	349	9
3,000	360	10
6,000	—	—
10,000	—	—

Cloud.

Cu. from 4,200 to 5,300 ft.

Bumps up to 5,300 ft.
Haze top 5,700 ft.

ASCENT No. 149.
Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1011·1	Surf.	89	40	90	36
	1110	79	53	79	45
950	1800	75	55	74	55
900	3350	66	71	66	67
850	4950	58	84	58	84
800	6640	60	17	60	14
—	*7850*	*61*	—	—	—
750	8420	58	10	58	10

Upper Wind 1305

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	22	6
500	301	7
1,500	357	5
3,000	9	12
6,000	323	14
8,000	277	9

Cloud.

Cu. at 6,300 ft.

Bumpy to 6,300 ft.
Haze top 6,800 ft.

ASCENT No. 150.
Left Ground 1700 Landed 1735

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1010·2	Surf.	85	50	84	51
	1110	78	63	76	66
950	1780	74	74	73	70
900	3320	67	86	65	86
850	4910	60	90	59	90
800	6600	60	32	61	22
750	8390	58	14	58	14

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	22	12
500	353	16
1,500	351	9
3,000	328	12
6,000	299	14
8,000	264	10

Cloud.

Cu. from 6,300 to 8,300 ft.

Bumpy to 6,300 ft.
Haze top 8,300 ft.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XXXIX—JULY 6, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No 151.
Left Ground 0545 Landed 0615

P. mb.	Ht. feet.	Ascent T. °F	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·5	Surf.	70	90	72	69
	1090	68	95	68	97
950	1690	68	72	68	74
900	3200	64	60	65	56
850	4800	58	69	59	51
800	6480	54	56	55	65
750	8220	49	35	49	35

Upper Wind 0615

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	247	6
500	257	15
1,500	310	17
3,000	336	22
6,000	320	26
8,000	317	26

Cloud. Cu. from 1,600 to 2,100 ft.

Haze top 1,600 ft.
No bumps

ASCENT No. 152.
Left Ground 0800 Landed 0830

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·1	Surf.	76	79	82	61
	1100	70	81	72	71
950	1700	69	70	69	68
900	3230	64	66	65	58
850	4810	58	72	59	57
800	6500	54	68	55	49
750	8290	52	36	52	36

Upper Wind —

Ht feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. Cu. from 2,100 to 3,200 ft.

Haze top 2,100 ft.
Up—No bumps.
Down—Bumps from 2,100 ft. to surface.

ASCENT No. 153.
Left Ground 1000 Landed 1120

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·9	Surf.	84	57	86	50
	1110	76	58	77	52
950	1720	74	63	74	59
900	3280	65	76	64	66
850	4870	60	60	58	75
800	6540	54	58	54	48
750	8310	52	16	50	14
700	10210	49	10	49	6
650	12250	50	0	—	—
600	14430	48	—	—	—

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	308	8
500	278	8
1,500	284	12
3,000	284	16
5,000	306	26
10,000	—	—

Cloud. Cu. at 2,100 ft.

Haze top 700 ft.

ASCENT No. 154.
Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·6	Surf.	90	42	90	43
	1110	81	60	82	41
950	1730	78	57	79	45
900	3300	68	70	70	57
850	4900	59	87	61	72
800	6590	53	92	53	61
750	8340	51	24	51	24

Upper Wind 1305

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	329	13
500	318	16
1,000	317	17
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. Cu. from 900 to 6,300 ft. and above.

Haze top—nil.
Fairly bumpy all the time.
Many large Cu. clouds, 6,300—8,300 ft., and at 9,300 ft. in places.

ASCENT No. 155.
Left Ground 1700 Landed 1745

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·3	Surf.	90	40	89	74
	1110	82	44	82	40
950	1700	79	46	79	44
900	3260	71	61	70	57
850	4880	61	75	62	70
800	6570	53	85	54	62
750	8320	50	36	50	36

Upper Wind 1705

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	330	10
500	310	13
1,500	313	14
3,000	312	22
6,000	307	13
8,000	304	16

Cloud Cu. from 7,600 to 8,300 ft.

Very bumpy all the way, especially at 6,300 ft.

TABLE XL—JULY 7, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 156.
Left Ground 0530 Landed 0600

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·2	Surf.	70	98	72	94
	1090	70	77	68	100
950	1700	69	66	69	72
900	3210	67	49	68	46
850	4820	61	53	62	45
800	6500	55	49	56	43
750	8270	49	45	49	45

Upper Wind 0320

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	246	1
500	279	11
1,500	305	17
3,000	307	19
6,000	311	23
8,000	318	28

Cloud. St. 1,100 ft.

Haze top 7,200 ft.
Low-lying stratus at 1,100 ft. over whole desert, but not over the cultivation.

ASCENT No. 157.
Left Ground 0730 Landed 0800

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·9	Surf.	75	85	76	80
	1090	69	95	69	90
950	1700	68	76	68	81
900	3250	67	46	67	40
850	4850	62	54	62	45
800	6500	57	43	57	39
750	8290	50	41	50	41

Upper Wind 0700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	270	8
500	288	12
1,500	303	15
3,000	301	21
6,000	302	20
10,000	—	—

Cloud.

Haze top over 8,300 ft.
Slight bumps.

ASCENT No. 158.
Left Ground 1015 Landed 1120

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·7	Surf.	83	60	88	45
	1110	74	60	76	55
950	1710	71	69	73	62
900	3270	65	63	66	62
870	*4200*	65	—	—	—
850	4850	63	15	64	30
800	6540	57	20	58	30
750	8310	53	25	54	22
700	10240	50	11	50	9
650	12260	46	8	46	8

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	312	3
500	311	10
1,500	292	9
3,000	303	15
6,000	323	24
10,000	319	29

Cloud. Cu. from 6,300 to 6,400 ft.

Haze top 7,300 ft.
Very bumpy to 4,200 ft.
Cu. over coast at 6,300 ft.

ASCENT No. 159.
Left Ground 1300 Landed 1335

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·7	Surf.	90	44	90	47
	1110	81	49	82	44
950	1720	76	59	78	47
900	3270	69	73	71	55
850	4890	61	80	62	62
800	6590	59	21	59	18
750	8360	54	20	54	20

Upper Wind 1300

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	300	8
500	329	8
1,500	324	5
3,000	317	10
6,000	321	15
8,000	301	13

Cloud. Cu. 6,300 ft.

Up—Moderate bumps.
Down—Bad bumps from 5,300 ft. downward.

ASCENT No. 160.
Left Ground 1700 Landed 1735

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1006·6	Surf.	91	42	90	51
	1120	86	42	82	59
950	1700	80	51	75	66
900	3260	72	62	70	61
850	4860	62	80	62	75
800	6560	56	64	57	51
750	8340	52	58	52	58

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	335	15
500	331	12
1,500	319	7
3,000	330	9
6,000	314	20
10,000	—	—

Cloud. Cu. 5,300 ft.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XLI—JULY 8, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 161.
Left Ground 0540 Landed 0615

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·6	Surf.	70	91	72	96
	1090	68	90	67	90
950	1680	65	90	66	71
900	3200	67	25	69	18
870	*4140*	*68*	—	—	—
850	4800	66	16	65	18
800	6500	62	13	61	15
750	8290	57	39	57	39

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. St. from 1,100 to 1,600 ft.

ASCENT No. 162.
Left Ground 0700 Landed 0730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·6	Surf.	74	81	76	79
	1090	68	63	68	71
950	1680	66	50	66	50
900	3200	69	18	69	15
880	*3830*	*70*	—	—	—
850	4800	67	25	66	19
800	6500	62	25	60	29
750	8300	57	27	57	27

Upper Wind 0630

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	319	4
500	338	6
1,500	31	5
3,000	293	9
6,000	327	15
10,000	329	31

Cloud. Cu. 2,100 ft.

Haze top 3,700 ft.

ASCENT No. 163.
Left Ground 1000 Landed 1100

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·6	Surf.	—	—	—	—
	1100	75	72	76	48
950	1740	72	71	73	62
900	3280	69	38	68	37
850	4880	68	15	67	5
800	6590	63	19	65	12
750	8370	56	40	57	26
700	10280	50	45	50	38
650	12310	42	38	42	38

Upper Wind 1005

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	212	1
500	45	3
1,500	—	Calm
3,000	324	6
6,000	320	18
10,000	339	31

Cloud.

Haze top 3,200 ft.
Considerable bumps up to 3,200 ft., up and down.

ASCENT No. 164.
Left Ground 1315 Landed 1345

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·9	Surf.	93	42	93	41
	1130	83	36	—	—
950	1750	80	36	—	—
900	3300	72	51	—	—
850	4910	64	59	—	—
800	6620	63	16	—	—
750	8420	59	13	—	—

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud.

Haze top 4,300 ft.

ASCENT No. 165.
Left Ground 1700 Landed 1730

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1006·3	Surf.	94	47	90	53
	1130	84	49	82	52
950	1710	81	49	80	51
900	3280	72	66	72	66
850	4900	68	28	69	15
800	6610	64	17	65	16
750	8400	60	28	60	28

Upper Wind 1505

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	10	8
500	350	16
1,500	342	15
3,000	320	7
6,000	349	17
10,000	335	30

Cloud.

No bumps.

TABLE XLII—JULY 19, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 166.
Left Ground 0535 Landed 0620

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·2	Surf.	72	94	74	90
	1090	69	90	69	90
950	1720	66	95	67	93
910	*2940*	*67*	—	—	—
900	3240	67	49	67	44
850	4820	64	31	64	30
830	*5500*	*65*	—	—	—
800	6530	63	14	63	17
750	8310	61	14	61	14

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. St. and St. Cu. from 1,900 to 2,000 ft.

ASCENT No. 167.
Left Ground 0705 Landed 0745

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·7	Surf.	75	95	77	83
	1090	69	95	69	95
950	1710	66	97	67	93
940	*2010*	*67*	—	—	—
900	3210	67	48	67	44
850	4820	63	30	64	27
830	*5490*	*64*	—	—	—
800	6520	62	16	62	16
750	8300	61	14	61	14

Upper Wind 0615

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	252	1
500	300	5
1,500	351	5
3,000	344	12
6,000	344	11
10,000	242	24

Cloud. Cu. from 1,600 to 2,700 ft.

ASCENT No. 168.
Left Ground 1000 Landed 1100

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1009·0	Surf.	82	70	87	62
	1100	74	72	76	59
950	1720	71	75	74	62
900	3260	65	55	66	76
850	4860	64	27	64	27
800	6570	63	20	64	17
750	8360	60	10	60	7
700	10270	56	6	56	5
650	12320	51	4	51	4

Upper Wind 1000

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	254	3
500	277	4
1,500	303	5
3,000	322	13
6,000	290	8
8,000	274	9

Cloud. Cu. at 3,700 ft.

No Early Afternoon Ascent.

Upper Wind 1305

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	326	4
500	325	12
1,500	333	13
3,000	317	28
6,000	—	—
10,000	—	—

Cloud.

ASCENT No. 169.
Left Ground 1705 Landed 1745

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1006·1	Surf.	92	59	91	59
	1130	83	51	82	62
950	1700	79	68	79	68
900	3250	71	80	71	77
850	4870	63	90	63	85
800	6570	59	53	59	57
797	*6900*	*62*	—	—	—
750	8340	60	11	60	11

Upper Wind 1700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	341	9
500	309	8
1,500	307	9
3,000	312	9
6,000	276	18
10,000	—	—

Cloud. Cu. from 6,300 to 7,900 ft.

OBSERVATIONS OF UPPER AIR TEMPERATURE AND RELATIVE HUMIDITY BY AEROPLANE ASCENTS FROM ABU SUEIR, AND OF UPPER WIND BY PILOT BALLOONS.

TABLE XLIII—JULY 21, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 170.
Left Ground 0530 Landed 0610

P. mb.	Ht. feet.	Ascent T. °F	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1005·7	Surf.	75	93	70	87
	1090	70	95	70	91
950	1640	67	99	67	97
915	*2720*	*74*	—	—	—
900	3190	73	43	73	46
850	4800	69	39	69	32
800	6500	59	55	59	43
750	8260	49	69	49	69

Upper Wind —

Ht feet	Dir °	Speed m.p.h.
Surf	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. St. Cu. 7/10 from 1,600 to 2,100 ft.

ASCENT No. 171.
Left Ground 0700 Landed 0800

P mb.	Ht feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1005·2	Surf.	77	86	78	82
	1100	71	97	72	84
950	1600	67	100	69	93
915	*2600*	*73*	—	—	—
900	3120	72	49	74	39
850	4780	67	45	68	42
800	6490	59	50	60	44
750	8220	50	61	50	61

Upper Wind 0620

Ht feet.	Dir. °	Speed m.p.h.
Surf.	254	3
500	273	8
1,500	292	9
3,000	7	9
6,000	—	—
10,000	—	—

Cloud. St. Cu. 4/10, from 1,700 to 2,200 ft.

ASCENT No. 172.
Left Ground 1000 Landed 1120

P mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1005·7	Surf.	85	54	89	47
	1100	77	72	79	61
950	1680	73	80	77	65
900	3200	71	48	70	66
850	4820	67	43	67	48
800	6520	59	47	60	39
750	8300	50	61	51	54
700	10210	47	20	48	14
650	12230	42	11	42	11

Upper Wind 1005

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	Calm
500	276	5
1,500	301	7
3,000	321	9
6,000	330	5
10,000	343	8

Cloud

Clouds on N., E., and W. horizons. Haze top above 13,400 ft.

ASCENT No. 173.
Left Ground 1300 Landed 1350

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1004·8	Surf.	93	41	95	37
	1120	83	54	84	53
950	1630	80	63	82	49
900	3190	72	70	73	66
850	4820	67	54	69	42
800	6520	60	50	60	45
750	8300	50	63	50	63

Upper Wind 1310

Ht. feet.	Dir. °	Speed m.p.h.
Surf	—	Calm
500	307	5
1,500	321	7
3,000	321	14
6,000	—	—
10,000	—	—

Cloud. Cu. and Cu. Nb. from 7,900 ft.

Few cloud peaks 7,900 to 10,000—20,000 ft.; to the north.

ASCENT No 174.
Left Ground 1700 Landed 1750

P mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T °F.	Descent R H %
1003·4	Surf.	95	44	93	47
	1140	86	52	84	—
950	1610	82	62	83	—
900	3150	74	75	75	—
850	4800	65	84	67	—
800	6500	59	86	59	—
750	8300	53	70	51	—

Upper Wind 1700

Ht feet.	Dir °	Speed m.p.h.
Surf.	13	3
500	13	12
1,500	360	13
3,000	325	11
6,000	281	6
10,000	—	—

Cloud. Cu. and Nb. at 4,900 ft. Cu. Nb. at 6,900 ft. and at 8,900 ft.

Cu Nb. in vicinity of Abu Sueir and Ismailia. Raining in places.

TABLE XLIV—JULY 22, 1926.

TIME STANDARD :—CAIRO TIME.

ASCENT No. 175.
Left Ground 0530 Landed 0625

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T °F.	Descent R.H. %
1007·1	Surf	75	92	75	90
	1080	70	86	70	95
970	*1090*	*72*	*86*	—	—
950	1680	73	47	70	79
900	3200	71	42	71	47
850	4810	64	46	65	48
800	6510	59	30	59	32
750	8300	55	17	55	16

Upper Wind —

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	—	—
500	—	—
1,500	—	—
3,000	—	—
6,000	—	—
10,000	—	—

Cloud. St. and Nb. 9/10, from 500 to 1,300 ft. at first, rising to 700 to 1,900 ft.

ASCENT No. 176.
Left Ground 0730 Landed 0815

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·8	Surf.	77	81	79	76
	1090	71	100	73	86
950	1700	74	42	71	77
900	3230	71	35	72	68
850	4830	64	46	65	47
800	6520	59	61	59	35
750	8310	56	12	56	12

Upper Wind 0700

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	281	4
500	293	8
1,500	313	6
3,000	315	9
6,000	269	21
10,000	—	—

Cloud. St. and Nb. 5/10, from 1,100 to 1,900 ft., at first, rising to 1,500 to 2,300 ft.

ASCENT No. 177.
Left Ground 1005 Landed 1115

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1008·3	Surf.	87	54	89	45
	1110	77	67	80	54
950	1720	73	75	77	56
900	3290	67	62	70	51
850	4890	64	42	64	38
800	6570	59	18	59	15
750	8350	56	14	57	5
700	10260	50	15	49	9
650	12300	41	15	41	15

Upper Wind 1005

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	302	3
500	306	9
1,500	298	6
3,000	270	8
6,000	276	16
10,000	289	8

Cloud

Cu. at 3,200 ft. to north. Cu. at 9,300 ft. over Port Said.

ASCENT No. 178.
Left Ground 1325 Landed 1410

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1007·3	Surf.	93	32	94	31
	1120	84	41	85	36
950	1710	81	44	81	40
900	3300	73	51	73	49
850	4910	64	67	65	61
800	6620	62	16	62	14
750	8410	57	15	57	15

Upper Wind 1320

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	260	3
500	312	7
1,500	288	5
3,000	296	13
6,000	270	8
10,000	298	5

Cloud. Cu 30 miles north, at 9,400 ft.

Very bumpy to 5,300 ft.

ASCENT No. 179.
Left Ground 1705 Landed 1740

P. mb.	Ht. feet.	Ascent T. °F.	Ascent R.H. %	Descent T. °F.	Descent R.H. %
1006·8	Surf.	93	35	90	42
	1110	84	46	84	44
950	1700	80	51	80	51
900	3280	72	62	73	59
850	4900	65	66	65	67
800	6610	63	22	62	21
750	8400	57	19	57	19

Upper Wind 1705

Ht. feet.	Dir. °	Speed m.p.h.
Surf.	320	2
500	335	7
1,500	317	10
3,000	340	11
6,000	310	7
8,000	261	7

Cloud

Haze top 7,400—8,400 ft.

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