

BIBLIOGRAPHY

- London, Meteorological Office. Handbook of meteorological instruments, Part I: Instruments for surface observations. London, HMSO, 1956 (reprinted 1962). (See also 2nd edition below.)
- London, Meteorological Office. Hygrometric tables, Part II: For use with Stevenson screen readings in degrees Celsius, 2nd edition. London, HMSO, 1964 (reprinted 1978).
- London, Meteorological Office. Hygrometric tables, Part III: For aspirated psychrometer readings in degrees Celsius, 2nd edition. London, HMSO, 1964 (reprinted 1978).
- London, Meteorological Office. The measurement of upper winds by means of pilot balloons, 4th edition. London, HMSO, 1968.
- London, Meteorological Office. Abbreviated weather reports. London, HMSO, 1982.
- London, Meteorological Office. Handbook of weather messages, Part II: Codes and specifications, 7th edition. London, HMSO, 1979. (Amendment Lists are issued from time to time.)
- London, Meteorological Office. Handbook of weather messages, Part III: Coding, 6th edition. London, HMSO, 1979. (Amendment Lists are issued from time to time.)
- London, Meteorological Office. Handbook of meteorological instruments, 2nd edition (published in eight separate volumes). Vol. 1: Measurement of atmospheric pressure; Vol. 2: Measurement of temperature; Vol. 3: Measurement of humidity; Vol. 4: Measurement of surface wind; Vol. 5: Measurement of precipitation and evaporation; Vol. 6: Measurement of sunshine and solar and terrestrial radiation; Vol. 7: Measurement of visibility and cloud height; Vol. 8: General observational systems. London, HMSO, 1980-82.
- London, Meteorological Office. Cloud types for observers, Revised edition (colour). London, HMSO, 1982.
- London, Meteorological Office. Dew-point tables for screen readings, degrees Celsius. 1982.
- London, Meteorological Office. Met. O. Leaflet No. 11: The Meteorological Office Calendar (yearly).
- London, Nautical Almanac Office. The nautical almanac. London, HMSO, yearly.
- Washington, D.C., Smithsonian Institution. Smithsonian meteorological tables, 6th revised edition. Washington, D.C., 1958.
- Geneva, World Meteorological Organization. Guide to meteorological instrument and observing practices, 4th edition. WMO - No. 8, 1971.
- Geneva, World Meteorological Organization. International cloud atlas, Vol. I: Manual on the observation of clouds and other meteors, Revised edition. WMO - No. 407, 1975.

INDEX

	<i>Page</i>		<i>Page</i>
Abbreviated weather reports	6	Kew-pattern and Fortin	103
Aerodrome level	105	Beaufort letters	72–79
Afterglow	166	for climatological records	57, 200
Air discharge (streak lightning)	66	in Health Resort reports	8, 72
Airfield, see Aerodrome		in Register	57
Alidade	33, 37	in Press report at 6 p.m.	79
Alpine glow	166	Beaufort scale of wind speeds	86–87
Altimeter setting (QNH)	106	Bishop's ring	167
Altitude of station	178–180	Blizzard	71
Alto cumulus	22	Brocken spectre	168
Alto stratus	23		
Anemograms	4, 17, 203	Calendar, Meteorological Office	5
Anemographs (see also Anemometer)	91–94, 197	Candela (luminous intensity)	52
Anemometer		Cirrocumulus	22
cup	88, 89, 90	Cirrostratus	22
effective height	82, 197	Cirrus	21
hand	89	Climatological	
reading from dials	90	records and returns	200–203
siting	82, 178, 197	stations	7, 57, 72, 183, 200–201
Anti-condensation shield	126	Cloud	
Arcs		accessory	28
auroral	171, 172	altitude	20
circumzenithal	163	amount	29
of contact	161, 162	appearance of	19, 26
paranthetic	161, 162	base	31
Atmospheric		recorder	41
obscurity	78	below station	19
pressure, see Pressure		classification of	18, 21
Aurora	170–173	composition of	18
Autographic		colour	20, 165, 168
instruments	4–5, 15–17, 129	definition of	18
records	17	discharges	66
Balloon		funnel	28, 63
cloud height measured by	11, 31, 37	genera	21, 33
filling shed	39	height	14, 20, 31–33
inflation of	40	balloon, see Balloon	
observation of upper winds by	5	levels	20
rates of ascent	37, 41	luminance	19
storage of	41	mother	29
Bare ground (plot)	95, 177	mother-of-pearl	168
Barograms	5, 17, 109	nacreous	168, 170
Barograph	106–109, 184	noctilucent	169, 170
Barometer		observation of	14, 19, 21, 32
aneroid	99–102	photography	175–176
certification	183	precipitation of	29, 68
schematic drawing	100	searchlight	31, 33–36, 206, 207
siting and installation of	102, 184	special	168
checking procedures	105	species	24
mercury		supplementary features	28
certification	183	varieties	26
corrections to	103	vertical extent	20
		Coastal stations, see Station	

	Page		Page
Concrete slab		in suspension, diffraction by	160
minimum thermometer	128, 188	whirl	63, 65
state of	97	Duststorm	65
Conversion tables			
°C to °F	209	Earth shadow	166
inches to mm and tenths	210–211	Effective height of anemometer	82, 197
knots to mile/h and m/s	212	Electrometeors	65, 75, 170–173
metres to feet	212	Evaporation, temperature of	119
Coronae	22, 24, 167	Eye-level, definition of	61
Corposant (St Elmo's fire)	170		
Corrections		Fallstreaks	28
aneroid barometers	101	Fata Morgana	165
cloud height at aerodromes	31	Fiducial point	103
hygrograph readings	121	Fog	
mercury barometers	204	definition of	60
thermometers		droplets, deposit of	61
aspirated and inspectors'	110, 113	in rain-gauge	135, 140
wind to standard height		freezing	63
land stations	83	high	173
sea stations	84	ice	60
Counter-glow	166, 175	in past hour	67
Counter-sun	162	shallow	60
Crepuscular rays	173	wet, on thermometers	124
Cumulonimbus	24	Frost, hoar, see Hoar frost	
Cumulus	24	Funnel cloud	28, 63
tropical	32		
Day		Gale	81, 86–87
constant, definition of	156	Gegenschein	174
darkness	173	Glaze	63
first observation of	11	Glory	167
length of	13	Green flash	166
Daylight, duration of	13	Grid reference	179
Declination		Ground	
magnetic	180, 182	bare patch	95, 177
of sun	190–194	discharges	66
Desiccator, silica-gel	37	ice	63
Desynn	91	state of	95–96
Dew	61, 96	Gust	
collected by rain-gauge	135, 140	definition of	82
Dew-point	119, 124, 133	on anemograph record	92
Diamond dust	60	speed uncorrected for synoptic	
Diffraction	160	purposes	83
Discharge		Gustiness	92
air, cloud and ground	66		
Drizzle			
description of	59	Hail	
freezing	59	association with cumulonimbus	24, 29
intensity of	71, 72	definition of	60
supercooled	63	reporting of	71, 72
Dust		small	60
devil	65	stones, shapes and sizes	60
drifting or blowing	64	water equivalent measured	142, 151
haze	64		

	<i>Page</i>		<i>Page</i>
Halo phenomena	22, 60, 160–163, 167	Line-squall	67
photographing	175	Lithometeors	63–65, 74
Haze	64, 78	Looming	164
Health Resort Scheme	8, 200	Lull	82, 92
Hectopascal	98		
Helium, use of	41	Magnetic	
Hoar frost	62, 96	declination	180, 182
advection	62	tape event recorder	151
deposits in rain-gauge	67, 140	Magslip	91
Hours, numbering of	11	Mean sea level, reference datum	180
Humidity, relative	121, 132	Measure, rain, see Rain measure	
determination of	119	METAR, codes and wall-card	6, 9
haze/mist criteria	78	Meteorological Office Calendar	5
obtained from hygrograph	121, 130	Meteorological optical range (MOR)	43
Humidity slide-rule	119, 133	Meteor, definition of	58
Hydrogen, use of	37–41	Millibar	98
Hydrometeors	18, 58, 73	Mirage	164
Hydrograms	5, 17, 131	Mist	61
Hydrograph, hair	108, 130, 131	Mock moons and suns	161, 162
used instead of supercooled wet bulb	121	Mock-sun ring	161, 162
Hygrometer		Mother-clouds	29
aspirated	132	Mother-of-pearl clouds	168
non-aspirated	119		
Hygrometric tables	119, 133		
		Nautical Almanac	13, 181
Ice		Nebule, definition of	48
bulb thermometer	120, 121	Nimbostratus	23
clear	62	Nomograms to determine visibility	53–55
crystals	60, 160, 163	North, true, determination of	181
deposit	62–63	Northern lights	171
fog	60		
ground	63	Observation (see also Reports)	
particles	59–60, 67	at night	19, 20, 31, 32, 51, 114
pellets	59, 135, 142	at stations making abbreviated reports	6
Inspection of stations	105, 113	avoidance of errors in	13
Instrument		climatological stations	7, 10
autographic	4–5, 15–17, 129	entry, checking of	13
enclosure	177, 179	first of the day	11
Instrumental equipment	183	for aviation	6, 9
International		hours of	10, 11
Cloud Atlas	18, 58, 160	official record of	13
Nautical Mile	212	order of making	3, 6, 7
symbols for meteors	73	pilot-balloon	5, 11, 31
Irisation (iridescence)	168	recording	5, 200–203
Isogonals	180, 182	site	177–179
		special phenomena	175
Jacob's ladder	173	standard hours of	9
		time of, actual and official	11
Kelvin, definition of SI unit	110	Obstruction lights	52
Koschmieder's formula	44, 54	Okta (unit for reporting cloud amount)	30
		Ordnance Survey maps, use of	32, 178, 181
Lightning	66	Orientation	180–182

	Page		Page
Parallax		Rain	
rainfall reading	139	classification of intensity	69, 72
soil thermometer reading	128	continuity of	77
thermometer reading	114	description of	58
Paranthelia	161, 162	drops supercooled	63
Parantiselenae	162	freezing	59
Paraselenae	162	measure	
Paraselenic circle	162	care of	140
Parhelia	161, 162	housing	16
Parhelic circle	161, 162	reading	139
Pascal, definition of SI unit	98	types of	138, 139
Past weather	72	measurement after freezing	142, 143
Phenomena		recorder, see Rain recorder	
descriptions of	58–63, 160–175	Rainbows	163
recording, photographing		Rain-gauge	
170, 171, 175–176		Bradford	138
within sight	78	bottle	140, 141
Photography	170, 171, 175–176	care of	140–141
Photometeors	74–75, 160–168	catch due to surface condensation	135
Pilot balloon, see Balloon		climatological	3, 137, 141
Precipitation		gravimetric	152
association with cloud types		hours of reading	141
23, 24, 28, 29, 68		measurement of solid	
continuity of	68, 77	precipitation	142–144, 151
definition of	67	Meteorological Office preferred	136, 137
effect on balloon ascents	37	Mk 2 and Mk 3	137
hourly	203	Octapent	136, 138
intensity of	68–72, 76	rates of accumulation in	69–70
measurement of	3, 10, 135–144	recording, see Rain recorder	
mixed	72, 77	site and exposure	135, 178, 188
observations	3, 57, 67–72, 76–78, 135	Snowdon	136, 138
site peculiarities affecting	178, 188–189	tipping-bucket	148–151
trace of	140	magnetic-tape event recorder	151
types of	58–60, 76	turf wall for	189
within sight	68, 78	Rain recorder, tilting-siphon	145–148
Precision aneroid barometer, see Barometer		assessment of intensity from	69–70
Press report, 6 p.m.	79, 122	frost protection	146
Pressure		sample chart traces	69
at aerodrome level (QFE)	105	siting and exposure	189
atmospheric	98	Rayleigh scattering	166
conversion factors	98	Red flash	167
reduction to other levels	101, 105, 205	Refraction	160
vapour	119	Register	
Psychrometer		climatological station	8, 57, 200
aspirated	132–134	corrections	13
non-aspirated	119	Daily	5, 13, 201, 202
Purple light	165–166	official time entered in	11
		for abbreviated synoptic reports	6, 201
QFE	105	Health Resort stations	8, 200
QFF	99	of Observations	6
QNH	106	official record of surface observations	13
		Pocket	8, 200
Radiation points	27	remarks column	58, 72
		use of Beaufort letters in	57, 76–78

	Page		Page
Reports (see also Observation)		Snow depth	
abbreviated synoptic	6	measurement of	152
Air Traffic Control	99	when reported by synoptic stations	3, 4, 152
aviation	6	Snow lying	
from agrometeorological stations	8	climatological observation of	67, 142, 152
hourly rainfall	3	day of	67
METAR	6, 9	description of	67
simplified, plain-language	7	fresh	152
special at 6 p.m.	8, 10, 79	rainfall equivalent of	142, 143–144
sudden changes	6	Southern lights	171
supplementary data, 0900 and 2100		Spout	63
GMT	4	Spray	61
Returns		Squall	67, 82
additional	203	State of	
monthly and weekly	201, 202, 203	concrete slab	97
Rime		ground	95–96
deposit in rain-gauges	135, 140	sky	76
description of	62	Static pressure head	102, 184
Run of wind	8, 89, 197	Station	
Runway visual range	56	agricultural meteorological	8, 201
		authority at	177
		auxiliary reporting	6, 177, 201–202
		climatological	7, 57, 72, 183, 200–201
St Elmo's fire	170	coastal	
Sand		rain-gauge exposure	178
blowing or drifting	64, 65	visibility	45, 47
whirl	63, 65	wind speed	88, 178
Sandstorm	65	co-ordinates	178–180
Scintillation	165	Health Resort	8, 10, 200
Screen, thermometer		height	178
approved types	117, 185–186	inspection of	105, 113
care of	118	layout	179
exposure and installation	185–186	synoptic	3, 57, 72, 183, 202–203
use for storage	16	Storm	86–87
Shimmer	165	Stratus	23
Showers		Stratocumulus	23
definition of	68	Sublimation of water vapour	62
intensity of	70, 71, 76	Sudden or significant changes	6, 57, 90
Site, observation	177–179	Sun	
Sky		coloration	64
obscured	55, 76	in transit	156
state of	67, 76	mock	161, 162
ugly threatening	76	pillar	163
Sleet	57	Sunbeams	173
Smog	60	Sunrise and sunset, definitions of	13
Smoke	64, 173	Sunshine recorder	
Snow		bowl, cross-section	155
association with cloud types	29	cards	154–155
classification of intensity	71–72	care and adjustment	158–159
cover, rate of increase	71	siting and installation	178, 190–196
definition of	59	support for	195
drifting and blowing	61	trace at different times of year	159
grains	59	types of	153
measurement of	135, 137, 142–144	Supercooling	
on ground	63, 67, 96	droplets and deposits of ice	62, 63
pellets	59	effect on wet bulb	121
rainfall equivalent of	142–144		

	Page		Page
Temperature (see also Thermometer)		during past hour	65
by aspirated psychrometer/		intensity of	77
hygrometer	132	Time	
conversion °C to °F	209	equation of	156
effect of jet aircraft on	125	Greenwich Mean	2, 9
indicator	115, 116	Local Apparent	155, 158, 195, 196
of evaporation	119	Local Mean	156
rounding to nearest whole degree	116	of observation	9, 10, 11
scales	110	zone	9, 11, 12
site peculiarities affecting	177	Time marks on charts	4, 17
throwing to the odd	117	anemogram	5, 93
Theodolite, use of	175, 194	barogram	108
Thermogram	5, 17	hygogram	130, 131
Thermograph	129, 130–131	thermogram	129, 131
Thermometers		tilting-siphon rain recorder	145
accuracy	110	Tornadoes	63
attached	103	Transmissometer	51
bare-soil minimum	16, 127, 187	Twilight	
bulbs above ground	117, 185	arch	165, 166
care of	124	astronomical	166
category to be used	110	colours	165
certificates	110, 113	crepuscular rays	173
check of	113, 116	phenomena at	174
concrete-slab minimum	128, 188	Turf wall	189
discrepancies in readings	124	Twinkling	165
dry-bulb	118, 124		
electrical resistance	115–116	Ulloa's ring	168
estimation to tenths	114, 115	Undersun	163
grass minimum	112, 125–127	Units	
anti-condensation shield	126	atmospheric pressure	98
check of	126	cloud amount	30
siting	125–126, 187	height of cloud base	31
supports for	126, 127, 187	precipitation	135
ice bulb	120–121	snow depth	135, 152
indicator	115–116	temperature	110
inspectors'	110, 113	visibility	44
maximum	110, 113, 122	wind direction and speed	80, 88
minimum	110, 113, 122–124		
misreading of, avoidance	13, 114, 124	Vapour pressure	119
order of reading	124	Virga	28
range of temperature scales	185	Visibility	
reading of	114, 124–125, 133	definition of	43
screen, see Screen		determination of	46–55
soil	111, 112, 128–129, 186–187	from transmissometer reading	51
spirit, removal of bubbles	123	in certain weather conditions	60, 61, 64, 71
wet-bulb		lights	48
aspirated	132–133	meter	48–51
depression	119	objects	44–46, 47
water for	119, 133	varying in different directions	47
wick	119, 120, 132	vertical	55
Thunder	66	Visual extinction coefficient	43
Thunderbolt	66	Visual threshold	52
Thunderstorm			
at the station	65, 67, 76		
definition of	65		

	<i>Page</i>		<i>Page</i>
Water		Mk 5B system	94
container, wet-bulb	120	run of	8, 89, 197
equivalent of solid precipitation	142–144	speed	
purified	119	Beaufort scale	86–87
vapour	60, 61, 62	conversions	88, 212
Weather		estimation of	84, 85
diary	57, 81, 200	measurement of	80, 88–90
past	72	reports of	80
present	67–72	sudden change in	81, 91
Whirlwind	63	squall	67, 82
Wick, see Thermometers, wet-bulb		standard height	80, 82, 84
Wind		terminology	81–82
direction		vane	84–85, 196–197
backing or veering	82		
estimation of	84	Zodiacal	
readings of	91, 93	light	174
reports of	80	band and Gegenschein	174
sudden change in	81, 91		
force in blizzards	71		