Synchronous Weather Charts

Publication/Creation

1861-1863

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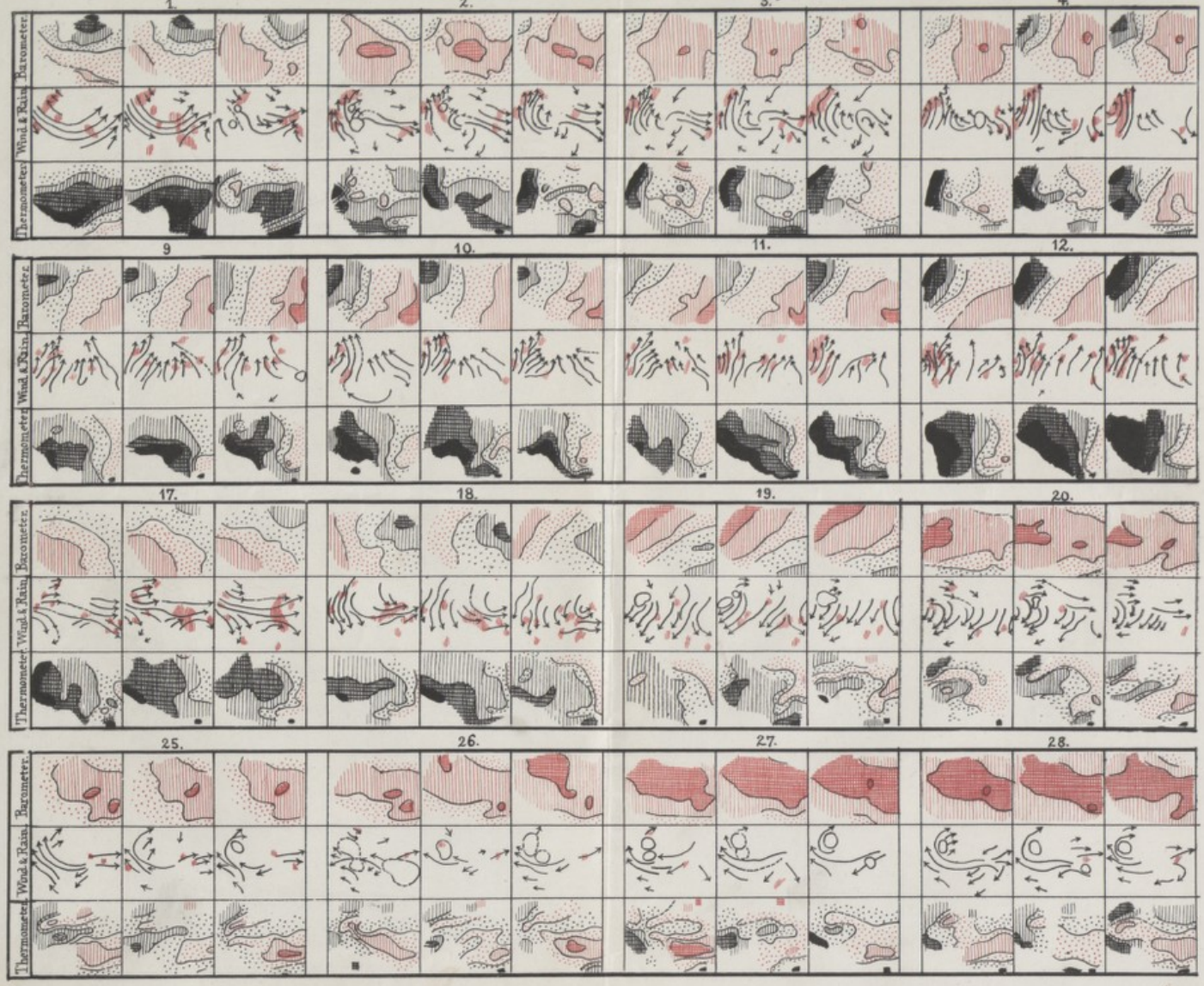
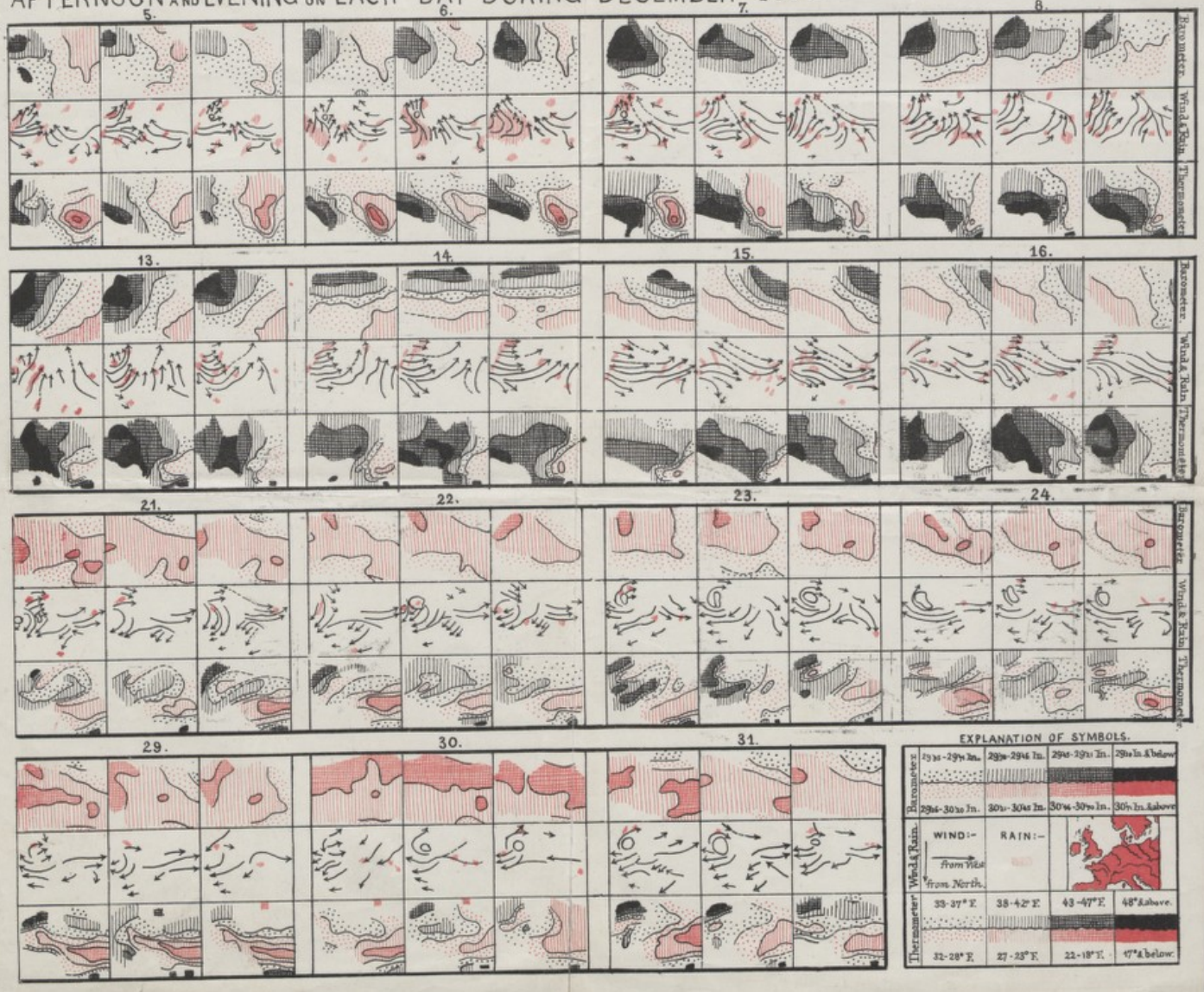
CHARTS of the THERMOMETER, WIND, RAIN and BAROMETER on the MORNING

CHARTS OF THE THERMOMETER, WIND, RAIN AND BAROMETER ON THE MORNING



AFTERNOON AND EVENING ON EACH DAY DURING DECEMBER, 1861.

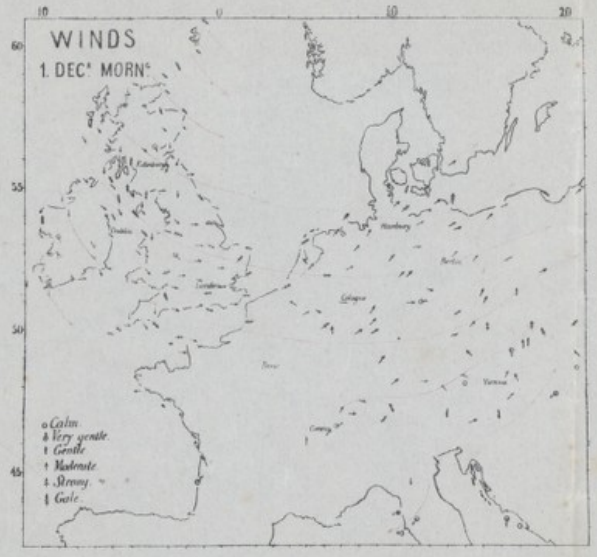


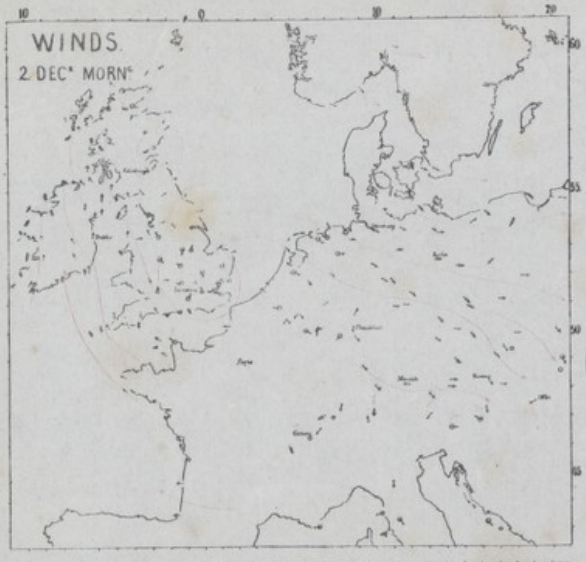
f. 3v (18)

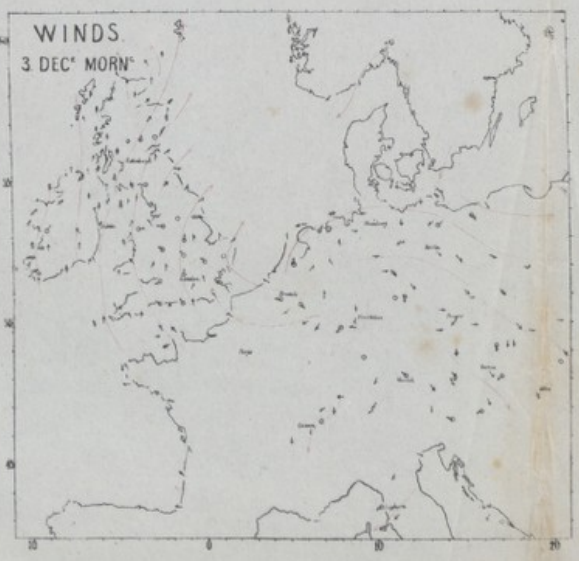
(Was 1(b)
f. 1)

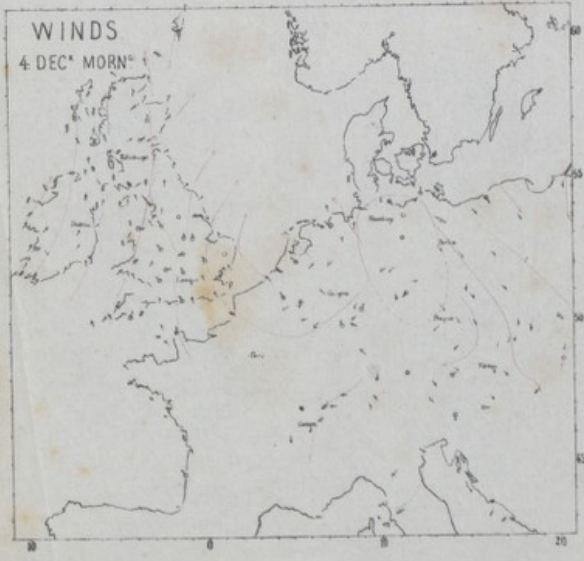
(Pearson
Galton)

F.5





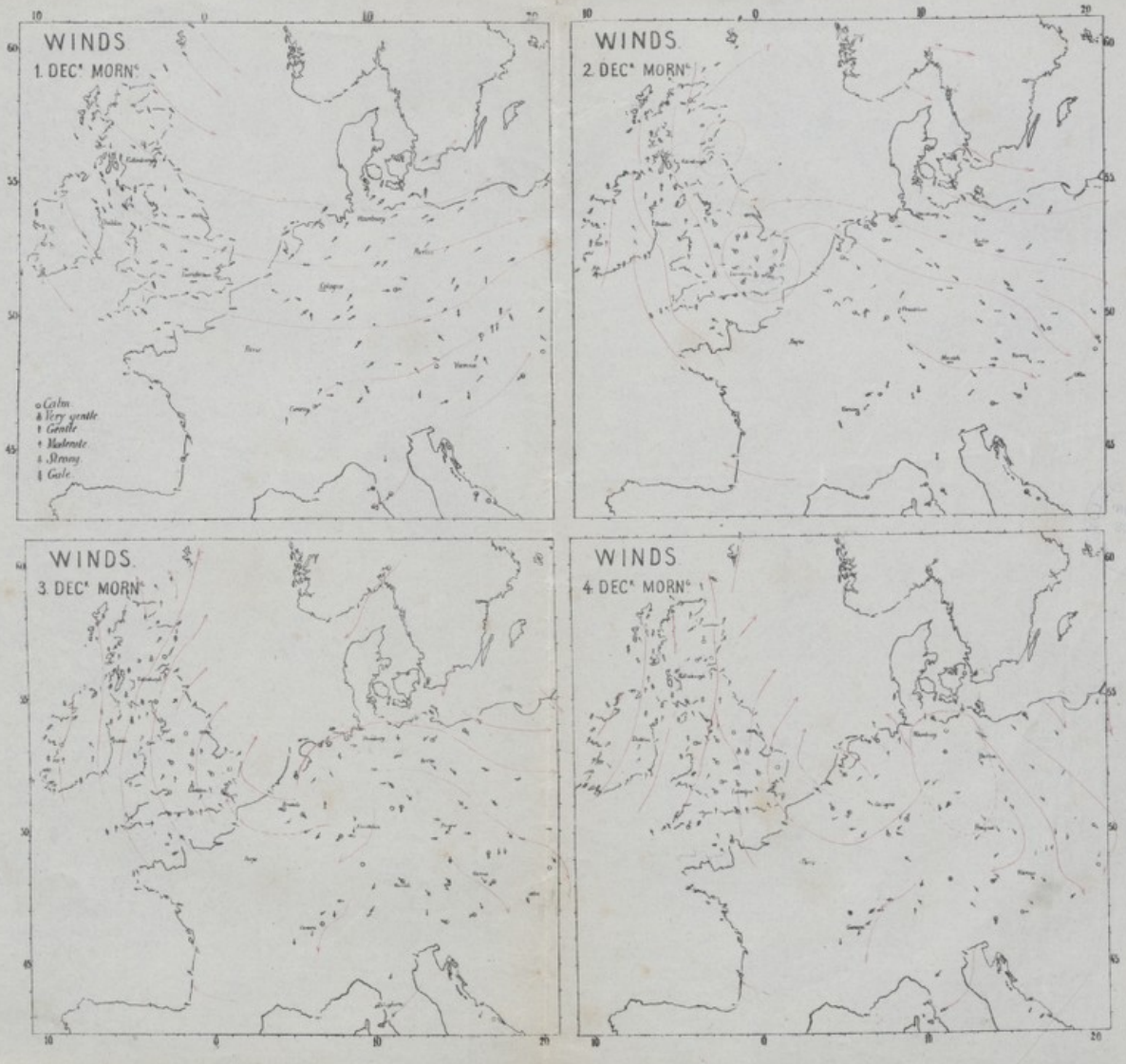




The Winds of Britain & Europe, Morn.^g Aft.^n & Ev.^g of each day Dec.^r 1861.

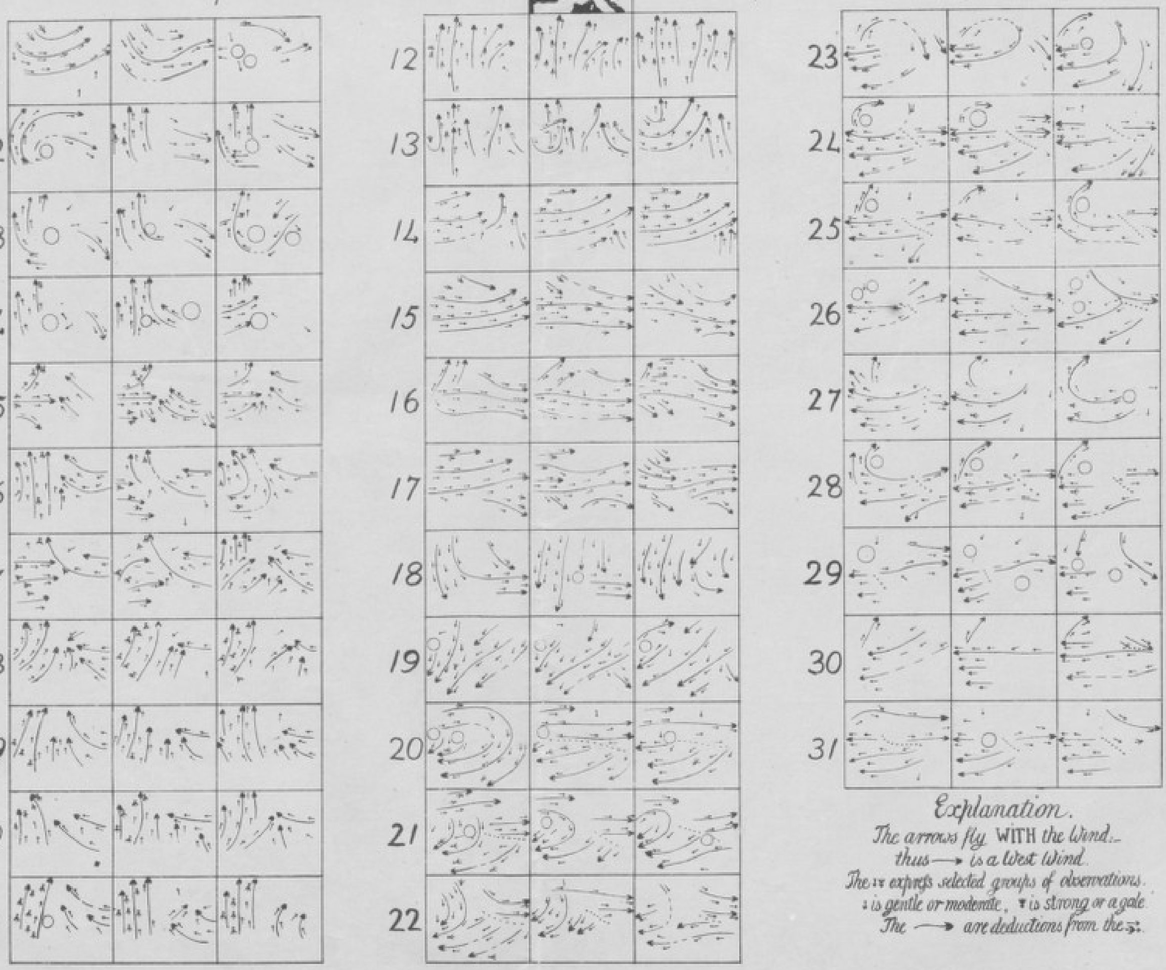
Explanation.

The arrows fly WITH the Wind:—
thus ⟶ is a West Wind.
The ↓↑ express selected groups of observations.
↓ is gentle or moderate, ↑ is strong or a gale.
The ⟶ are deductions from the ⇉.


WINDS
1. DEC.r MORN.s
WINDS
2. DEC.r MORN.s
WINDS
3. DEC.r MORN.s
WINDS
4. DEC.r MORN.s
o Calm
1 Very gentle
1 Gentle
1 Moderate
1 Strong
1 Gale

f. 8

The Winds of Britain & Europe,  Morn.g, Aft.n, & Ev.g of each day Dec.r 1861.



Explanation.

The arrows fly WITH *the Wind:-*
thus ⟶ is a West Wind.
The ⇣ express selected groups of observations.
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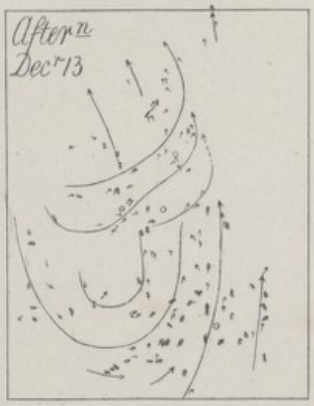
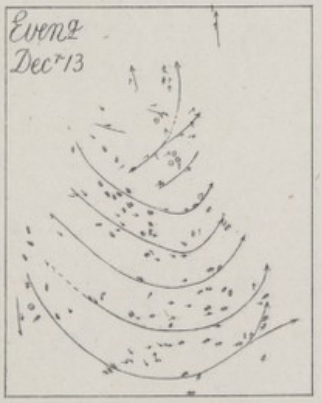
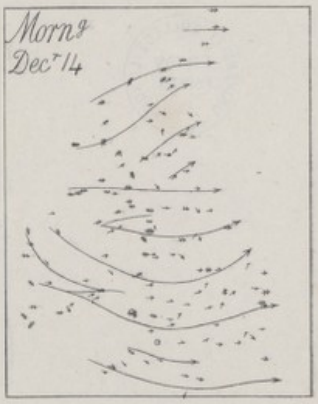
The ⟶ are deductions from the ⇣.

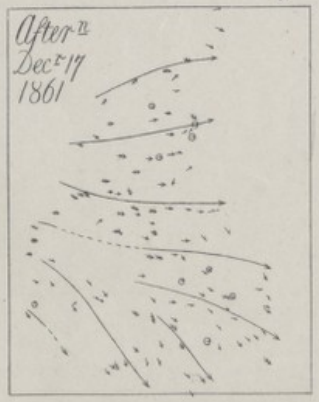
Change from a South to a West Gale.

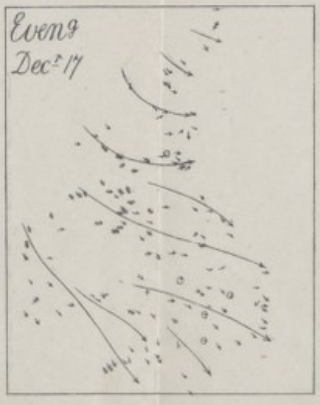


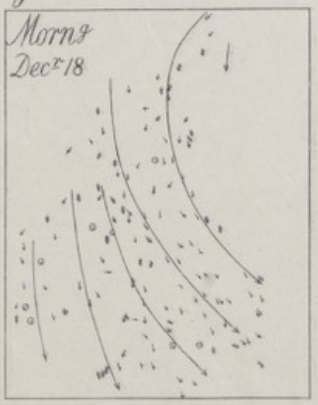




Change from a West to a North Gale



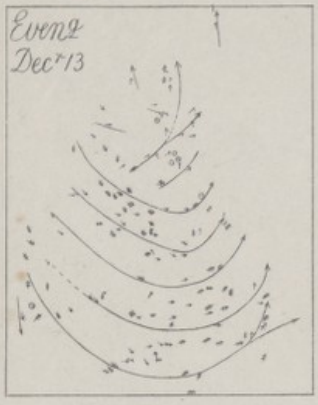


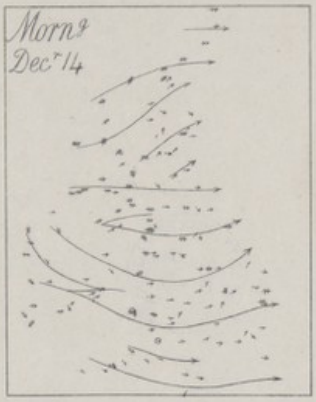


SYMBOLS FOR FORCE OF WIND

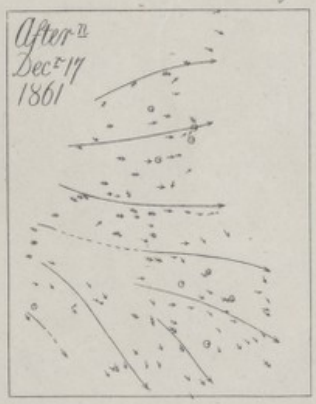
very gentle ①
gentle ↓
moderate ↓
strong ↓↓
gale ↓↓

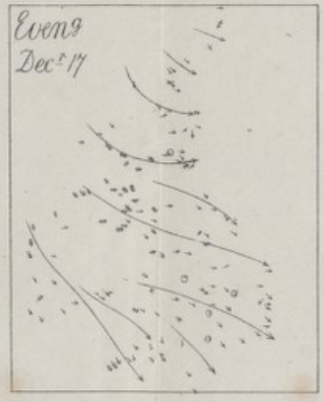
Change from a South to a West Gale.

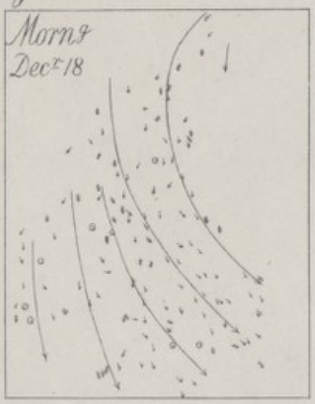




Change from a West to a North Gale







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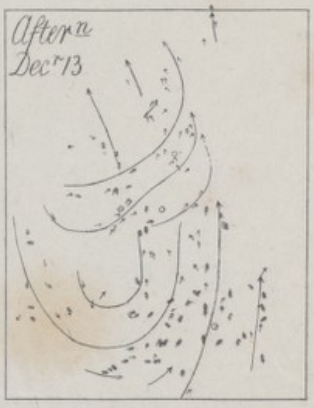
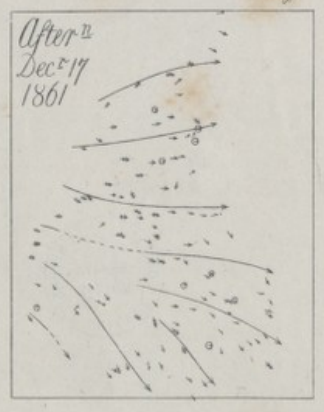
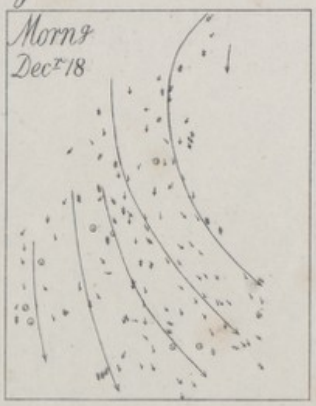
Change from a South to a West Gale.



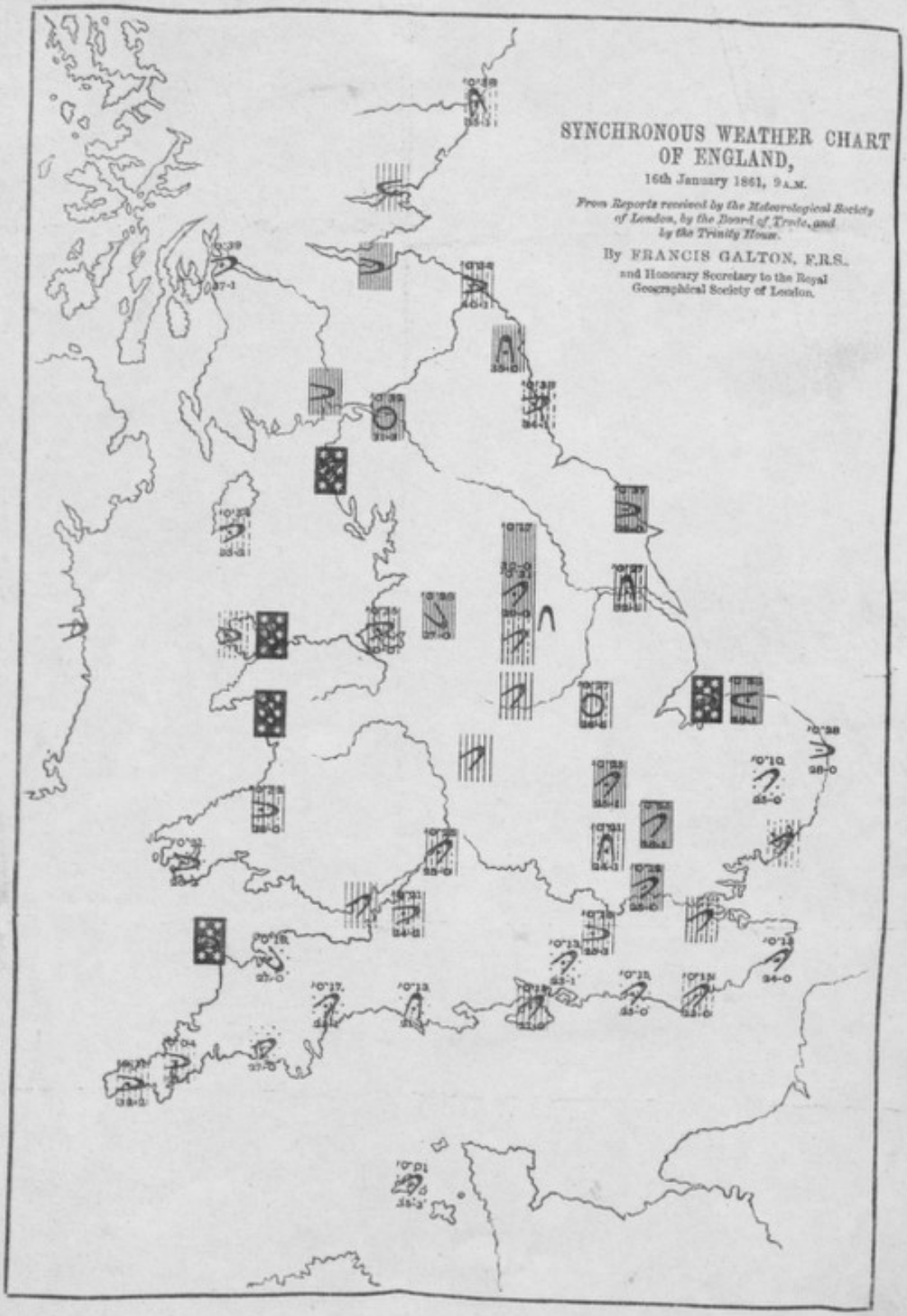
Change from a West to a North Gale





SYMBOLS FOR FORCE OF WIND

very gentle
gentle
moderate
strong
gale



SYNCHRONOUS WEATHER CHART OF ENGLAND,

16th January 1861, 9 A.M.

From Reports received by the Meteorological Society of London, by the Board of Trade, and by the Trinity House.

By FRANCIS GALTON, F.R.S.
and Honorary Secretary to the Royal Geographical Society of London.

CIRCULAR LETTER TO METEOROLOGICAL OBSERVERS.

(Translations in French and in German are sent to the Continent.)

SYNCHRONOUS WEATHER CHARTS.

The accompanying Map is printed with types I have designed and had cast for the purpose of representing synchronous weather data under a geographical arrangement and in a partly pictorial form, desiring to afford that intelligible picture of the meteorology of a large region which mere printed lists are wholly inadequate to supply.

In the scale I adopt, the centre of each symbol can be adjusted to within two English statute miles of any station, and, as the symbols occupy a space of one-third of a degree both in latitude and longitude, very numerous stations may be employed, the only limit to their number being, that every two of them should lie apart at least 20 English geographical miles in latitude and 13½ in longitude. An enormous number of observations, extending over large areas, might thus be printed with ease and collated with accuracy, mapping out broad eddying currents of air, heat, and moisture which determine our climate, but of whose directions, shapes, and mutual relations we are at present in lamentable ignorance.

As a basis to future efforts, I here invite Meteorologists who have been in the habit of contributing observations to any Society, and are therefore familiar with methods of observing, to co-operate with me during the whole of next December, in order to obtain a series of aërial charts of Northern Europe between the latitudes 42° 25′ on the South (including all France and Perugia) and 61° on the North (including Shetland, Bergen, and Christiana), and extending from the westernmost limit of the British islands to the meridian 20° 30′ East from Greenwich (including Konigsberg and Pesth, and even reaching Warsaw). I propose to print a few charts, containing one of the most prominent series of weather changes that may occur, on the scale and plan of that which is here annexed, but covering a sheet more than six times its size, and to write an analysis of the rest, aided by lithographs. A copy of these will be presented and forwarded, by book post, gratuitously to every Contributor who will send me, *postage free*, a series of *reduced* observations and other information, according to the subjoined conditions.

The result of a wide system of co-operation such as I propose, will be the accomplishment of a valuable piece of scientific work, that will also help to afford an answer to the question whether synchronous charts may hereafter be printed regularly, with success.

The trouble of preparing a list of observations, such as I ask for, will be an exceedingly small addition to the every-day work of an habitual Observer. I am obliged to insist upon the condition that the observations should be *reduced* ready for printing without further trouble, because a labour which is not worth consideration when divided among some hundred Observers and spread over a monthly time, becomes more serious than I care to undertake single-handed and at once. (I mean that the barometer should be corrected for temperature; reduced to the mean sea level; and its reading, if in millimètres* or other foreign scale, should be converted into *English inches* and decimals; also, that the reading of the thermometers, if in Reaumur's or Centigrade scale,* should be converted into that of *Fahrenheit*.) Also that the observations should be entered on one of the enclosed blank forms, as want of uniformity causes an enormous waste of labour. Moreover, the postage of letters is so onerous that I cannot accept any save those that are prepaid. Neither can I undertake to correspond with individual Observers, although I shall be most happy to give any information that may be required to the representatives of Meteorological Societies. I feel sure that every Meteorologist will, on reflection, see the reasonableness of my reservations, and will excuse them. I need not add, that in any case the self-imposed cost and labour to myself will be considerable.

Conditions of Co-operation.

1. Every intending Contributor to send me in a *prepaid letter* as soon as convenient, and not later than the 1st of December next, the name of himself and of his station, its latitude, longitude *from Greenwich*, and its height above the sea level, in *English feet*. Any particulars (written in English, French, or German) about the aspect of the station would be acceptable. It is particularly requested that all this may be written very legibly in a large hand. It will be sure to prevent mistakes if the names are written twice over, once in *printed* characters.

2. Every Contributor to despatch to me on the 1st of January 1862, in a *prepaid letter*, his series of observations entered in the blank form, sent herewith.

It is incomparably more important that the observations should be trustworthy than that they should be numerous or continuous. Attention is particularly requested to the amount of cloud, as its symbol is a prominent and interesting feature in the Map, though Observers are frequently somewhat careless in recording it.

Observations even of cloud and wind alone are very acceptable, especially when made at lighthouses, it being always understood that they are accurately noted.

The observations will be printed precisely as they are furnished, according to the subjoined system; that is to say, no attempt will be made to correct apparent errors of record or reduction. If, however, the results from any station should appear on comparison with those of the stations adjacent to it to be frequently faulty, they will be altogether discarded.

I cannot promise to present complete sets of charts to the contributors of very imperfect series of observations.

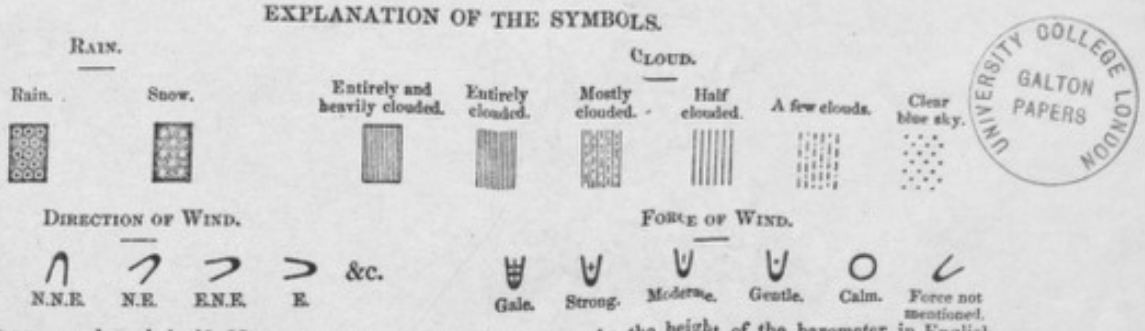
In addition to the copies presented gratuitously to Contributors, others will be issued for sale, to lighten in some small degree the heavy expenses of printing.

Francis Galton,
42, Rutland Gate,
London.

July 1861.

* See Tables on other side of this page.

EXPLANATION OF THE SYMBOLS.



In each compound symbol the upper figures, as $\left\{\begin{matrix}'0\cdot39\\'9\cdot72\end{matrix}\right\}$ respectively signify $\left\{\begin{matrix}30\cdot39\\29\cdot72\end{matrix}\right\}$ to be the height of the barometer in English inches.

The lower figures 34—1 mean 34° is the height of Fahrenheit thermometer, and 1° is its excess over thermometer with moistened bulb.

CONVERSION OF FOREIGN TO ENGLISH SCALES.

x° Fahrenheit $= \frac{5}{9}(x^\circ - 32^\circ)$ Centigrade $= \frac{4}{9}(x^\circ - 32^\circ)$ Reaumur.

Fahrenheit.	Centigrade.	Reaumur.	Fahrenheit.	Centigrade.	Reaumur.
100	37·8	30·2	44	6·7	5·3
99	37·2	29·8	43	6·1	4·9
98	36·7	29·3	42	5·6	4·4
97	36·1	28·9	41	5·0	4·0
96	35·6	28·4	40	4·4	3·6
95	35·0	28·0	39	3·9	3·1
94	34·4	27·6	38	3·3	2·7
93	33·9	27·1	37	2·8	2·2
92	33·3	26·7	36	2·2	1·8
91	32·8	26·2	35	1·7	1·3
90	32·2	25·8	34	1·1	0·9
89	31·7	25·3	33	0·6	0·4
88	31·1	24·9	32	0·0	0·0
87	30·6	24·4	31	− 0·6	− 0·4
86	30·0	24·0	30	− 1·1	− 0·9
85	29·4	23·6	29	− 1·7	− 1·3
84	28·9	23·1	28	− 2·2	− 1·8
83	28·3	22·7	27	− 2·8	− 2·2
82	27·8	22·2	26	− 3·3	− 2·7
81	27·2	21·8	25	− 3·9	− 3·1
80	26·7	21·3	24	− 4·4	− 3·6
79	26·1	20·9	23	− 5·0	− 4·0
78	25·6	20·4	22	− 5·6	− 4·4
77	25·0	20·0	21	− 6·1	− 4·9
76	24·4	19·6	20	− 6·7	− 5·3
75	23·9	19·1	19	− 7·2	− 5·8
74	23·3	18·7	18	− 7·8	− 6·2
73	22·8	18·2	17	− 8·3	− 6·7
72	22·2	17·8	16	− 8·9	− 7·1
71	21·7	17·3	15	− 9·4	− 7·6
70	21·1	16·9	14	−10·0	− 8·0
69	20·6	16·4	13	−10·6	− 8·4
68	20·0	16·0	12	−11·1	− 8·9
67	19·4	15·6	11	−11·7	− 9·3
66	18·9	15·1	10	−12·2	− 9·8
65	18·3	14·7	9	−12·8	−10·2
64	17·8	14·2	8	−13·3	−10·7
63	17·2	13·8	7	−13·9	−11·1
62	16·7	13·3	6	−14·4	−11·6
61	16·1	12·9	5	−15·0	−12·0
60	15·6	12·4	4	−15·6	−12·4
59	15·0	12·0	3	−16·1	−12·9
58	14·4	11·6	2	−16·7	−13·3
57	13·9	11·1	1	−17·2	−13·8
56	13·3	10·7	0	−17·8	−14·2
55	12·8	10·2	− 1	−18·3	−14·7
54	12·2	9·8	− 2	−18·9	−15·1
53	11·7	9·3	− 3	−19·4	−15·6
52	11·1	8·9	− 4	−20·0	−16·0
51	10·6	8·4	− 5	−20·6	−16·0
50	10·0	8·0	− 6	−21·1	−16·9
49	9·4	7·6	− 7	−21·7	−17·3
48	8·9	7·1	− 8	−22·2	−17·8
47	8·3	6·7	− 9	−22·8	−18·2
46	7·8	6·2	−10	−23·3	−18·7
45	7·2	5·8			

1 Inch = 25·3995 Millimetres
= 11·2595 Paris Lines
= 20 Russian Half Lines.

Inches and Tenths.	Millimetres.	Paris Lines.	Russian Half Lines.
28·0	711	315	560
1	714	316	562
2	716	318	564
3	719	319	566
4	721	320	568
5	724	321	570
6	726	322	572
7	729	323	574
8	732	324	576
9	734	325	578
29·0	737	327	580
1	739	328	582
2	742	329	584
3	744	330	586
4	747	331	588
5	749	332	590
6	752	333	592
7	754	334	594
8	757	336	596
9	759	337	598
30·0	762	338	600
1	765	339	602
2	767	340	604
3	770	341	606
4	772	342	608
5	775	343	610
6	777	345	612
7	780	346	614
8	782	347	616
9	785	348	618

(Proof of an intended Circular for consideration.)

Synchronous Weather Charts.

The accompanying Map is printed with types I have designed and had cast for the purpose of representing synchronous weather data under a geographical arrangement and in a partly pictorial form, desiring to afford that intelligible picture of the meteorology of a large region which mere printed lists are wholly inadequate to supply.

In the scale I adopt, the centre of each symbol can be adjusted to within two English statute miles of any station, and, as the symbols occupy a space of one-third of a degree both in latitude and longitude, very numerous stations may be employed, the only limit to their number being, that every two of them should lie apart at least 20 English geographical miles in latitude and 13⅓ in longitude. An enormous number of observations, extending over large areas, might thus be printed with ease and collated with accuracy, mapping out broad eddying currents of air, heat, and moisture which determine our climate, but of whose directions, shapes, and mutual relations we are at present in lamentable ignorance.

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(Vorläufiger Entwurf eines Umschreibens.)

Karten gleichzeitiger Witterung.

Beiliegende Karte ist mit von mir erfundenen Typen gedruckt, die ich by Herstellung von Karten gleichzeitiger Witterung zu benutzen gedenke. Mein Zweck dabei ist ein verständliches Bild der Meteorologie einer ausgedehnten Region zu geben, wie solches durch die gewöhnlichen Tabellen nicht gegeben werden kann.

Bei dem von mir angenommenen Massstab kann der Mittelpunkt jedes Zeichens bis auf zwei Englische Meilen jeder Station angepasst werden, und da jedes der Zeichen einen Platz von ein Drittel Grad Länge und Breite einnimmt, so wird die Zahl der Stationen nur dadurch beschränkt, dass sie wenigstens 20 Englische Meilen in Breite und 13⅓ in Länge von einander entfernt sein müssen; sehr zahlreiche Stationen können daher in Betracht gezogen werden. Auf diese Weise können eine Anzahl von über ausgedehnte Länder sich erstreckende Beobachtungen mit Leichtigkeit gedruckt und mit einander verglichen werden. Breite Luftströmungen, Wärme, und Feuchtigkeit, die unser Klima bestimmen, und über deren Richtung, Verbreitung und Zusammenhang wir bis jetzt in beklagenswerther Unwissenheit sind, werden klar bezeichnet.

Um eine Grundlage für fernere Beobachtungen zu gewinnen, lade ich hiermit alle Meteorologen, die in regelmässigem Verkehr mit Meteorologischen Gesellschaften und daher mit den verschiedenen Beobachtungsweisen vertraut sind, ein, mit ihre Beihülfe für den nächsten December zu gewähren, um eine Reihe von Witterungskarten von Nord-Europa herzustellen, die sich von 42° 25′ N. Br. im Süden bis 61° im Norden, und vom äussersten Westen der Britischen Inseln bis zum Meridian von 20° 30′ Ostl. von Greenwich erstrecken sollen, ein Gebiet das ganz Frankreich, Italien bis Perugia, Pesth, Warschau und Königsberg im Osten, Christiania, Bergen und die Schettland Inseln im Norden einschliesst. Es ist meine Absicht, eine Anzahl von Karten im Massstabe beiliegender Probe zu drucken, und darauf eine Reihe der bedeutendsten Witterungswechsel niederzulegen, und über die andern Beobachtungen eine von Lithographien begleitede Analyse zu schreiben.

Jeder Mitarbeiter, der mir frei durch die Post eine kleine Tabelle von *reduzirten* Beobachtungen und anderen Angaben, in Uebereinstimmung mit den beigefügten Bedingungen, überschickt, erhält ein Exemplar der Karten und Analyse gratis, und werden diese frei an die Meteorologische Gesellshaft befördert, mit der der Mitarbeiter in Verbindung steht. Die weitere Versendung kann ich jedoch nicht übernehmen.

Durch das Zusammenwirken vieler Kräfte, so wie ich es vorschlage, wird ein für die Wissenschaft werthvolles Resultat erzielt werden, und wird sich zeigen, ob auch fernerhin synchronyme Wetterkarten regelmässig und mit Erfolg gedruckt werden können.

Die Anfertigung einer Liste von Beobachtungen, wie ich sie wünsche, wird nur wenig zur täglichen Arbeit eines regelmässigen Beobachters fügen. Ich fühle mich jedoch gedrungen, darauf zu bestehen, mir die Beobachtungen reduzirt und druckfertig zu überschicken. Diese Arbeit, unter einige hundert Beobachter vertheilt, die 14 Tage darauf verwenden können, kommt kaum in Betracht, ist aber mehr als ich allein, und auf einmal, zu unternehmen wünsche (das heisst, die Barometerangaben sollten für Temperatur korrigirt, und auf den Seespiegel reduzirt sein; und in Englischen Zoll und zweistelligen Dezimalen angegeben sein; die Grade Reaumur und Celsius des Thermometers sollen in Fahrenheit'schen Graden ausgedrückt werden).

Ferner kann ich nur vorausbezahlte Briefe annehmen. Noch kann ich mit einzelnen Beobachtern Briefe wechseln, bin aber mit Vergnügen bereit, Vorstehern von Meteorologischen Gesellschaften und Anstalten alle wünschenswerthe Erklärungen zu geben. Ich bin versichert, dass nach reiflicher Ueberlegung Jedermann diese Einschränkungen billig finden und entschuldigen wird. Es ist kaum nöthig zu bemerken, dass die von mir freiwillig unternommenen Arbeiten und Auslagen jedenfalls bedeutend sein werden.

(Epreuve d'une Circulaire projetée.)

Chartes des Temps Synchroniques.

La carte ci-jointe est imprimée en caractère que j'ai composé expressément pour représenter les faits des temps synchroniques sous un arrangement géographique, et en partie sous des formes pittoresques, afin de donner un tableau intelligible de la météorologie d'une grande région, que de simple listes seraient incapables de produire.

Dans l'échelle que j'adopte, le centre de chaque symbole peut être fixé à deux miles anglais d'une station quelconque; et puisque les symboles occupent un espace d'un tiers de degré en latitude ainsi qu'en longitude, on peut employer un grand nombre de stations, la seule limite à leur nombre serait, que chaque fois deux stations soient à une distance, de l'une à l'autre, au moins de 20 miles géographiques anglais en latitude et 13⅓ en longitude. Un nombre immense d'observations sur un vaste terrain peuvent ainsi être imprimées avec aisance, et collationnées avec exactitude, traçant des circuits espacés de courants d'air, de chaleur, et d'humidité, qui déterminent notre climat, mais dont les directions, les formes, et les relations mutuelles nous sont fort peu connues jusqu'à présent.

Comme base pour des efforts futurs, j'ai l'honneur d'inviter les météorologistes qui ont été accoutumés à fournir des observations, à quelque société que ce soit, et sont par conséquent familier avec les méthodes d'observations, à bien vouloir co-opérer avec moi durant tout le mois de décembre prochain, afin de nous procurer une série de chartes sériennes de la partie nord de l'Europe, entre latitude 42° 25′ au sud (y compris la France et Perugia), et 61° au nord (y compris les îles Shetland, Bergen, et Christiania), et s'étendant depuis l'extrême ouest des îles Britanniques jusqu'au méridien 20° 30′ Est de Greenwich (y compris Königsberg et Pesth, et même jusqu'à Varsovie). Je me propose d'imprimer quelques chartes contenant une des séries les plus saillantes des changements de temps qui puissent survenir, sur un plan et une échelle comme ci-joints, mais couvrant une feuille plus de six fois l'étendue de celle-ci; et d'écrire un analyse du reste, illustré par des lithographies. Une copie en sera envoyée gratuitement à tous ceux qui contribueront à me renseigner, *affranchi*, un petit tableau d'observations *réduites*, et autres informations selon les conditions ci-dessous, et elles seront envoyées gratis aux centres météorologiques avec lesquels chaque observateur particulier sera en communication; je ne puis entreprendre une transmission au-delà.

Le résultat d'un système étendu de coopération semblable à celui que je propose sera l'accomplissement d'une pièce scientifique de haute valeur, qui donnera aussi la réponse à la question, si des chartes synchroniques peuvent dorénavant être imprimées régulièrement avec succès.

L'embarras à préparer une liste d'observations correspondant à mon désir ajoutera excessivement peu au travail journalier d'un observateur consommé. Je suis obligé d'insister sur la condition que les observations soient réduites, prêtes pour l'impression sans plus de peine, parce qu'un labeur divisé parmi une centaine d'observateurs, dans un espace de quinze jour, est peu considérable; mais lorsqu'on laisse tout à la charge d'une seule person, et tout à la fois, cela devient à peu près impossible. (Je veux dire que le baromètre serait corrigé pour la température, réduit au niveau moyen de la mer, converti en pouces anglais et décimales; que les thermomètres, soit de Résumur ou en centigrades, seraient convertis en celui de Fahrenheit). De même les lettres non-affranchies seront refusées. Ni même puis-je entreprendre de correspondre avec des observateurs individuellement quoi que pourtant je m'estimerai heureux de donner les informations requises aux représentants des sociétés météorologiques. J'ai la confiance que, réflexion faite, tout météorologist comprendra la raison pourquoi je suis si réservé, et voudra bien m'en excuser. Je n'ai point besoin d'ajouter que, dans tous les cas, les peines et les frais que je m'impose seront sans doute considérables.

Conditions of Co-operation.

1. Every intending Contributor to send me in a *prepaid letter* as soon as convenient, and not later than the 15th of November next, the name of himself and of his station, its latitude, longitude *from Greenwich*, and its height above the sea level, in *English feet*. Any particulars (written in English, French, or German) about the aspect of the station would be acceptable. It is particularly requested that all this may be written very legibly in a large hand. It will be sure to prevent mistakes if the names are written twice over, once in *printed* characters.

2. Every Contributor to despatch to me on the 1st of January, in a *prepaid letter*, a schedule of observations ruled as follows, and filled up. The whole might be inserted on the two sides of a single sheet of note paper.

Bedingungen für Mitarbeiter.

1. Jeder Mitarbeiter ist ersucht mir so bald als möglich, und spätestens bis zum 15ten November d. J. seinen Namen und seine Station, mit Angabe von Breite und Länge von Greenwich, und Höhe über dem Meeresspiegel in Englischen Fussen, postfrei mitzutheilen. Näheres über Lage der Station, u. s. w. (in Englischer, Französischer, oder Deutscher Sprache) wäre willkommen. Es wird insbesondere ersucht recht deutlich zu schreiben, und um ja Irrthümer zu vermeiden, die Eigennamen einmal in Kartenschrift zu geben.

2. Jeder Mitarbeiter schickt am 1sten Januar eine Tabelle von Beobachtungen nach beiliegendem Schema postfrei ein. Das ganze liesse sich of zwei Seiten Schreibpapier bringen.

Conditions de Co-operation.

1. Chaque collaborateur est prié de m'envoyer par lettre affranchie, aussitôt que possible, et au plus tard le 15 novembre prochain, son nom et sa station, sa latitude et longitude de Greenwich, et sa hauteur au dessus du niveau de la mer, en *pieds anglais*. Des explications détaillés (en français, anglais ou allemand) concernant l'aspect de la station seront bien venu. Ayez soin surtout que tout ceci soit écris en caractère bien lisible afin d'éviter des erreurs, les noms écrits double, une fois en caractère romains.

2. Chaque collaborateur est prié de m'envoyer au 1 janvier, lettre affranchie, un tableau des observations arrangé et remplie comme suit. Le tout peut être inséré sur deux pages du papier de lettre.

Name of Station : Its Latitude : Its Longitude from Greenwich : Its Height above Sea Level, in English Feet :	Name of Contributor : Full Address of Meteorological Society to which the Charts are to be forwarded when ready :
Namen der Station : Breite : Länge von Greenwich : Höhe über dem Meeresspiegel in Engl. Fuss :	Namen des Mitarbeiters : Genaue Addresse der Meteorologischen Gesellschaft an welche die Karten nach Vollendung zu schicken sind :
Nom de la Station : Latitude : Longitude de Greenwich : Altitude au-dessus du niveau de la mer, en pieds Anglaises :	Nom du Collaborateur : Adresse complète de la Société Météorologique à laquelle les Chartes seront expediées.

		Barometer corrected to Freezing Point at Mean Sea Level, and reduced to English Inches, Tenths, and Hundredths.	Exposed Thermometer in Shade, to nearest Degree, Fahrenheit.	Moistened Bulb for Evaporation and Dew Point, to nearest Degree, Fahrenheit.	Direction of Wind, *true* not magnetic. Only 16 points of the Compass are used; as, N., N.N.E., N.E., E.N.E., E., &c.	Force of Wind: Calm, Gentle, Moderate, Strong, Gale.	Amount of Cloud: Clear blue sky, A few clouds, Half clouded, Mostly clouded, Overcast, Dull and overcast.	Rain, Snow.	Remarks.
		Barometer mit Correktur auf den Gefrierpunkt am mittleren Meeresspiegel, in Englischen Zollen, und zweistelligen Decimalen.	Thermometer in offener Luft, im Schatten, Grade Fahrenheit.	Befeuchtete Kugel für Verdunstung und Thaupunkt, Grade Fahrenheit.	Richtung des Windes (wahre, nicht magnetische). Nur 16 Compassrichtungen; wie N., N.N.O., N.O., O.N.O., O., u. s. w. kommen in Betracht.	Stärke des Windes: Windstille, Schwach, Mässig, Stark, Sturm.	Bewölkung: Klare blaue Luft, Wenige Wolken, Halb bewölkt, Fast ganz bewölkt, Bedeckt, Trübe und bedeckt.	Regen, Schnee.	Bemerkungen.
		Baromètre corrigé au Degré de Gelée au Niveau moyen de la Mer, et reduit en Pouces, Dixaines et Centaines Anglais.	Thermomètre exposé à l'Ombre au plus près Degré Fahrenheit.	Boule humectée pour Evaporation et Pointe de Rosée, au plus près Degré Fahrenheit.	Direction du Vent Vrai et non-magnetic. On fait usage de 16 points de Compas seulement, N., N.N.E., N.E., E.N.E., E., &c.	Force du Vent: Calm, Doux, Modéré, Fort, Orage.	Volume de Nuage: Ciello sernin, quelques Nuages, Moitié nuageux, Moyenne partie nuageux, Couvert, Sombre et convert.	Pluie, Neige.	Observations.
Dec.									
15	*9 A.M.*								
	3 P.M.								
	9 P.M.								
16	*9 A.M.*								
	3 P.M.								
	9 P.M.								
17	*9 A.M.*								
	3 P.M.								
	9 P.M.								
18	&c.								
	&c.								
	&c.								

(Example:)

Jersey.
Lat. 49° 22′ N.
Long. 2° 3′ W.
Alt., 58 English Feet.

James Watson,
Meteorological Society of London,
30, Great George Street,
Westminster,
London.

Dec.									
15	*9 A.M.*	*30·39*	*40*	*38*	*N.N.E.*	*Gentle*	*Clear*	—	
	3 P.M.	*30·33*	*44*	*41*	*N.N.E.*	*Gentle*	*Few clouds*	—	
	9 P.M.	*30·29*	*38*	*36*	*N.*	*Strong*	*Overcast*	*Rain*	
16	*9 A.M.*	*30·25*	*42*	*41*	*N.N.E.*	*Moderate*	*Half cloud*	—	
	3 P.M.	*30·23*	*47*	*45*	*N.E.*	*Moderate*	*Few clouds*	—	
	9 P.M.	*30·21*	*40*	*39*	*E.*	*Calm*	*Clear*	—	
17	&c.								

It is incomparably more important that the observations should be trustworthy than that they should be numerous or continuous. Attention is particularly requested to the amount of cloud, as its symbol is a prominent and interesting feature in the Map, though Observers are frequently somewhat careless in recording it.

Observations of cloud and wind alone, are very acceptable, it being always understood that they are accurately noted. I cannot, however, promise to present complete sets of charts to the contributors of discontinuous or partial observations.

All the observations will be printed precisely as they are furnished, according to the subjoined system; that is to say no attempt will be made to correct apparent errors of record or reduction. If, however, the results from any station should appear in comparison with those of the stations adjacent to it to be frequently faulty, they will be altogether discarded.

In addition to the copies presented gratuitously to Contributors, others will be issued for sale, to lighten in some small degree the heavy expenses of printing.

FRANCIS GALTON,
42, Rutland Gate,
July 1861. London.

Es ist bei Weitem wichtiger, dass die Beobachtungen genau, als dass sie zahlreich und längere Zeit fortgesetzt seien. Es wird besonders ersucht der Bewölkung Aufmerksamkeit zu schenken, da das dafür benutzte Zeichen auf der Karte eine hervorragende Stelle einnimmt, und von Interesse ist.

Beobachtungen über Wind und Bewölkung allein, sind gleichfalls willkommen, vorausgesetzt sie sind zuverlässig; doch kann ich mich nicht verpflichten für theilweise Beobachtungen ein vollständiges Exemplar des Werkes zu geben.

Alle Tabellen werden genau nach den erhaltenen Manuscripten gedruckt, und finden anscheinende Schreib- und Reduktionsfehler keine Berücksichtigung. Sollte es sich durch Vergleichung benachbarter Stationen herausstellen, dass Resultate einer Station offenbar unzuverlässig sind, so finden solche keine Berücksichtigung.

Ausser den Frei-Exemplaren der Mitarbeiter sind andere für den Verkauf bestimmt, um einigermassen die bedeutenden Drukkosten zu decken.

FRANCIS GALTON,
42, Rutland Gate,
Juli, 1861. London.

Il est infiniment plus important que les observations soient de conscience plutôt que nombreuses et continué. Surtout faites attention à la masse de nuages, puisque le symbol en est une figure intéressante et essentielle de la carte, je remarque que les observateurs sont fréquemment en défaut sous ce rapport.

Les observations des nuages et des vents seule sont bien venu, car il importe d'observer qu'ils sont toujours notés avec grande exactitude. Je ne puis pas pourtant promettre aux collaborateurs une série complète des chartes pour des observations partielles ou discontinuées.

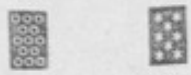
Toutes les observations seront imprimées exactement telles qu'elles nous sont fournies, selon le système ci-dessous; c'est-à-dire, aucune attente sera fait à corriger les erreurs enregistrées au reduits. Si, pourtant, les résultats d'une station paraîtront fréquemment fautives, en comparaison d'avec les stations adjacentes, elles seront entièrement omises.

En sus des copies données gratuitement aux collaborateurs, d'autres seront mises en vente afin d'alléger jusqu'à un certain point les fortes dépenses qu'occasionnera l'impression.

FRANCIS GALTON,
42, Rutland Gate,
July 1861. London.

The symbols I have in present use, are—

RAIN.



CLOUD.

DIRECTION OF WIND.

FORCE OF WIND.

In each compound symbol $\left\{\begin{matrix}'0\cdot39\\'9\cdot72\end{matrix}\right\}$ respectively signify $\left\{\begin{matrix}30\cdot39\\29\cdot72\end{matrix}\right\}$ to be the height of the barometer in English inches.
the upper figures, as
The lower figures 34—1 mean 34° is the height of Fahrenheit thermometer, and 1° is its excess over thermometer with moistened bulb.

To reduce millimètres, to inches, multiply by 3937, and take the two left-hand figures for inches and the rest for decimals; thus, 762 × 3937 millimètres = 30·00 inches.

To reduce the degrees of Reaumur to those of Fahrenheit, multiply by 9, divide by 4, and add 32°; thus—

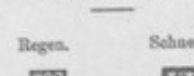
$$\overset{\text{Reaumur.}}{16^\circ} \times 9 = 144 \div 4 = 36 + 32 = \overset{\text{Fahrenheit.}}{68^\circ}.$$

To reduce the degrees of Centigrade to those of Fahrenheit, multiply by 9, divide by 5, and add 32°; thus—

$$\overset{\text{Centigrade.}}{100^\circ} \times 9 = 900 \div 5 = 180 + 32 = \overset{\text{Fahrenheit.}}{212^\circ}.$$

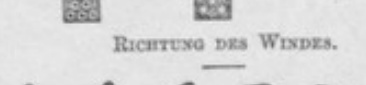
Erklärung der von mir gebrauchten Zeichen :—

NIEDERSCHLAG.

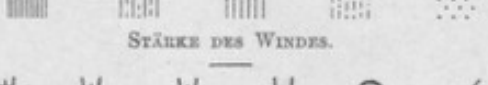


BEWÖLKUNG.

RICHTUNG DES WINDES.



STÄRKE DES WINDES.



Die oberen Zahlen in jedem zusammengesetzten Zeichen bezeichnen den Barometerstand in Englisch Zoll,

$$\left\{\begin{matrix}'0\cdot39\\'9\cdot72\end{matrix}\right\} = \left\{\begin{matrix}30\cdot39\\29\cdot27.\end{matrix}\right.$$

Von den untern Zahlen (34—1) bedeuted 34° den Thermometerstand in Graden Fahrenheit, und 1° den Ueberschuss über den Thermometer mit befeuchteter Kugel.

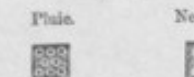
Um Millimeter in Englische Zolle zu verwandeln, multiplicire mit 3937; die zwei ersten Stellen sind dann Zoll, die übrigen Decimalen, z. B., 762 × 3972 = 30·00 Zoll.

Um Grade Reaumur in Grade Fahrenheit zu verwandeln, multiplicire mit 9, dividire durch 4, und addire 32°; z. B., $16^\circ \text{ R.} \times 9 = \frac{144}{4} = 36 + 32 = 68^\circ \text{ F.}$

Um Grade Celsius in Grade Fahrenheit zu verwandeln, multiplicire mit 9, dividire durch 5, und addire 32 z. B., $100^\circ \text{ C.} \times 9 = \frac{900}{5} = 180 + 32 = 212^\circ \text{ F.}$

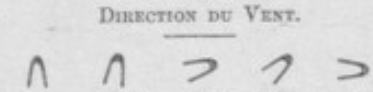
Les symboles dont je fais actuellement usage, sont :—

PLUIE.

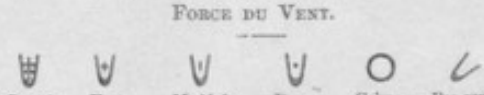


VOLUME DE NUAGE.

DIRECTION DU VENT.



FORCE DU VENT.



Dans chaque symbole combinée les chiffres supérieures, comme $\left\{\begin{matrix}'0\cdot39\\'0\cdot72\end{matrix}\right\}$ respectivement signifient $\left\{\begin{matrix}30\cdot39\\29\cdot72\end{matrix}\right\}$ la hauteur du baromètre en pouces anglais.

Les chiffres inférieures, 34—1, signifient 30° la hauteur du thermomètre Fahrenheit, et 1° est l'excédent sur le thermomètre avec une boule humectée.

Pour reduire les millimètres en pouces, multipliez par 3937, et les deux premiers chiffres du résultat seront pouces, les autres decimals ; ex., 762 × 3937 = 30·00 pouces.

Pour reduire les degrés Réaumur en Fahrenheit, multipliez par 9, divisez par 4, et ajoutez 32° ; ex.—

$$16^\circ \text{ R.} \times 9 = \frac{144}{4} = 36 + 32 = 68^\circ \text{ F.}$$

Pour reduire les degrés Centigrades en Fahrenheit, multipliez par 9, divisez par 5, et ajoutez 32° ; ex.—

$$100^\circ \text{ C.} \times 9 = \frac{900}{5} = 180 + 32 = 212^\circ \text{ F.}$$

Contributors, according to the Conditions of my Circular Letter, are requested to enter their Observations in one of these blank forms, to enclose it in a stamped envelope, and to post it to my address on January 1st, 1862.

FRANCIS GALTON,
42, Rutland Gate, London.

Name of Station:
Its Latitude:
Its Longitude from Greenwich:
Its Height above Sea Level, in English Feet:

Name of Contributor:
Full Address to which the Charts are to be forwarded when ready:

Date. Either Local or Railway Time; state which. December 1861.		Barometer corrected to Freezing Point at Mean Sea Level, and reduced to English Inches, Tenths, and Hundredths.	Exposed Thermometer in Shade, to nearest Degree, Fahrenheit.	Moistened Bulb to nearest Degree, Fahrenheit, for Evaporation and Dew Point.	Direction of Wind, true not magnetic. Only 16 points of the Compass are used; as, N., N.N.E., N.E., E.N.E., E., &c.	Force of Wind: Calm, Gentle, Moderate, Strong, Gale.	Amount of Cloud: Clear blue sky, A few clouds, Half clouded, Mostly clouded, Entirely clouded, Entirely and heavily clouded.	Rain, Snow, or neither.	Remarks.
1	9 A.M.								
	3 P.M.								
	9 P.M.								
2	9 A.M.								
	3 P.M.								
	9 P.M.								
3	9 A.M.								
	3 P.M.								
	9 P.M.								
4	9 A.M.								
	3 P.M.								
	9 P.M.								
5	9 A.M.								
	3 P.M.								
	9 P.M.								
6	9 A.M.								
	3 P.M.								
	9 P.M.								
7	9 A.M.								
	3 P.M.								
	9 P.M.								
8	9 A.M.								
	3 P.M.								
	9 P.M.								
9	9 A.M.								
	3 P.M.								
	9 P.M.								
10	9 A.M.								
	3 P.M.								
	9 P.M.								
11	9 A.M.								
	3 P.M.								
	9 P.M.								
12	9 A.M.								
	3 P.M.								
	9 P.M.								
13	9 A.M.								
	3 P.M.								
	9 P.M.								
14	9 A.M.								
	3 P.M.								
	9 P.M.								
(Example:) 16	9 A.M.	30·25	42°	41°	N.N.E.	Moderate	Half cloud	Rain	
	3 P.M.	30·23	47	45	N.E.	Moderate	Few clouds	No	
	9 P.M.	30·21	40	39	E.	Calm	Clear	No	
17	&c.								

Date. Either Local or Railway Time; state which.		Barometer corrected to Freezing Point at Mean Sea Level, and reduced to English Inches, Tenths, and Hundredths.	Exposed Thermometer in Shade, to nearest Degree, Fahrenheit.	Moistened Bulb to nearest Degree, Fahrenheit, for Evaporation and Dew Point.	Direction of Wind, *true* not magnetic. Only 16 points of the Compass are used; as, N., N.N.E., N.E., E.N.E., E., &c.	Force of Wind: Calm, Gentle, Moderate, Strong, Gale.	Amount of Cloud: Clear blue Sky, A few clouds, Half clouded, Mostly clouded, Entirely clouded, Entirely and heavily clouded.	Rain, Snow, or neither.	Remarks.
December 1861.									
15	9 A.M.								
	3 P.M.								
	9 P.M.								
16	9 A.M.								
	3 P.M.								
	9 P.M.								
17	9 A.M.								
	3 P.M.								
	9 P.M.								
18	9 A.M.								
	3 P.M.								
	9 P.M.								
19	9 A.M.								
	3 P.M.								
	9 P.M.								
20	9 A.M.								
	3 P.M.								
	9 P.M.								
21	9 A.M.								
	3 P.M.								
	9 P.M.								
22	9 A.M.								
	3 P.M.								
	9 P.M.								
23	9 A.M.								
	3 P.M.								
	9 P.M.								
24	9 A.M.								
	3 P.M.								
	9 P.M.								
25	9 A.M.								
	3 P.M.								
	9 P.M.								
26	9 A.M.								
	3 P.M.								
	9 P.M.								
27	9 A.M.								
	3 P.M.								
	9 P.M.								
28	9 A.M.								
	3 P.M.								
	9 P.M.								
29	9 A.M.								
	3 P.M.								
	9 P.M.								
30	9 A.M.								
	3 P.M.								
	9 P.M.								
31	9 A.M.								
	3 P.M.								
	9 P.M.								