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(B 11109) Wt. 5904-425 235M 12/17 H & S P. 17/919

FIELD ALMANAC

1918.

The Risings and Settings of the Sun and Moon are calculated for 3° 0 East Longitude, and for Latitude 50° North (a point near the British Line in France), and are given in Greenwich Mean Time, which is the standard time of France and Belgium, and of the British Expeditionary Force.

For each degree that you are East or West of this Longitude, provided that you are near the above Latitude, the Sun and Moon rise 4 minutes earlier or later, respectively, than the times given.

The times are given for the true horizon. This is in most cases not the same as the visible horizon; for each degree of elevation of the latter, the times of rise and set will be about 7 minutes later and earlier respectively.

(The Sun rises and sets in Serbia and Egypt roughly 1½ and 2 hours earlier than the times given, respectively. The rise and set of the Moon in those countries would require special calculations. For Egypt the reader is referred to the Sudan Almanac.)

French and Belgian time is calculated up to 24: *e.g.*, what we call 3 p.m. is called by them 15 o'clock; 11.22 p.m. is 23.22; and so on.

Mid-European time (15° E.L.) is one hour, and East European time (30° E.L.) is two hours, fast of Greenwich time.

1 degree of latitude, or 1 degree of longitude at the Equator = 69·09 miles. 1 degree of longitude in N.E. France or Belgium = approximately 45 miles.

Eclipses.—There will be two eclipses of the Sun (June 8th and December 3rd), and one of the Moon (June 24th).

These eclipses are unimportant in North-Western Europe.

N.B.—A waxing moon has the circular edge on the Right: horns to the Left. A waning moon has the circular edge on the Left: horns to the Right (*i.e.*, opposite way to **C**rescent and **D**ecrescent).

MOHAMMEDAN CALENDAR

First day of—					
Rabi-el-Tani...	1336...	January 14	Shawwal ...	1336...	July 10
Juma'a-el-Awwal	„ ...	February 12	Dhul Kada	„ ...	August 8
Juma'a-el-Tani	„ ...	March 14	Dhul Hegga	„ ...	September 7
Regeb ...	„ ...	April 12	Moharrem	1337...	October 7
Shaban ...	„ ...	May 12	Safar ...	„ ...	November 6
Ramadan ...	„ ...	June 10	Rabi-el-Awwal	„ ...	December 5

The Mohammedan Calendar has 354 days. The month begins on the day when the New Moon is first *visible*, and may therefore vary in different countries.

In the following calendar, a.m. times are printed in ordinary type, p.m times in **black type.**

Dimensions of the Earth.

Equatorial circumference	24,872 miles.
,, diameter	7,926 ,,
Polar diameter	7,899 ,,

JANUARY.

		DATE.	H.	M.			DATE.	H.	M.
☾	*Last Quarter* ...	... 5th	11	50	☽	*First Quarter* ...	... 19th	**2**	**38**
●	New Moon ...	... 12th	**10**	**36**	○	Full Moon ...	... 27th	3	14

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	T	7.47	**3.56**	New Year's Day. Yaunde (Cameroons) occupied, 1916.	**8.40**	9.36
2	W	7.47	**3.57**		**9.45**	9.53
3	TH	7.47	**3.58**	Ardahan battle (Caucasus), 1915.	**10.50**	10. 9
4	F	7.47	**4. 0**		**11.56**	10.26
5	S	7.46	**4. 0**		—	10.44
6	℣	7.46	**4. 2**	EPIPHANY.	1. 3	11. 4
7	M	7.46	**4. 3**		2.11	11.28
8	T	7.46	**4. 4**		3.20	11.59
9	W	7.45	**4. 5**	Gallipoli evacuated, 1916. Turks routed at Rafa, 1917.	4.29	**0.39**
10	TH	7.44	**4. 7**		5.33	**1.31**
11	F	7.44	**4. 8**		6.29	**2.36**
12	S	7.44	**4. 9**	Gen. Joffre b. 1852.	7.15	**3.52**
13	℣	7.43	**4.11**	1ST SUNDAY AFTER EPIPHANY. Chillianwallah, 1849. Fall of Cettinje, '16.	7.51	**5.13**
14	M	7.42	**4.12**	Swakopmund occupied by Union Forces, '15.	8.21	**6.38**
15	T	7.42	**4.14**		8.46	**8. 1**
16	W	7.41	**4.15**	Coruna, 1809.	9. 8	**9.24**
17	TH	7.40	**4.17**	Abu Klea, 1885.	9.29	**10.45**
18	F	7.39	**4.18**		9.51	—
19	S	7.38	**4.20**	Ciudad Rodrigo, 1812.	10.15	0. 6
20	℣	7.37	**4.21**	2ND SUNDAY AFTER EPIPHANY.	10.44	1.25
21	M	7.36	**4.23**		11.18	2.41
22	T	7.35	**4.24**		**0. 2**	3.51
23	W	7.34	**4.26**		**0.54**	4.52
24	TH	7.33	**4.28**	Dogger Bank action, 1915.	**1.55**	5.43
25	F	7.32	**4.29**	Givenchy, 1915.	**3. 1**	6.23
26	S	7.31	**4.31**	Gordon killed at Khartoum, 1885.	**4.10**	6.54
27	℣	7.30	**4.33**	SEPTUAGESIMA. William II b. 1859. 1st Military Service Act passed 1916.	**5.18**	7.20
28	M	7.28	**4.34**		**6.26**	7.41
29	T	7.27	**4.36**	V.C. instituted, 1856.	**7.32**	7.59
30	W	7.26	**4.38**	La Bassée, 1915.	**8.37**	8.16
31	TH	7.24	**4.39**		**9.42**	8.33

a.m. in ordinary and **p.m.** in black type.

FEBRUARY.

		DATE.	H.	M.			DATE.	H.	M.
☾	*Last Quarter* ...	... 4th	7	52	☽	*First Quarter* ...	... 18th	0	57
●	New Moon ...	... 11th	10	5	○	Full Moon ...	... 25th	**9**	**35**

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	F	7.23	**4.41**		**10.48**	8.50
2	S	7.22	**4.43**	Turks defeated on Suez Canal, 1915.	**11.55**	9. 9
3	☩	7.20	**4.44**	SEXAGESIMA.	—	9.31
4	M	7.19	**4.46**		1. 2	9.58
5	T	7.17	**4.48**		2. 9	10.32
6	W	7.16	**4.50**		3.14	11.17
7	TH	7.14	**4.51**		4.13	**0.14**
8	F	7.12	**4.53**		5. 3	**1.23**
9	S	7.11	**4.55**		5.45	**2.42**
10	☩	7. 9	**4.56**	QUINQUAGESIMA.	6.18	**4. 5**
11	M	7. 8	**4.58**		6.46	**5.31**
12	T	7. 6	**5. 0**	Shrove Tuesday. Gen. Smuts C.-in-C. E.	7.10	**6.57**
13	W	7. 4	**5. 2**	Ash Wednesday. [Africa, 1916.	7.32	**8.22**
14	TH	7. 2	**5. 4**		7.55	**9.46**
15	F	7. 0	**5. 5**	Kimberley Relieved, 1900.	8.19	**11. 8**
16	S	6.59	**5. 7**	Battle of Masurian Lakes, 1915. Russians take Erzerum, 1916. Victory Loan over	8.47	—
17	☩	6.57	**5. 9**	FIRST SUNDAY IN LENT. [£1,000,000,000, 1917.	9.21	0.28
18	M	6.55	**5.10**	German submarine "blockade" declared, '15. Conquest of Cameroon completed, '16.	10. 2	1.42
19	T	6.53	**5.12**		10.52	2.46
20	W	6.51	**5.14**	First battle of Verdun begun, 1916.	11.49	3.40
21	TH	6.49	**5.16**		**0.53**	4.23
22	F	6.47	**5.17**		**2. 0**	4.57
23	S	6.45	**5.19**	SECOND SUNDAY IN LENT. Kut re-captured,	**3. 8**	5.24
24	☩	6.43	**5.20**	Allied Fleets attacked Dardanelles, '15. ['17	**4.15**	5.46
25	M	6.41	**5.22**		**5.21**	6. 6
26	T	6.39	**5.24**	Majuba, 1881. Paardeberg, 1900.	**6.27**	6.23
27	W	6.37	**5.26**	Relief of Ladysmith, 1900.	**7.32**	6.40
28	TH	6.35	**5.27**		**8.37**	6.57

a.m. in ordinary and **p.m.** in black type.

MARCH.

		DATE.	H.	M.			DATE.	H.	M.
☾	*Last Quarter* ...	... 6th	0	44	☽	*First Quarter* ...	... 19th	**1**	**30**
●	New Moon ...	... 12th	**7**	**52**	○	Full Moon ...	... 27th	**3**	**33**

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	F	6.33	**5.29**	St. David's Day.	**9.43**	7.16
2	S	6.31	**5.30**		**10.49**	7.37
3	☩	6.29	**5.32**	3RD SUNDAY IN LENT.	**11.56**	8. 2
4	M	6.27	**5.34**		—	8.33
5	T	6.25	**5.35**		1. 0	9.12
6	W	6.23	**5.37**		**2. 0**	10. 2
7	TH	6.21	**5.39**		2.52	11. 4
8	F	6.19	**5.40**	Aboukir, 1801.	3.36	**0.15**
9	S	6.17	**5.42**	Vimy Ridge taken, 1917.	4.12	**1.34**
10	☩	6.14	**5.44**	4TH SUNDAY IN LENT. Neuve Chapelle, 1915.	4.43	**2.57**
11	M	6.12	**5.45**	Capture of Bagdad, 1917.	5. 8	**4.22**
12	T	6.10	**5.47**	Gen. Smuts entered German territory near	5.32	**5.48**
13	W	6. 8	**5.48**	[Kilimanjaro, 1916.	5.55	**7.14**
14	TH	6. 6	**5.50**	Senussi defeated at Sollum, 1916.	6.20	**8.40**
15	F	6. 4	**5.52**		6.47	**10. 4**
16	S	6. 2	**5.53**		7.19	**11.24**
17	☩	6. 0	**5.55**	5TH SUNDAY IN LENT. Chaulnes and Bapaume taken, 1917. St. Patrick's Day.	7.59	—
18	M	5.57	**5.56**	Naval attack on the Narrows, Dardanelles, '15.	8.47	0.34
19	T	5.55	**5.58**		9.43	1.34
20	W	5.53	**6. 0**		10.46	2.21
21	TH	5.51	**6. 1**		11.53	2.58
22	F	5.49	**6. 3**		**1. 0**	3.28
23	S	5.46	**6. 4**		**2. 7**	3.52
24	☩	5.44	**6. 6**	PALM SUNDAY. "Sussex" torpedoed, 1916.	**3.13**	4.12
25	M	5.42	**6. 8**	Lady Day.	**4.18**	4.30
26	T	5.40	**6. 9**	Battle of Gaza, 1917.	**5.23**	4.47
27	W	5.38	**6.11**		**6.28**	5. 4
28	TH	5.35	**6.12**		**7.34**	5.22
29	F	5.33	**6.14**	GOOD FRIDAY.	**8.40**	5.43
30	S	5.31	**6.15**		**9.46**	6. 7
31	☩	5.29	**6.17**	EASTER SUNDAY.	**10.51**	6.36

a.m. in ordinary and **p.m.** in black type.

APRIL.

		DATE.	H.	M.			DATE.	H.	M.
☾	*Last Quarter*	4th	1	33	☽	*First Quarter*	18th	4	8
●	New Moon	11th	4	34	○	Full Moon	26th	8	5

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	M	5.27	**6.18**		**11.51**	7.13
2	T	5.25	**6.20**		—	7.58
3	W	5.22	**6.22**	Germans defeated at Arusha, 1916.	0.45	8.55
4	TH	5.20	**6.23**		1.31	10.0
5	F	5.18	**6.25**	U.S.A. declares war on Germany, 1917.	2. 9	11.13
6	S	5.16	**6.26**		2.40	**0.31**
7	℣	5.14	**6.28**	1ST SUNDAY AFTER EASTER.	3. 7	**1.53**
8	M	5.12	**6.29**	Atbara, 1898. [began '17.	3.31	**3.16**
9	T	5.10	**6.31**	End of 1st battle of Verdun, '16. Arras battle	3.54	**4.40**
10	W	5. 8	**6.33**	Toulouse, 1814.	4.18	**6. 6**
11	TH	5. 5	**6.34**		4.44	**7.32**
12	F	5. 3	**6.36**	Lord Rodney's Victory, 1782.	5.14	**8.55**
13	S	5. 1	**6.37**	Magdala, 1868. [Bartjisiyeh (Euphrates), '15.	5.52	**10.13**
14	℣	4.59	**6.39**	2ND SUNDAY AFTER EASTER. Battle of	6.38	**11.19**
15	M	4.57	**6.40**		7.32	—
16	T	4.55	**6.42**	French offensive (Champagne) began 1917.	8.35	0.14
17	W	4.53	**6.44**	Trebizond captured by Russians, 1916. Capture	9.42	0.56
18	TH	4.51	**6.45**	Chitral, 1895. [of Hill 60, 1915.	10.50	1.29
19	F	4.49	**6.47**		11.58	1.55
20	S	4.47	**6.48**	Blake's naval victory, 1657.	**1. 4**	2.16
21	℣	4.45	**6.50**	3RD SUNDAY AFTER EASTER.	**2. 9**	2.35
22	M	4.43	**6.51**	2nd Battle of Ypres began, 1915.	**3.14**	2.53
23	T	4.41	**6.53**	St. George's Day. Battle of the Scarpe, 1917.	**4.18**	3.10
24	W	4.39	**6.54**		**5.24**	3.28
25	TH	4.37	**6.56**	Allies land in Dardanelles, 1915.	**6.30**	3.48
26	F	4.35	**6.58**		**7.37**	4.11
27	S	4.33	**6.59**		**8.43**	4.39
28	℣	4.32	**7. 1**	4TH SUNDAY AFTER EASTER.	**9.45**	5.14
29	M	4.30	**7. 2**	Surrender of Kut, 1916.	**10.41**	5.57
30	T	4.28	**7. 4**	Fontenoy, 1745.	**11.29**	6.50

a.m. in ordinary and **p.m.** in black type.

MAY.

		DATE.	H.	M.			DATE.	H.	M.
☾	*Last Quarter* ...	3rd	**10**	**26**	☽	*First Quarter* ...	17th	**8**	**14**
●	New Moon ...	10th	**1**	**1**	○	Full Moon ...	25th	**10**	**32**

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	W	4.26	**7. 5**		—	7.53
2	TH	4.24	**7. 7**	Russian line on Dunajec broken, 1916.	0. 9	9. 3
3	F	4.22	**7. 8**	Anson's Victory, 1747. Second battle of Verdun begins, 1916.	0.42	10.18
4	S	4.21	**7.10**	Seringapatam, 1799.	1. 9	11.35
5	℣	4.19	**7.11**	5TH SUNDAY AFTER EASTER (Rogation Day). Chemin des Dames captured, 1917.	1.33	**0.54**
6	M	4.17	**7.13**	Acc. of King George V, 1910.	1.56	**2.15**
7	T	4.16	**7.14**	"Lusitania" torpedoed, 1915.	2.18	**3.37**
8	W	4.14	**7.16**	Germans occupy Libau, 1915.	2.42	**5. 1**
9	TH	4.12	**7.17**	Franco-British attack, Arras-Armentières, '15.	3.10	**6.25**
10	F	4.11	**7.19**	Lodi, 1796. Tyrwhitt's action off Zeebrugge,	3.43	**7.46**
11	S	4. 9	**7.20**	Capture of Bullecourt, 1917. [1917.	4.25	**8.58**
12	℣	4. 8	**7.22**	SUNDAY BEFORE ASCENSION. Gen. Botha occupies Windhoek, 1915.	5.17	**10. 0**
13	M	4. 6	**7.23**		6.17	**10.49**
14	T	4. 5	**7.25**		7.24	**11.26**
15	W	4. 3	**7.26**	Gen. Pétain, French C.-in-C., 1917.	8.34	**11.56**
16	TH	4. 2	**7.27**	Albuera, 1811. Festubert, 1915.	9.44	—
17	F	4. 0	**7.29**	Ascension Day. Relief of Mafeking, 1900.	10.52	0.20
18	S	3.59	**7.30**		11.58	0.40
19	℣	3.58	**7.32**	WHIT SUNDAY.	**1. 3**	0.58
20	M	3.57	**7.33**		**2. 8**	1.15
21	T	3.55	**7.34**		**3.12**	1.33
22	W	3.54	**7.35**		**4.19**	1.52
23	TH	3.53	**7.37**	Ramillies, 1706. Italy declares war on Austria, 1915. Italian offensive on Carso, '17.	**5.25**	2.14
24	F	3.52	**7.38**		**6.32**	2.41
25	S	3.51	**7.39**	Military Service Act became law, 1916.	**7.36**	3.13
26	℣	3.50	**7.40**	TRINITY SUNDAY. QUEEN MARY b. 1867.	**8.35**	3.54
27	M	3.49	**7.42**		**9.26**	4.44
28	T	3.48	**7.43**		**10. 9**	5.45
29	W	3.47	**7.44**		**10.44**	6.54
30	TH	3.46	**7.45**		**11.13**	8. 8
31	F	3.45	**7.46**	Union Day, S. Africa, 1910. Battle of Jutland, 1916.	**11.38**	9.24

a.m. in ordinary and **p.m.** in black type.

JUNE.

		DATE.	H.	M.			DATE.	H.	M.
☾	*Last Quarter*	2nd	4	20	☽	*First Quarter*	16th	1	12
●	New Moon	8th	10	3	○	Full Moon	24th	10	38

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	♑	3.44	**7.47**		**11.59**	10.42
2	♑	3.44	**7.48**	1ST SUNDAY AFTER TRINITY.	—	11.59
3	M	3.43	**7.49**	KING GEORGE V b. 1865. Amarah taken, 1915.	0.22	**1.20**
4	T	3.42	**7.50**		0.45	**2.40**
5	W	3.42	**7.51**	Earl Kitchener drowned, 1916.	1.10	**4. 2**
6	TH	3.41	**7.52**	Russians take Luck and Dubno, 1916.	1.40	**5.22**
7	F	3.40	**7.53**	Battle of Messines, 1917.	2.16	**6.38**
8	S	3.40	**7.54**		3. 3	**7.44**
9	♑	3.40	**7.54**	2ND SUNDAY AFTER TRINITY.	3.59	**8.39**
10	M	3.39	**7.55**	Capture of Garua (Cameroons), 1915.	5. 4	**9.22**
11	T	3.39	**7.56**		6.14	**9.55**
12	W	3.39	**7.57**	K. Constantine abdicates, 1917.	7.25	**10.21**
13	TH	3.38	**7.57**	British enter Kerman, 1916.	8.35	**10.43**
14	F	3.38	**7.58**	Naseby, 1645. Marengo, 1800.	9.43	**11. 3**
15	S	3.38	**7.58**	Magna Charta, 1215.	10.49	**11.20**
16	♑	3.38	**7.59**	3RD SUNDAY AFTER TRINITY. Dettingen, 1743.	11.54	**11.38**
17	M	3.38	**7.59**	Czernowitz captured by Russians, 1916.	**0.59**	**11.56**
18	T	3.38	**8. 0**	Waterloo, 1815.	**2. 4**	—
19	W	3.38	**8. 0**		**3.11**	0.18
20	TH	3.38	**8. 0**	[Mecca captured by Arabs, 1916.	**4.18**	0.41
21	F	3.38	**8. 1**	Vittoria, 1813. 2nd War Loan, 1915, £570,000,000.	**5.23**	1.11
22	S	3.38	**8. 1**	Fall of Lemberg, 1915.	**6.25**	1.48
23	♑	3.39	**8. 1**	4TH SUNDAY AFTER TRINITY. Prince of Wales	**7.20**	2.35
24	M	3.39	**8. 1**	Midsummer Day. [b. 1894. Plassey, 1757.	**8. 7**	3.33
25	T	3.39	**8. 1**	Italian advance on Carso, 1916.	**8.45**	4.40
26	W	3.40	**8. 1**		**9.16**	5.54
27	TH	3.40	**8. 1**		**9.43**	7.12
28	F	3.40	**8. 1**	Cawnpore massacre, 1857. Assassination of Archduke Franz Ferdinand, 1914.	**10. 6**	8.31
29	S	3.41	**8. 1**	Russians take Kolomea, 1916.	**10.28**	9.50
30	♑	3.42	**8. 1**	5TH SUNDAY AFTER TRINITY. End of 2nd battle of Verdun, 1916.	**10.50**	**11. 8**

a.m. in ordinary and **p.m.** in black type.

JULY.

		DATE.	H.	M.			DATE.	H.	M.
☾	*Last Quarter*	1st	8	43	☽	*First Quarter*	16th	6	25
●	New Moon	8th	8	22	○	Full Moon	23rd	8	35
					☾	*Last Quarter*	30th	1	14

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	M	3.42	**8. 1**	The Boyne, 1690. Dominion Day. Somme offensive begins, '16. Russian offensive, '17.	**11.14**	**0.28**
2	T	3.43	**8. 0**		**11.42**	**1.47**
3	W	3.43	**8. 0**	Sadowa, 1866.	—	**3. 6**
4	TH	3.44	**8. 0**	Independence Day, U.S.A. Van Deventer	0.15	**4.22**
5	F	3.45	**8. 0**	[began advance from Kilwa (E. Africa), '17.	0.56	**5.31**
6	S	3.46	**7.59**	King George V m. 1893.	1.47	**6.29**
7	♑	3.46	**7.58**	6TH SUN. AFT. TRIN. Daylight air-raid on	2.48	**7.16**
8	M	3.47	**7.58**	[London, '17.	3.55	**7.53**
9	T	3.48	**7.57**	Surrender of German S.W. Africa, 1915. [Contalmaison captured by British, 1916.	5. 6	**8.23**
10	W	3.49	**7.56**		6.17	**8.47**
11	TH	3.50	**7.56**	Oudenarde, 1708.	7.26	**9. 7**
12	F	3.51	**7.55**		8.34	**9.26**
13	S	3.52	**7.54**	[1789. Longueval captured, '16.	9.40	**9.44**
14	♑	3.53	**7.53**	7TH SUN. AFTER TRINITY. Fall of Bastille,	10.44	**10. 2**
15	M	3.54	**7.53**	St. Swithin.	11.50	**10.21**
16	T	3.55	**7.52**		**0.55**	**10.44**
17	W	3.56	**7.51**	War between France and Prussia declared,	**2. 1**	**11.10**
18	TH	3.58	**7.50**	[1870.	**3. 6**	**11.44**
19	F	3.59	**7.49**		**4.10**	—
20	S	4. 0	**7.48**		**5. 8**	0.25
21	♑	4. 1	**7.46**	8TH SUN. AFT. TRIN.	**5.59**	1.18
22	M	4. 2	**7.45**	Salamanca, 1812.	**6.42**	2.22
23	T	4. 4	**7.44**	Austro-Hungarian Note to Serbia, 1914.	**7.16**	3.34
24	W	4. 5	**7.43**	Gibraltar captured, 1704. Russians lose Tarnopol and Stanislau, 1917.	**7.45**	4.52
25	TH	4. 6	**7.42**	Capture of Nasriyeh (Mesopotamia), 1915. [Erzingan captured by Russians, 1916.	**8.11**	6.12
26	F	4. 8	**7.40**	[1916.	**8.34**	7.33
27	S	4. 9	**7.39**	Talavera, 1809. Capt. Fryatt shot by Germans,	**8.56**	8.54
28	♑	4.10	**7.38**	9TH SUN. AFT. TRIN. Austria declared war on Serbia, 1914.	**9.20**	10.15
29	M	4.12	**7.36**	Armada, 1588. Russians take Brody, 1916.	**9.46**	11.36
30	T	4.13	**7.35**		**10.18**	**0.55**
31	W	4.14	**7.33**	3rd Battle of Ypres begun 1917.	**10.56**	**2.12**

a.m. in ordinary and **p.m.** in black type.

AUGUST.

		DATE.	H.	M.			DATE.	H.	M.
●	New Moon ...	... 6th	8	30	○	Full Moon ...	... 22nd	5	2
☽	*First Quarter* ...	... 14th	11	16	☾	*Last Quarter* ...	... 28th	7	27

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	TH	4.16	7.32	Minden, 1759. Germany declares war on	11.43	3.22
2	F	4.17	7.30	Blenheim, 1704. [Russia, 1914.	—	4.23
3	S	4.19	7.29	Germ'y declares war on France, 6.45 p.m., '14.	0.38	5.13
4	℣	4.20	7.27	10TH SUN. AF. TRIN. British ultimatum to Germany, '14. Fall of Warsaw, '15. Turkish attack E. of Suez defeated, 1916.	1.43	5.53
5	M	4.21	7.26	First day of British mobilization, 1914.	2.51	6.25
6	T	4.23	7.24	Advance from Suvla Bay, 1915.	4. 1	6.50
7	W	4.24	7.22		5.11	7.12
8	TH	4.26	7.20	[1916.	6.19	7.32
9	F	4.27	7.19	Heligoland ceded, 1890. Italians take Gorizia,	7.26	7.50
10	S	4.29	7.17	France declares war on Austria-Hungary, 1914. Stanislau captured by the Russians, 1916.	8.31	8. 8
11	℣	4.30	7.15	11TH SUNDAY AFTER TRINITY.	9.36	8.26
12	M	4.32	7.13	Gt. Britain declares war on Austria-Hungary, 1914. French capture German 3rd line N.	10.41	8.48
13	T	4.33	7.12	Liége forts destroyed, 1914. [of the Somme., '16.	11.46	9.13
14	W	4.34	7.10	Pope's peace proposals, 1917.	0.51	9.42
15	TH	4.36	7. 8	Hill 70 near Loos taken, 1917.	1.54	10.20
16	F	4.38	7. 6	Langemarck taken, 1917.	2.54	11. 6
17	S	4.39	7. 4	Fall of Kovno, 1915.	3.47	—
18	℣	4.40	7. 2	12TH SUNDAY AFTER TRINITY. Gravelotte,	4.33	0. 3
19	M	4.42	7. 0	Fall of Novo-Georgievsk, 1915. [1870.	5.12	1.10
20	T	4.44	6.58	French recapture Mort-Homme, '17. Germans	5.44	2.25
21	W	4.45	6.56	Vimiera, 1808. [cross Nyasaland border, '14.	6.11	3.45
22	TH	4.46	6.54	Fall of Namur, 1914.	6.36	5. 7
23	F	4.48	6.52	Battle of Mons. Japan declares war on Germany, 1914.	7. 0	6.31
24	S	4.49	6.50	Italians capture M. Santo, 1917. [1914.	7.24	7.54
25	℣	4.51	6.48	13TH SUNDAY AF. TRINITY. Sack of Louvain,	7.50	9.17
26	M	4.52	6.46	Crécy, 1346. Le Cateau, Togoland captured, 1914. Central Railway, German E. Africa [captured, 1916.	8.20	10.40
27	T	4.54	6.44		8.57	11.59
28	W	4.55	6.42	Naval action off Heligoland, 1914.	9.42	1.13
29	TH	4.57	6.40	Samoa captured, 1914. Falkenhayn replaced [by Hindenburg, 1916.	10.35	2.17
30	F	4.58	6.38		11.36	3.10
31	S	5. 0	6.36	Candahar, 1880. Venezelist revolt at Salonika, 1916.	—	3.53

a.m. in ordinary and **p.m.** in black type.

SEPTEMBER.

		DATE.	H.	M.			DATE.	H.	M.
●	New Moon ...	... 5th	10	44	○	Full Moon ...	... 20th	1	1
☾	*First Quarter* ...	... 13th	3	2	☽	*Last Quarter* ...	... 27th	4	39

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	℣	5. 1	6.34	14TH SUNDAY AFTER TRINITY. [Lemberg, '14.	0.43	4.27
2	M	5. 3	6.32	Sedan, 1870. Omdurman, 1898. Capture of	1.51	4.54
3	T	5. 4	6.30	Capture of Guillemont, '17. Fall of Riga, '17.	3. 0	5.17
4	W	5. 6	6.28	Dar-es-Salaam taken, 1916. First night aeroplane raid on London, 1917.	4. 8	5.38
5	TH	5. 7	6.25		5.14	5.56
6	F	5. 9	6.23	Battle of Marne began '14. Russian victory	6.20	6.14
7	S	5.10	6.21	[at Halicz, 1916.	7.25	6.33
8	℣	5.12	6.19	15TH SUNDAY AFTER TRINITY. Sebastopol,	8.29	6.54
9	M	5.13	6.17	Kass-asin, 1882. [1855.	9.34	7.17
10	T	5.15	6.14		10.38	7.44
11	W	5.16	6.12	Neu-Pommern taken, 1914. Malplaquet, 1709.	11.42	8.18
12	TH	5.18	6.10	Battle of the Aisne began, 1914.	0.42	9. 0
13	F	5.19	6. 8	Capture of Quebec and death of Wolfe, 1759.	1.36	9.52
14	S	5.21	6. 6	[Tel-el-Kebir, 1882.	2.24	10.52
15	℣	5.22	6. 4	16TH SUNDAY AFTER TRINITY. Flers and High Wood captured, 1916.	3. 5	—
16	M	5.24	6. 1		3.40	0. 2
17	T	5.25	5.59	Rout of Austrians in Galicia, 1914.	4. 9	1.17
18	W	5.27	5.57		4.35	2.37
19	TH	5.28	5.55	Poictiers, 1356. Tabora (E. Africa) taken, '16.	5. 0	4. 0
20	F	5.30	5.52	Alma, 1854. Delhi, 1857. Battle of Ypres-	5.24	5.23
21	S	5.31	5.50	[Menin Road, '17.	5.50	6.48
22	℣	5.33	5.48	17TH SUNDAY AFTER TRINITY.	6.20	8.14
23	M	5.34	5.46	Assaye, 1803.	6.55	9.38
24	T	5.36	5.44		7.38	10.56
25	W	5.37	5.42	Lucknow, 1857. German New Guinea taken, 1914. Battle of Loos and Champagne offensive begun, 1915.	8.30	0. 6
26	TH	5.39	5.39	Capture of Combles and Thiepval, 1916, of	9.30	1. 5
27	F	5.40	5.37	Busaco, 1810. [Zonnebeke, 1917.	10.36	1.52
28	S	5.42	5.35	Capture of Kut el Amara, 1915. Maude's victory at Ramadie, 1917.	11.44	2.29
29	℣	5.43	5.33	18TH SUNDAY AFTER TRINITY. St. Michael	—	2.58
30	M	5.45	5.30	[and All Angels.	0.52	3.22

a.m. in ordinary and **p.m.** in black type.

OCTOBER.

		DATE.	H.	M.			DATE.	H.	M.
●	New Moon ...	... 5th	3	5	○	Full Moon ...	... 19th	9	35
☽	*First Quarter* ...	... 13th	5	0	☾	*Last Quarter* ...	... 26th	5	35

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	T	5.46	**5.28**	British advance over Struma, 1916.	2. 0	**3.43**
2	W	5.48	**5.26**		3. 6	**4. 2**
3	TH	5.50	**5.24**		4.11	**4.21**
4	F	5.51	**5.22**	Broodseinde taken, 1917.	5.16	**4.40**
5	S	5.53	**5.20**	British land at Salonika, 1915.	6.20	**5. 0**
6	ℌ	5.54	**5.18**	19TH SUNDAY AFTER TRINITY. Austro-German invasion of Serbia, 1915.	7.25	**5.22**
7	M	5.56	**5.15**	Loos, 1915.	8.29	**5.49**
8	T	5.57	**5.13**		9.33	**6.20**
9	W	5.59	**5.11**	South African War began, 1899.	10.33	**6.59**
10	TH	6. 0	**5. 9**	Fall of Antwerp, 1914.	11.29	**7.47**
11	F	6. 2	**5. 7**	Camperdown, 1797. Fall of Belgrade, 1915.	**0.18**	**8.43**
12	S	6. 4	**5. 5**	Michaelmas Day. Nurse Cavell shot, 1915.	**1. 0**	**9.47**
13	ℌ	6. 5	**5. 3**	20TH SUNDAY AFTER TRINITY. Poelcapelle taken, Germans attack Gulf of Riga, 1917.	**1.36**	**10.57**
14	M	6. 7	**5. 1**	Jena and Auerstadt, 1806.	**2. 7**	—
15	T	6. 8	**4.59**		**2.33**	0.12
16	W	6.10	**4.57**		**2.58**	1.30
17	TH	6.12	**4.55**		**3.22**	2.51
18	F	6.13	**4.53**	[Zeppelins, 1917.	**3.48**	4.14
19	S	6.15	**4.51**	Leipzig, 1813. The French destroyed four	**4.16**	5.40
20	ℌ	6.16	**4.49**	21ST SUNDAY AFTER TRINITY. 1st battle of Ypres started, 1914. Navarino, 1827.	**4.48**	7. 5
21	M	6.18	**4.47**	Trafalgar, 1805.	**5.29**	8.29
22	T	6.20	**4.45**		**6.19**	9.46
23	W	6.21	**4.43**	[man attack on Italy began, 1917.	**7.18**	10.52
24	TH	6.23	**4.41**	French Victory at Verdun. 1916. Austro-Ger-	**8.24**	11.45
25	F	6.25	**4.39**	St. Crispin. Agincourt, 1415. Balaclava, 1854.	**9.33**	**0.27**
26	S	6.26	**4.37**		**10.43**	**1. 0**
27	ℌ	6.28	**4.35**	22ND SUNDAY AFTER TRINITY.	**11.52**	**1.26**
28	M	6.30	**4.33**		—	**1.48**
29	T	6.31	**4.32**		0.58	**2. 8**
30	W	6.33	**4.30**		2. 3	**2.27**
31	TH	6.34	**4.28**	Hallowe'en. Beersheba taken, 1917.	3. 8	**2.45**

a.m. in ordinary and **p.m.** in black type.

NOVEMBER.

		DATE.	H.	M.			DATE.	H.	M.
●	New Moon ...	... 3rd	9	2	○	Full Moon ...	... 18th	7	33
☽	*First Quarter* ...	... 11th	4	46	☾	*Last Quarter* ...	... 25th	10	25

Day of Month.	Day of Week.	The Sun			The Moon	
		Rises.	Sets.		Rises.	Sets.
1	F	6.36	**4.26**	All Saints' Day. British squadron defeated	4.12	**3. 5**
2	S	6.38	**4.25**	All Souls' Day. [off Coronel, 1914.	5.16	**3.27**
3	ℌ	6.40	**4.23**	23RD S. AFT. T. Bombardment of Yarmouth beach, '14. Italian Victory on the Carso, '16.	6.21	**3.52**
4	M	6.41	**4.21**	French recapture Vaux Fort, 1916. [1914.	7.25	**4.23**
5	T	6.43	**4.20**	Inkerman, 1854. Gt. Brit. dec. war on Turkey,	8.26	**5. 0**
6	W	6.44	**4.18**	I.E.F. landed in Mesopotamia, 1914. Fall of	9.24	**5.44**
7	TH	6.46	**4.16**	Tsing-tau captured, 1914. [Nish, 1915.	10.15	**6.38**
8	F	6.48	**4.15**		10.59	**7.39**
9	S	6.50	**4.13**	The "Emden" destroyed, 1914.	11.37	**8.46**
10	ℌ	6.51	**4.12**	24TH SUNDAY AFTER TRINITY.	**0. 8**	**9.58**
11	M	6.53	**4.10**	Defeat of Prussian Guard at Ypres, '14. Mag-	**0.35**	**11.12**
12	T	6.54	**4. 9**	[ersfontein, 1899.	**0.59**	—
13	W	6.56	**4. 8**	Battle of Ancre, '16, Beaumont-Hamel, '16.	**1.23**	0.29
14	TH	6.58	**4. 6**	Beaucourt, 1916.	**1.46**	1.47
15	F	6.59	**4. 5**	Colenso, 1899.	**2.12**	3. 8
16	S	7. 1	**4. 4**	[occupied, 1917.	**2.41**	4.32
17	ℌ	7. 3	**4. 2**	First War Loan, 1914 (£350,000,000). Joppa	**3.18**	5.56
18	M	7. 4	**4. 1**	Lt.-Gen. Sir Stanley Maude died, 1917.	**4. 3**	7.17
19	T	7. 6	**4. 0**	Allies take Monastir, 1916.	**4.58**	8.30
20	W	7. 8	**3.59**	End of first battle of Ypres, 1914. British	**6. 3**	9.31
21	TH	7. 9	**3.58**	[advance west of Cambrai, '17.	**7.14**	10.20
22	F	7.10	**3.57**	St. Cecilia's Day. Basrah taken, '14. Ctesi-	**8.26**	10.57
23	S	7.12	**3.56**	[phon, 1915.	**9.37**	11.27
24	ℌ	7.14	**3.55**	Martinmas.	**10.46**	11.51
25	M	7.15	**3.54**	Retreat from Ctesiphon, 1915.	**11.53**	**0.12**
26	T	7.17	**3.53**		—	**0.32**
27	W	7.18	**3.52**		0.58	**0.51**
28	TH	7.20	**3.52**		2. 2	**1.10**
29	F	7.21	**3.51**		3. 6	**1.31**
30	S	7.22	**3.50**	St. Andrew's Day.	4.14	**1.55**

a.m. in ordinary and **p.m.** in black type.

DECEMBER.

		DATE.	H.	M.			DATE.	H.	M.
●	New Moon ...	... 3rd	3	19	○	Full Moon ...	... 17th	7	18
☽	*First Quarter* ...	... 11th	2	31	☾	*Last Quarter* ...	... 25th	6	31

Day of Month.	Day of Week.	The Sun Rises.	The Sun Sets.		The Moon Rises.	The Moon Sets.
1	♃	7.24	**3.50**	ADVENT SUNDAY.	5.15	**2.24**
2	M	7.25	**3.49**	Austerlitz, 1805. Fall of Belgrade, 1914.	6.18	**2.58**
3	T	7.26	**3.49**		7.18	**3.41**
4	W	7.28	**3.48**		8.12	**4.32**
5	TH	7.29	**3.48**	[take Bucharest, 1916.	8.59	**5.32**
6	F	7.30	**3.47**	Battle of Cawnpore, 1857. Austro-Germans	9.38	**6.38**
7	S	7.31	**3.47**	Mr. Ll. George, Prime Minister, 1916.	10.11	**7.49**
8	♄	7.32	**3.47**	2ND SUNDAY IN ADVENT. Destruction of German squadron off Falkland Islands, 1914.	10.39	**9. 2**
9	M	7.34	**3.46**		11. 4	**10.17**
10	T	7.35	**3.46**		11.27	**11.32**
11	W	7.36	**3.46**		11.49	—
12	TH	7.37	**3.46**		**0.13**	0.49
13	F	7.38	**3.46**		**0.40**	2. 9
14	S	7.38	**3.46**	Serbs recapture Belgrade, 1914.	**1.11**	3.29
15	♄	7.39	**3.46**	3RD SUNDAY IN ADVENT. French captured	**1.51**	4.50
16	M	7.40	**3.46**	[Côte du Poivre (Verdun), 1916.	**2.40**	6. 5
17	T	7.41	**3.47**	Bombardment of Hartlepool, Whitby, and Scarborough, 1914. [1914.	**3.40**	7.12
18	W	7.42	**3.47**	British Protectorate proclaimed over Egypt,	**4.48**	8. 7
19	TH	7.42	**3.47**	Withdrawal from Anzac and Suvla. Sir D.	**6. 2**	8.51
20	F	7.43	**3.48**	Suakin, 1888. [Haig C.-in-C., 1915.	**7.15**	9.25
21	S	7.44	**3.48**	El Arish occupied, 1916.	**8.27**	9.52
22	♄	7.44	**3.49**	4TH SUNDAY IN ADVENT.	**9.36**	10.16
23	M	7.45	**3.49**		**10.43**	10.36
24	T	7.45	**3.50**	Aeroplanes attack Cuxhaven, 1914.	**11.49**	10.55
25	W	7.46	**3.50**	CHRISTMAS DAY.	—	11.14
26	TH	7.46	**3.51**		0.53	11.35
27	F	7.46	**3.52**		1.58	11.57
28	S	7.46	**3.52**		3. 2	**0.24**
29	♄	7.47	**3.53**	SUNDAY AFTER CHRISTMAS.	4. 6	**0.56**
30	M	7.47	**3.54**		5. 6	**1.36**
31	T	7.47	**3.55**		**6. 4**	**2.24**

a.m. in ordinary and **p.m.** in black type

METRIC SYSTEM.

(Used everywhere in Europe except in the United Kingdom and Russia.)

The unit of measure is the metre, which is by way of being the one-ten-millionth part of the meridian between the Pole and the Equator.

The unit of capacity is the litre, which is a cube of water of $\frac{1}{10}$ metre (10 c.m.) side.

The unit of weight is the gramme, which is the weight of one cub. centimetre of water at 4° C.

METRIC TO BRITISH.

1 metre = 100 centimetres = 1,000 millimetres = 39·370788 ins. = 3·2808992 ft. = 1·0936331 yds.
1 kilometre = 1,000 metres = 1,093·6331 yds. = ·621325 mile.
1 sq. metre = 1·1960333 sq. yds. = 10·764299 sq. ft.
1 cubic metre = 1·3080215 cubic yds. = 35·3166 cubic ft.
1 sq. kilometre = 247·11 acres = ·386 sq. mile.
1 hectare = 100 ares = 10,000 sq. metres = 2·47108 acres.
1 litre = 100 centilitres = 1,000 cubic c.m. = 61·027 cubic ins. = 1·760773 pints = ·220097 gall.
1 hectolitre = 100 litres = 22 galls.
1 gramme = ·0352 oz. = 15·43235 grains.
1 kilogramme = 1,000 grammes = 2·204621 lbs. = 35·27394 ozs.
1 quintal = 100 kilogrammes = 1·96841 cwt. = 3·67 bushels.
1 tonne = 1,000 kilogrammes = 2,204·621 lbs. = ·984206 ton.
8 kilometres = practically 5 miles; 1 tonne = practically 1 ton; 4 hectolitres (400 litres) = practically 11 bushels; 1 cubic metre of water weighs 2,207·25 lbs. = practically 1 ton; 2 hectares = practically 5 acres; 10 metres = practically 11 yards.

BRITISH TO METRIC.

1 in. = 2·539954 centimetres = ·025399 metre.
1 ft. = ·3047945 metre.
1 yd. = ·9143834 metre; 1 mile = 1·609315 kilometre.
1 sq. yd. = ·835 sq. metre; 1 acre (4,840 sq. yds.) = 69·57 yds. square = 4,046·8 sq. metres.
1 cubic yd. = ·7645134 cubic metre.
1 gall. (of water weighs 10 lbs.) = 4·543458 litres; 1 pint = ·567932 litres.
1 bushel = 8 galls. = 1·283 cubic ft. = 36·33 litres.
1 cubic ft. of water (weighs 62·5 lbs.) = 6·25 galls. = 28·3 litres.
1 oz. (437·5 grs.) = 28·33 grammes.
1 lb. = ·4535927 kilogramme; 1 cwt. = 50·8032 kilogrammes; 1 ton = 1·016 tonne.

CONVERSION TABLES.

The figures in the central columns refer to either side; *e.g.*, in the first column the first line means that 1 inch = 2·5399 centimetres, or that 1 centimetre = ·39 inch.

Centimetres.	*	Inches.	Metres.		Feet.	Metres.		Yards.
2·5399	1	·39	·305	1	3·281	·914	1	1·093
5·0799	2	·79	·609	2	6·562	1·829	2	2·187
7·6199	3	1·18	·914	3	9·843	2·743	3	3·281
10·1598	4	1·57	1·219	4	13·124	3·658	4	4·374
12·6998	5	1·97	1·524	5	16·405	4·572	5	5·468
15·2397	6	2·36	1·829	6	19·685	5·486	6	6·562
17·7797	7	2·75	2·133	7	22·966	6·401	7	7·655
20·3196	8	3·15	2·438	8	26·247	7·315	8	8·749
22·8596	9	3·54	2·743	9	29·528	8·229	9	9·843
25·3995	10	3·94	3·048	10	32·809	9·144	10	10·936
38·0993	15	5·90	4·572	15	49·214	13·816	15	16·404
50·7990	20	7·87	6·096	20	65·618	18·288	20	21·873
76·1985	30	11·81	9·144	30	98·427	27·432	30	32·809
101·5980	40	15·75	12·192	40	131·236	36·576	40	43·745
126·9975	50	19·68	15·239	50	164·045	45·719	50	54·682
152·3971	60	23·62	18·287	60	196·854	54·863	60	65·618
177·7966	70	27·56	21·335	70	229·663	64·007	70	76·554
203·1961	80	31·50	24·383	80	262·472	73·151	80	87·491
228·5956	90	35·43	27·431	90	295·281	82·295	90	98·427
253·9951	100	39·37	30·479	100	328·090	91·438	100	109·363

* In order to bring millimetres to inches, shift the point one to the left. In order to bring inches to millimetres, shift the point one to the right, *e.g.*: 9 millimetres = ·354 inches; 9 inches = 228·59 millimetres.

CONVERSION TABLES—*continued.*

Kilometres.		Miles.	Hectares.		Acres.	Litres.		Gallons.
1·609	1	·621	·405	1	2·471	4·543	1	·220
3·219	2	1·243	·809	2	4·942	9·087	2	·440
4·828	3	1·864	1·214	3	7·413	13·630	3	·660
6·438	4	2·486	1·619	4	9·884	18·174	4	·880
8·047	5	3·107	2·024	5	12·356	22·717	5	1·110
9·656	6	3·728	2·428	6	14·827	27·261	6	1·321
11·265	7	4·350	2·833	7	17·298	31·804	7	1·541
12·879	8	4·971	3·238	8	19·769	36·348	8	1·761
14·484	9	5·592	3·642	9	22·240	40·891	9	1·981
16·093	10	6·214	4·047	10	24·711	45·435	10	2·201
24·140	15	9·321	6·070	15	37·066	68·152	15	3·311
32·186	20	12·428	8·094	20	49·422	90·869	20	4·402
48·279	30	18·641	12·141	30	74·133	136·304	30	6·603
64·373	40	24·855	16·188	40	98·844	181·738	40	8·804
80·466	50	31·069	20·235	50	123·555	227·173	50	11·105
96·559	60	37·283	24·282	60	148·266	272·607	60	13·206
112·652	70	43·497	28·329	70	172·977	318·042	70	15·407
128·746	80	49·710	32·376	80	197·688	363·477	80	17·608
144·839	90	55·924	36·423	90	222·399	408·911	90	19·809
160·932	100	62·138	40 468	100	247·108	454·346	100	22·010

Conversion Tables—*continued.*

Kilog.		Pounds.	Kilog.		Pounds.	Kilog.		Pounds.
·454	1	2·205	3·629	8	17·637	22·679	50	110·231
·907	2	4·409	4·082	9	19·841	27·215	60	132·228
1·361	3	6·614	4·536	10	22·046	31·751	70	154·322
1·814	4	8·818	6·804	15	33·069	36·287	80	176·369
2·268	5	11·023	9·072	20	44·092	40·823	90	198·416
2·721	6	13·228	13·608	30	66·139	45·359	100	220·462
3·175	7	15·432	18·144	40	88·185			

CONVERSION TABLE.

Francs to Sterling at 5 Francs = 3*s.* 8*d.*

		£	*s.*	*d.*
2 francs 50 cents.	=	0	1	10
5 ,,	=	0	3	8
10 ,,	=	0	7	4
20 ,,	=	0	14	8
30 ,,	=	1	2	0
40 ,,	=	1	9	4
50 ,,	=	1	16	8
100 ,,	=	3	13	4
150 ,,	=	5	10	0
200 ,,	=	7	6	8
250 ,,	=	8	13	4
500 ,,	=	17	6	8
1,000 ,,	=	34	13	4

SOME DISTANCES (between towns—as the crow flies).

—	Miles.	—	Miles.
London–Paris	206	Metz–Berlin	400
Dover–Calais	26	Russian Frontier*–Berlin	180
Folkestone–Boulogne	30	Harwich–Cuxhaven	335
Paris–Calais	143	Yarmouth–Wilhelmshaven	270
Paris–Boulogne	132	Petrograd–Prussian Frontier*	445
Paris–Amiens	70	Hazebrouck–Armentières	16
Boulogne–Hazebrouck	40	Calais–Amiens	76
Amiens–Lille	62	Length of Holland Seaboard†	250
Paris–Lille	123	Length of (North Sea) German Seaboard†	150
Length of Belgian Seaboard	40	Lille–Aix-la-Chapelle	130
Dover–Ostend	63	Paris–Coblenz	250
Ostend–Brussels	70	Paris–Mainz	265
Paris–Mons	130	Length of Franco-German Frontier	170
Paris–Reims	81	Length of Franco-Belgian Frontier	270
Paris–Belfort	220	Salonika–Nish	248
Paris–Metz	170	Salonika–Constantinople	318
Paris–Soissons	57	Dedeagach–Adrianople	67
Paris–Brussels	163	Alexandria–Cairo	165
Brussels–Antwerp	25	Ismailia–Cairo	72
London–Berlin	570	Constantinople–Alexandria	658
Paris–Berlin	550		

* Nearest point. † Not including indentations.

SOME LATITUDES AND LONGITUDES.

	N. Lat.	E. Long.		N. Lat.	E. Long.
	° ′	° ′		° ′	° ′
Adrianople	41 40	26 34	Liége	50 40	5 34
Alexandria	31 11	29 54	Lille	50 38	3 1
Amsterdam	52 22	4 53	Luxemburg	49 37	6 7
Antwerp	51 13	4 25	Mainz	50 0	8 16
Belfort	47 38	6 53	Metz	49 7	6 11
Berlin	52 45	13 24	Mons	50 27	3 58
Bruges	51 13	3 14	Munich	48 9	11 37
Brussels	50 51	4 22	Namur	50 28	4 52
Cairo	30 4	31 15	Nancy	48 41	6 11
Calais	50 57	1 50	Nish	43 19	21 53
Coblenz	50 21	7 35	Ostend	51 14	2 56
Cologne	50 56	6 59	Paris	48 50	2 20
Constantinople	40 0	28 58	Petrograd	59 56	30 18
Cuxhaven	53 52	8 41	Reims	49 15	4 2
Dedeagach	40 50	25 53	Salonika	40 38	22 56
Dresden	51 3	13 45	Soissons	49 23	3 20
Ghent	51 3	3 44	Strasburg	48 36	7 42
Greenwich	51 28	0 0	Vienna	48 12	16 23
Hazebrouck	50 44	2 31	Wilhelmshaven	53 32	8 9
Ismailia	30 35	32 16	Ypres	50 50	2 53
Kiel	54 19	10 8			

MAGNETIC VARIATIONS.

Greenwich 15° W.	Cairo 2¼° W.
Paris 13° W.	Constantinople 1¼° W.
Brussels 12½° W.	Salonika 4° W.
Berlin 8° W.	

Judging distance (lateral):—

100 yards lateral: at	500 yards	...	7 fingers.
	1,000 ,,	...	3½ ,,
	1,500 ,,	...	2 ,,
	2,000 ,,	...	1½ ,,

TOPOGRAPHICAL.

$\pi = 3{\cdot}14159 = \frac{22}{7}$ = relation of circumference of circle to diameter.
Area of circle $= \pi r^2$; circumference of circle $= 2\pi r$ where r = radius.
Sound travels (approximately) 365 yds. (337 metres) per second.
No sketch is of any use without a scale and a north point.
To find the north by your watch, point the short hand to the sun. The line bisecting the angle between XII and the short hand will, when produced beyond the centre of the watch, point (approximately) to the north.

In order to lay out a right angle from a point B in a line ALC, stick a peg P in the ground at any distance (say about a yard) and at any angle (say about 45°) from B (on the side on which you want the right angle laid out).

Tie a string to P; and with centre P, radius PB, describe an arc of a circle cutting ABC at D.

Prolong DP to R, making PR = PD; then DBR (being the angle in a semi-circle) is the right angle required.

PENETRATION.

The following thicknesses of material are necessary to stop a Mauser bullet at short range:

Earth, dry	3 ft. 6 ins. to 4 ft.
,, wet (length of rifle and bayonet)	4 ft. 6 ins. to 5 ft. 6 ins.
Shingle or broken bricks	8 ins.
Sand, dry	3 ft.
,, wet	4 ft. 6 ins.
Coal	8 ins.
Sandbags—headers	2.
,, stretchers	3.
Fir wood...	60 ins.
Oak	40 ,,
Steel plate	½ in.
Brickwork	10 to 15 ins.
Iron plate	1 in.

N.B.—The above are not proof against the armour-piercing bullet.

MEASUREMENTS, &c.

Of British rifle (S.M.L.E.):—

Length	3 ft. 8½ in.
Weight	8 lb. 1 oz. to 9 lbs.
Length of barrel	2 ft. 1½ in.
,, ,, rifle with bayonet fixed	5 ft. 2 in.
,, ,, bayonet	1 ft. 10 in.
,, ,, ,, blade only ...	1 ft. 5½ in.
Weight of bayonet	1 lb. ½ oz.
,, ,, 5 rounds (in charger) ...	5 oz.
,, ,, box of ammunition ...	20 bandoliers @ 50 rds. = 1,000 rds. 75 lbs.
Dimensions of box of ammunition	8·3 in. × 10·9 in. × 17 in.
Calibre of service revolver	·441 in.
Dimensions of a sand bag (empty)	2 ft. 9 ins. × 1 ft. 2 ins.
,, ,, ,, (full) ...	20 ins. × 10 ins. × 5 ins.
Length of rifle cartridge	3·05 in., weight 386 gr.
Bullet	length 1·28 in., weight 174 gr., charge 39 grs., I.V. 2,440 ft. per second.

Miscellaneous.

Height of wheel (British gun or wagon), 4 ft. 8 in.
Width between wheelmarks of do. 5 ft. 2 in.; clearance, 6 ft. 3 in.
Maxim gun (Mark III) weighs 60 lbs.
Vickers machine gun weighs 28½ lbs. to 32½ lbs. besides 10 lbs. of water in casing.
Weight of tripod, 48 lbs.; of ammunition box containing 1 filled belt of 250 rounds 21 lbs.
Lewis gun, weight 26 lbs., magazine holds 47 rounds; Hotchkiss gun, weight 27 lbs. loaded by strips holding 30 rounds.

SOME DETAILS OF BRITISH FIELD ARTILLERY.

—	13-pr.Q.F.	18-pr.Q.F.	60-pr.B.L.	4·5-in. Howr.	5-in. Howr.
Calibre ... ... in.	3	3·3	5	4·5	5
Weight of projectile lbs.	12½	18½	60	35	50
No. of rounds in limber	24	24	2	12	16
,, ,, wagon	38	38	26	32	32
,, ,, wagon limber	38	38	12	16	16
*Weight of gun and carriage ... cwt.	20	25	92	27	24
Length of gun and carriage...	12 ft. 2 in.	13 ft. 8 in.	21 ft. 7 in.	12 ft. 3 in.	9 ft. 2½ in.
*Weight of gun, carriage, and limber cwt.	33	40½	108	42	43

* Approximate.

FOREIGN ARMIES, SOME DETAILS REGARDING.

The German Mauser rifle is of 7·9 mm. calibre (·311 in.) and is sighted to 2,200 yds., 5 rounds in a clip. The length is 4 ft. 1½ in. without, and 5 ft. 9¾ in. with, bayonet.
Weight of rifle, 9 lb.
The French rifle is the Lebel of 8 mm. calibre (·315 in.), and is sighted to 2,200 yds., carries 8 rounds in tube fore-end. The length is 4 ft. 3 in. without, and 6 ft. with (triangular), bayonet.
Weight of rifle, 9 lb. 3 oz.

The Belgian rifle—Mauser ('95), calibre ·275 in., length 4 ft., ditto with bayonet 4 ft. 10 ins.; weight of rifle, 8 lbs. 13 ozs.
The American rifle—Springfield, calibre ·300 in., length 42·212 ins., weight 8 lbs. 11 ozs., sighted to 2,500 yards, 5 rounds in a clip, length of bayonet 16 ins.

German Field and Heavy Artillery:

——	'96. 7·7 c.m. Field Gun.	'98. 10·5 c.m. Field Howitzer.	10 c.m. Q.F. Gun.	13 c.m. Gun.	'13. 15 c.m. Field Howitzer.	15 c.m. Long Gun.	21 c.m. Mortar.	28 c.m. Howitzer.	42 c.m. Howitzer.
Muzzle velocity feet	1,525	985	1,980	2,280	905	1,640	996	1,115	(?)
Calibre ... inches	3·03	4·13	4·13	5·31	5·9	5·9	8·30	11·02	16·54
Weight of projectile ... lbs.	15	34	40	88	89	88	262	750	2,050
Maximum range yards	9,200	7,600	12,100	15,800	9,300	11,000	10,300	12,000	15,500
Weight of gun and carriage ... cwt.	35½	37	69	?	43	128	97	13⅛ tons	110

N.B.—Bz on German fuzes, &c. = time-fuze (*Brennzünder*).
Az ,, ,, = percussion-fuze (*Aufschlagzünder*).

There is also an old pattern 12 c.m. gun with a range of 8,000 yards.
The maximum ranges of the German (25 c.m.) heavy, (17 c.m.) medium, and (7·6 c.m.) light Minenwerfer are 1,100, 1,750, and 1,400 yards respectively.
There is also a 24 c.m. heavy Flügelminenwerfer which fires a bomb fitted with vanes; its maximum range is 1,300 yards.

French Field and Heavy Artillery:

——	75 mm. Field Gun.	105 mm. Q.F. Gun.	155 mm. Q.F. Gun.
Muzzle velocity ... ... feet	1,736	1,886	984
Calibre... ... ... inches	2·95	4·13	6·1
Weight of projectile ... ... lbs.	16	35½	90
Maximum range ... ...yards	9,300	12,900	7,000
Weight of gun and carriage ... cwt.	19	48	55½

POPULATIONS (Including Coloured Races) OF NATIONS ENGAGED.

	Millions.		Millions.
British Empire:—		*France:—*	
United Kingdom ..	45½	France	40 } 84
India	315	Colonies	44
Asia (excluding India)	8	Russia	164
Canada	7½	Belgium*	7½
West Indies, &c. ...	2 } 433	Austria	29 } 50
Australia...	5	Hungary	21
New Zealand	1	Rumania	7½
South Africa	6	Serbia	5
Remainder of Africa ...	43	Italy...	35
United States of America	100	Montenegro	½
		Bulgaria	5
Germany:—		Turkey in Europe ...	2¾ } 20
Empire	65 } 80	,, ,, Asia	17¼
Colonies*...	15	Egypt	11½

* Before the War.

CAPITALS.

London	4,523,000	Brussels	177,000
Paris	2,888,000	Vienna	2,031,000
Berlin	2,071,000	Budapest	880,000
Petrograd	1,908,000	Washington	340,000

UNIFORM AND BADGES OF FRENCH AND GERMAN ARMIES.

FRENCH.

All arms (except African troops, khaki) dressed in grey-blue ("bleu horizon") képi or helmet, tunic or greatcoat, trousers or pants, and puttees. Variations noted below. No. of regiment shown on collar patch (of same colour as chevron for Active, and white for Territorial Army). Chevron on collar patch mostly represents collar-colour in previous uniform.

Staff Officers.—Arm-band: dark blue for Brigade; red for Division; red, blue, white, with thunderbolt, for Corps; red and white, Army.

GERMAN.

All arms dressed in grey ("feldgrau") cap or covered helmet, tunic (stand and fall collar), greatcoat, trousers or pants, and long boots (worn over or under trousers). Shoulder-strap with regimental No. or monogram, edged with various colours or State colours (one year volunteers). Greatcoats sometimes dark blue. Variations below. Cap bands often grey-covered.

Staff Officers.—Carmine band to cap, broad carmine trouser-stripe.

	French Army.	German Army.
Infantry	Yellow trouser-piping; dark blue chevron on grey-blue patch; grenade on helmet. Chasseurs (Rifles): As for Infantry, except bugle on helmet, "béret" (Tam o' Shanter), and dressed in iron-grey *vice* grey-blue.	As above. Edging according to corps.* Cap band red, or grey-covered. Jäger and Schützen (Rifles): dressed in grey-green, with green strap edging, and shako *vice* helmet. Cap band red or grey-covered.
Cavalry	Dark blue piping, yellow leather gaiters, dark blue collar patch. Patch-chevrons vary: Cuirassiers, red; Dragoons, white; Chasseurs à Cheval, green; Hussars, light blue; Chasseurs d'Afrique, yellow, shako; Spahis, yellow, sheshia.	Stand-up collar. Lancers (Uhlans) and Hussars wear special cut tunics and special headdresses. Edging of shoulder-strap varies in colour; but Dragoons have single, Cuirassiers double, edging. Cap bands, various.

* White, I, II, IX, X, XII, and I Bav.; red, III, IV, XI, XIII, XV, XIX II Bav.; yellow, V, VI, XVI, XVII, III Bav.; blue, VII, VIII, XVIII XX, &c.; various, XIV; light green, XXI.

Uniform and Badges of French and German Armies—continued.

	French Army.	German Army.
Field Artillery ...	Scarlet piping; gaiters; light blue chevron on scarlet patch; grenade and crossed guns on helmet; chevron in Colonial, violet; Mountain, white; Heavy, grey; Horse, dark blue; Foot, green.	Black piping to collar red grenade on shoulder-straps, brass buttons (white metal in Guard Corps), cap band black.
Engineers	Black piping; scarlet chevron on black velvet patch.	Black piping to collar, no grenade, white metal buttons, cap band black.
Train	Green piping; red chevron on green patch; gaiters.	Blue edging to collar and tunic; (supply), crimson edging, cap band, blue.
Medical...	Red piping and red velvet collar patch with snake and rod badge; rank bars, gold.	Red edges to blue collar patch, cap band black.
Veterinary	Ditto; rank bars, silver.	Red edges to black collar patch.
Interpreters attached to British Army	Khaki képi, tunics and trousers. Officers wear olive branch badge on dark blue velvet, and men Sphinx's head on grey blue, collar patch	Guard regiments wear 2 4-in. tabs of braid either side of collar and white buttons. Shank of side-arm tassel shows No. of battalion, top and bottom No. of company: 1, white; 2, red; 3, yellow; 4, blue; 5, green. Thus red shank and yellow remainder = 2nd battalion, 3rd company.
Flying Corps	Orange piping; orange chevron on black collar patch.	
Gendarmerie and Military Police	White piping; narrow white band to képi and white grenade on black collar patch. Generally wear dark blue.	Landwehr wear cross on headdress. Caps now mostly all grey.
Zouaves...	Khaki and khaki-covered sheshia; chevron, dull red.	Cockade on soft front of cap is red, white and black; cockade on cap band shows State: Prussia, black and white; Bavaria, blue and white; Saxony, green and white; Württemberg, red and black; Hesse, red and white; Mecklenburg, red, yellow, blue, &c., &c.
Tirailleurs	Ditto ditto; chevron, light blue.	
Colonial Infantry ...	Grey blue; chevron, scarlet; anchor on képi.	
Foreign Legion ...	Ditto; chevron, green.	

BADGES OF RANK.

—	French Army.		German Army.	
General		On lower part of sleeve.	Gold and silver twist, 2 stars.	Shoulder strap.
General { de Division / Leutnant ...	3 small gold stars* ...		Gold and silver twist, 1 star.	
General { de Brigade / Major ...	2 small gold stars* ...		Gold and silver twist, no star.	
Colonel	5 gold bars†		Silver twist, 2 stars.	
Lieut.-Colonel ...	3 gold and 2 silver bars		,, ,, 1 ,,	
Major	4 gold bars†		,, ,, no ,,	
Captain...	3 gold bars†		Straight silver cord, 2 stars.	
Lieutenant ... / Oberleutnant ...	2 gold bars†		Straight silver cord, 1 star.	
Sous-lieutenant / Leutnant ...	1 gold bar†		Straight silver cord, no star.	
Adjudant (W.O.) ...	1 silver bar, red striped			
Sergent-major / Feldwebel ...	2 broad gold bars† ...		Gold or silver collar lace, button either side.	
Sergeant	1 broad gold bar ...		Plain collar lace, button either side.	
Caporal ... / Unteroffizier ...	2 dark blue woollen bars		Collar lace.	
Soldat 1. Cl. ... / Gefreiter ...	1 dark blue woollen bar		Button either side of collar.	
Bugler	Red, white & blue bar		Cord "wings" on shoulders.	

The bars ("galons") are about 2 inches long; horizontal for officers, oblique for N.C.Os.

* Generals also wear these stars on front of képi throughout Army (otherwise grey blue képi shows no badge of rank), and double dark blue piping to breeches.

† Silver for Cavalry and Chasseurs.

BADGES OF RANK. BELGIAN ARMY.

OFFICERS.

Rank.	On each side of collar of service jacket.*	On cap.
Lieut.-General	2 vertical gold lace stripes 3 gold stars Gold thunderbolt	2 vertical gold lace stripes on each side of gold thunderbolt.
Major-General	2 vertical gold lace stripes 2 gold stars Gold thunderbolt	2 vertical gold lace stripes on each side of gold thunderbolt.
Colonel	1 vertical gold lace stripe 3 gold stars	1 vertical gold lace stripe on each side of gold regimental No. or Gen. Staff badge.
Lieut.-Colonel	1 vertical gold lace stripe 2 gold stars	Ditto.
Major	1 vertical gold lace stripe 1 gold star	Ditto.
Captain ...	3 gold stars	Nil.
Lieutenant ...	2 gold stars	Nil.
Lieutenant ...	1 gold star	Nil.

* The same badges of rank are worn on the greatcoat.

Non-Commissioned Officers.

Warrant Officer ...	1 silver star on collar.
Co. Serjt.-Major...	3 rings of narrow dark brown braiding round cuff.
Serjt.-Major ...	2 rings of narrow dark brown braiding round cuff and 2 stripes of same material above elbow.
1st Serjeant ...	2 rings of narrow dark brown braiding round cuff.
Q.M.-Serjeant ...	1 ring of narrow dark brown braiding round cuff and 1 stripe of same material above elbow.
Serjeant	1 ring or stripe of narrow dark brown braiding on arm below elbow.
Corporal	1 ring or stripe of broad dark brown or white braid on arm below elbow.

BADGES OF RANK. U.S. ARMY.

Worn on Shoulder Strap of Tunic.

General	Coat of arms and two stars.
Lieut.-General ...	One large, two small stars.
Major-General ...	Two stars.
Brig.-General ...	One star.
Colonel	One silver spread eagle.
Lieut.-Colonel ...	One silver leaf.
Major	One gold leaf.
Captain	Two silver bars.
Lieutenant ...	One silver bar.
2/Lieutenant ...	No badge.

On overcoat.—General to Brig.-General wear the badge of rank in dull bronze below the elbow, with two bands of black braid one above, one below badge. Colonel, 5 bands, Lieut.-Colonel 4, Major 3, Captain 2, Lieutenant 1, 2/Lieutenant no bands.

CURRENCY (normal values).

France and Belgium:
1 franc = 100 centimes = about $8\frac{1}{2}d.$
Coins: 5 centimes,* 10 centimes*; 25 centimes (nickel); 50 centimes, 1, 2 and 5 francs (silver), 10 and 20 francs (gold).
* Copper in France, nickel in Belgium.
The "sou" or halfpenny (= 5 centimes) is largely used as a unit in small dealings: *e.g.*—"Quatre sous" = 20 centimes; "Dix sous" = half a franc; "Vingt sous" = 1 franc; "Pièce de cent sous" = 5 francs.

Germany:
1 mark = 100 pfennigs = about 1*s.*: 20 marks = £1.
Coins: 5, 10, 20 pfennigs (nickel); 50 pfennigs, 1 mark, 2 and 3 marks (thaler), 5 marks (silver); 10 and 20 marks (gold).

Holland:
1 gulden (florin) = 100 cents = 1*s.* 8*d.*
Coins: 5, 10, 25 cents; $\frac{1}{2}$, 1, $2\frac{1}{2}$ florins (silver); 10 florins (ducat)—16*s.* 8*d.*—(gold).

EARTHWORKS, &c.

1. A four hours' relief (actual digging) is long enough for the ordinary soldier. Longer reliefs, of 6 or 8 hours, may occasionally be necessary.

2. In ordinary soil, for one hour, a man can dig at the rate of 30 cub. ft. an hour; up to four hours at the rate of 20 cub. ft. per hour, or 80 cub. ft. in a four hours' relief. The normal distance at which men should be spaced apart is two paces, 5 ft.

3. The normal trace of trenches is:—Fire trench 18 to 30 ft. long, traverse 9 to 12 ft. wide, and extending about 8 ft. back with corners well rounded. The general line must be irregular, not straight, and arranged to provide flanking fire.

4. In the normal trench the fire step, 18 ins. broad, should be 4 ft. 6 ins. below the crest of the parapet.

5. Behind the fire step, which should be well revetted, is a passage about 2 ft. deeper, and about 2 ft. wide at bottom. This passage, which is carried round the traverses, is therefore about 6 ft. 6 ins. below the crest.

6. How much of this cover is provided by excavation and how much by the parapet thrown up depends on the ground; if there is water near the surface, it may be necessary to build a parapet nearly 4 ft. 6 ins. high. It is then usually called a breastwork. As a rule, the parapet should be about 1 ft. to 1 ft. 6 ins. high. It must be sufficiently high to provide a good view over the ground in front.

7. A parados (back parapet) must be provided to give protection against a back burst of high explosive shell, and it should generally be a trifle higher than the front parapet, but the front slope of it should harmonise with the front slope of the parapet. Both parapet and parados tops should be uneven and not dead level.

Earthworks, &c.—continued.

8. If the trench is to be held for any length of time, unless the soil is very hard and well drained, trench boards should be laid on the bottom (sole) of the trench, and the lower portion of the trench below the level of a fire step revetted (standard short revetting frames are provided for this purpose). In communication trenches and on the reverse side of a fire trench, the portion above the level of the frame is best left at its natural slope and unrevetted, with good berms 1 ft. 6 ins. to 2 ft. wide: above the fire step, however, it should usually be revetted with sandbags or other material that can be easily cleared if the trench is blown in.

9. The parapet must be bullet proof at the top; 4 ft. thickness is the minimum, 6 ft. is better.

10. An obstacle should be provided in front of the trench; this will usually be barbed wire, either stretched on posts or made up on knife-rests or in concertinas. A height of 2 ft. 6 ins. is sufficient; the near edge may be 20 yds. from the parapet. The entanglement should be 10 yds. or more broad in front of trenches that it is intended to defend for a considerable period, and should be placed in natural hollows where they exist, or if there is time and labour available broad shallow ditches should be constructed to place it in.

11. Communication trenches should give 7 ft. of cover, if possible, *e.g.*, be 5 ft. deep with 2 ft. parapet on each side. They should be traced either curved or zigzag, or with elbows or island traverses.

12. Communication trenches should be provided with flank defence by means of short lengths of fire trench either in them or off them; and there should be entanglements parallel to them, so that they may be used as switches or lateral retrenchments.

13. Each company front should have at least two communication trenches between support and front line, and each battalion front if possible two between reserve and support lines, for "up" and "down" traffic.

14. Overhead cover may be classed as grenade-proof, splinter-proof shell (5·9 in.) proof and heavy shell proof. As cover against grenades, any roofing, *e.g.*, timber or corrugated iron with 1 or 2 ft. of earth, according to its nature, is sufficient. For splinter-proof cover there might be one or more layers of pit props 9-in. logs, rails or girders, or a foot or more of stone or bricks, or 9 ins. of concrete covered with 2 or 3 feet of earth.

15. Shell (5·9 in.) proof cover should include at least the following, counting from the top downwards:—

Thin layer of earth (6 or 9 ins.)
Bursting course of hard material (9 ins. of stones, ferro-concrete slabs, rails, or if nothing else is available, 12 ins. of broken brick, or a layer of logs).
Earth cushion, 2 to 4 ft. according to hardness.
Arresting course (logs or rails wired together to form a mattress).
Earth cushion, 1½ to 3 ft. according to hardness.
Inner roof (timber, corrugated steel or iron, or concrete).
Substructure (a strong framework of brick, concrete, timber, or a corrugated steel shelter), to support the inner roof.
Or there may be 3 ft. or more of ferro-concrete. The above is probably sufficient to stop 8-in. shell.

Earthworks, &c.—continued.

An air space between the inner roof and the next layer above is sometimes used, but the supports of the latter must not be carried on the inner roof, they should go down to the solid ground.

16. To resist heavy shell (over 8-inch) at least 5 feet of good reinforced concrete, or its equivalent, is required.

17. In mined dugouts there should be at least 15 ft. of hard chalk or 22 ft. of Flanders' clay above the chamber, supported on strong cases or frames.

18. All deep dugouts, and others if possible, should have at least two entrances.

WEIGHTS.

Infantry in fours weigh 5 cwt. per foot run of bridge.
Cavalry in half-sections weigh 3½ cwt. per foot run of bridge.
18-pr. gun—maximum concentrated weight on one bay = 24 cwt.
4·5-in Howitzer ,, ,, ,, ,, 26 ,,
60-pr. gun ,, ,, ,, ,, 67 ,,
Weight of earth 1 in. thick per sq. ft. = 10 lbs.
,, ,, soft timber per cubic ft. = 40 ,,
Weight carried on man (approximate):—

Clothing (*a*)	13 lbs.	0 ozs.
Arms	10 ,,	8½ ,,
Ammunition (120 rds.)	7 ,,	8 ,,
Tools	2 ,,	9¼ ,,
Accoutrements (*b*)	9 ,,	2¼ ,,
Articles in pack (*c*)	13 ,,	0 ,,
Rations and water	5 ,,	14½ ,,
Total	61 lbs.	10 ozs.
Waterproof sheet	3 ,,	2½ ,,

100 men in heavy marching order weigh about 9½ tons.
35 cubic ft. = 1 ton displacement (for boats, &c.).
A horse or big mule can draw, in fair country, 8 to 10 cwt.; a heavy draught horse can draw a ton.
A pony or cob can carry 120 to 180 lbs.
The following loads should not as a rule be exceeded:—

Forage cart, 1 horse	1,200 lbs.
,, ,, 2 horse	1,500 ,,
G.S. wagon, 4 horse	3,000 ,,

A quarter of wheat, maize, or rye, weighs 480 lbs.
,, ,, oats weighs 304 lbs.
,, ,, barley weighs 400 lbs.
A quarter of wheat at 52/6 = sack of flour at 40/- = 4lb. loaf at 7*d*.

(*a*) Includes badges, disc, clasp-knife, field dressing and paybook.
(*b*) Includes pack weighing 1 lb. 11 ozs.
(*c*) Includes great coat, 1 shirt, 1 pair of drawers, 1 cardigan, 2 pairs of socks.

MEASURES.

1 tablespoon holds 1 oz.; 1 dessertspoon, $\frac{2}{3}$ oz.; 1 teaspoon, $\frac{1}{4}$ oz.
1 fathom = 6 ft.; 1 cable = $\frac{1}{10}$ nautical mile = 202·7 yds.
1 cubic foot of water weighs 62·5 lbs. = $6\frac{1}{4}$ galls.
1 ,, ,, loose earth weighs 95 lbs.
1 ,, ,, pine weighs 41 lbs.
1 ,, ,, oak ,, 59 ,,
1 gallon of water ,, 10 ,,
1 cubic yard of coal (solid) weighs 2,160 lbs.

SUPPLIES.

To estimate contents of stacks: The average height × breadth × length (in yds.) divided by 11 gives tons of hay; and the same divided by 16 gives tons of straw. A cubic yd. of hay should weigh 200 lbs. For circular stacks: πr^2 × height (in yds.) = cubic contents in tons.

An acre of potatoes yields 8 tons.
,, ,, cabbages ,, 35 ,,
,, ,, oats ,, 50 bushels and $1\frac{1}{2}$ tons straw.
,, ,, barley ,, 40 ,, ,, 1 ,,
,, ,, wheat ,, 25 ,,

Oats should weigh at least 38 lbs. to the bushel (8 galls.).

THERMOMETER SCALES.

	Freezing pt.	Boiling pt.	
Fahrenheit	32°	212°	Used in U. Kingdom and Holland.
Centigrade or Celsius	0°	100°	Used in France, Belgium and Germany.
Réaumur	0°	80°	Used in Germany (occasionally).

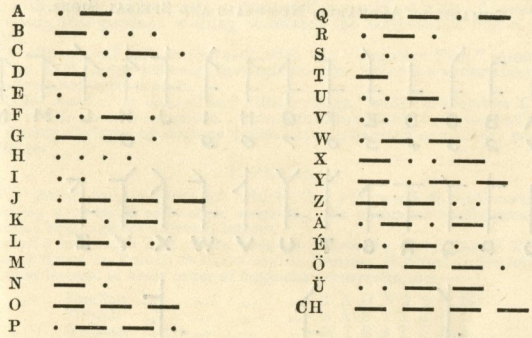
Each 5° C = 4° R = 9° F.

For temperatures above freezing point:—
To convert Centigrade° into Fahrenheit°, multiply by $\frac{9}{5}$ and add 32°.
,, ,, Réaumur° ,, ,, ,, ,, ,,
,, ,, Fahrenheit° ,, Centigrade°, subtract 32° and multiply by $\frac{5}{9}$.
,, ,, ,, ,, Réaumur°, ,, ,, ,, ,, $\frac{5}{4}$.

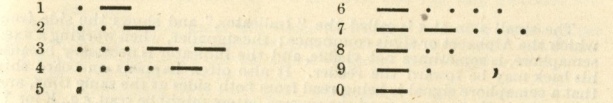
− 20° C	=	− 4° F		5° C	=	41° F		30° C	=	86° F
− 15° C	=	+ 5° F		10° C	=	50° F		35° C	=	95° F
− 10° C	=	+ 14° F		15° C	=	59° F		40° C	=	104° F
− 5° C	=	+ 23° F		20° C	=	68° F		45° C	=	113° F
0° C	=	32° F		25° C	=	77° F		50° C	=	122° F

Normal blood temperature = $98\frac{1}{2}$° F = 37° C.

MORSE CODE.

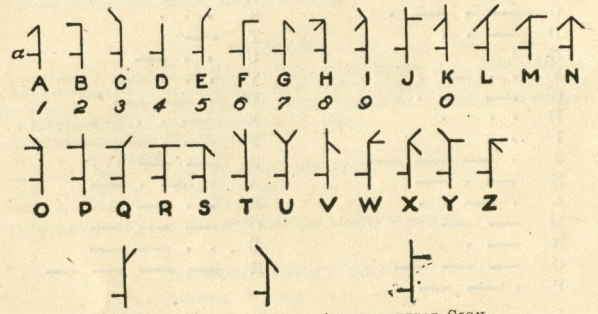


Numerals: (preceded by FI (figures intended) and closed by FF (figures finished)).



SEMAPHORE CODE.

Semaphore Alphabet, Numerals and Special Signs.



Numeral Sign. (*Figures Follow.*) Annul. Alphabetical Sign. (*Letters Follow.*)

The small arm at *a* is called the "Indicator," and shows the side from which the Alphabet or signs commence; the signaller, when working a fixed semaphore, is sometimes not visible, and the indicator is necessary because his back may be toward the reader. It also often happens on board ship that a semaphore signal is being read from both sides at the same time, and unless the indicator were used the reverse letters might be read, *e.g.*, K for V.

The above figures also represent the semaphore-flagger as *facing* the reader.

Semaphore Code—continued.

Intercommunication between Army and Navy.

Special signals for opening communication.—Two special signals are established for distinguishing intercommunication between the two services when wishing to call one another up, viz.:—

(*a*) *By day.*—The "Naval and Military Pendant," which is white with 2 black crosses. This is always to be used by H.M. ships wishing to communicate with a shore station, or by a shore station equipped with a flagstaff and possessing this pendant wishing to attract the attention of one of H.M. ships.

The above must not be confused with the "Negative Flag," sometimes used by H,M. ships between themselves. The latter is a white square flag with five black crosses on it.

(*b*) *By night or by day.*—The "Military Sign," which is the letter **X** made either by Morse or Semaphore. This sign is invariably to be used at night, and during daylight by stations which have no flagstaff or military pendant available.

CIPHERS.

For deciphering ciphers of which the key word is unknown, the following may be of assistance, as giving the comparative frequency in different languages of different letters.

In all 3 languages E is of the greatest frequency, occurring in English about 12 times, in French 18 times, and in German 14 times, in 100 letters.

Other letters, in their order of frequent occurrence, are:—

English	T A O N I S R H.
French	S A N T I R U L.
German	N I R S T U D A.

WATER.

Contents of circular wells per foot deep:—
3 ft. (diameter) 44, 4 ft. 78, 5 ft. 122, 6 ft. 176, 7 ft. 240, 8 ft. 313, 9 ft. 400 galls.

Minimum drinking water allowance (including water for cooking) per man per day—1 gall.; per horse—6 galls.; latter drinks 1½ galls. at a time.

Capacity of regulation canvas bucket—5 galls.; pail 3·4 galls.

Capacity of water cart—108 galls.

Field pumps draw from 4 to 5 galls. per minute.

To prepare a muddy well or stream for use, sink a large tin or box with small holes covered outside by cloth or muslin: top of box above water.

The ordinary big biscuit tin holds 13 galls.

Area of section of stream (in ft.) × velocity (in ft.) per minute × $6\frac{1}{4}$ = number of galls. obtainable per minute.

If water is too bad to drink, considerable relief from thirst is said to be obtained by immersing the arms in it.

MEDICAL NOTES.

Normal pulse		72 per minute.
,, respiration		15 to 18 per minute.
,, temperature		98°·4 Fahr. or 36°·8 Centigrade.

First Field Dressing.

Every officer and man on active service carries this dressing in the pocket on the right side of skirt of frock. It consists of a khaki cotton cover enclosing two small separate dressings enclosed in waterproof material. Each is composed of a bandage, to which a folded piece of gauze is stitched, and one safety pin. Directions are on outside cover and each packet.

Treatment of Cases of Emergency.

Artificial Respiration (v. under *Drowning*).

Bleeding—

Bleeding may be either external or internal, and may be arterial or venous.

(*a*) Arterial bleeding.—The blood is of a bright red colour, and at first escapes in spurts.

Treatment.—Expose the wound, apply the gauze of the first field dressing, and first try pressure on the bleeding point with the fingers over this protection; if this fails compress the artery against the bone close to the wound but between it and the heart. Pressure should be maintained until some more permanent means can be employed (such as an improvised tourniquet), or medical assistance procured.

Absolute rest is essential. If the bleeding is from a limb, raise it.

(*b*) Venous bleeding.—The blood is of a dark colour; it flows or oozes out, but there is no appearance of pulsation.

Treatment.—Lay the patient down, remove any constriction which may be round the limb, elevate the limb, and apply a pad and firm bandage.

The following table shows the situation of the main arteries and their treatment when wounded:—

Position.	Name of Artery.	Treatment.
Head	Temporal and facial ...	Apply first field dressing over the wound and bandage tightly.
Arm-pit...	Axillary	Compress artery downwards and backwards behind the middle of the collar-bone.
Arm (on inner side in line with the seam of the sleeve)	Brachial	Compress the artery by hand.
Thigh	Femoral	Pressure in the groin by fingers or tourniquet.

Medical Notes—*continued.*

An improvised tourniquet may be made as follows:—Take a handkerchief, a smooth rounded stone, and a stick or bayonet scabbard, &c., wrap up the stone in the centre of the handkerchief, tie a knot over it and place the stone over the artery, pass the ends of the handkerchief round the limb and tie them securely, leaving sufficient space for the stick to be admitted; pass the stick then between the handkerchief and the skin, and carefully twist it until by tightening the handkerchief the stone is pressed upon the artery with sufficient force to arrest the flow of blood. A pad should be placed between the stick and the skin to prevent the latter being bruised, and the end of the stick must be secured with a bandage to prevent the tourniquet untwisting.

The tourniquet should be applied no tighter than is absolutely necessary to stop the arterial bleeding, and should only be used as a last resource. A medical officer must be sent for as soon as possible.

Internal bleeding.—The symptoms of internal hæmorrhage are prostration and weakness. The surface of the body is cold and the face pale, the lips lose their colour. The pulse is weak or imperceptible; there is sighing respiration and a cold clammy sweat.

Keep the patient absolutely quiet and do not give stimulants.

Bowel complaints.—Any disorder of the bowels should at once be brought to the notice of the medical officer. Diarrhœa is often the first symptom of more serious disease.

Broken limbs.—Gently put the broken limb straight after cutting off the clothes. Then fix it in this position by means of a rifle, roll of newspapers, pieces of wood, &c. If no splints are available, or when time is an important factor, simply—in the case of a leg—fix the broken limb to the sound one, and in the case of the arm, fix to the chest, using in the former the sound limb, and in the latter the chest to act as a splint. In fixing a broken limb care should be taken not to bandage too tightly as during the first 24 hours considerable swelling of the part is likely to take place.

A collar-bone fracture should be treated by bandaging the arm across the chest, so that the hand rests on the opposite shoulder. The elbow should be free, but the forearm and arm bandaged across the chest.

Splints are required for the treatment of broken limbs. They are made of any unyielding substance such as wood, bark, bundles of twigs, wire, rifles, bayonets, swords, &c. They should be padded with some soft material. They are bound to the limb with bandages, tapes, &c., but care should be taken not to bandage immediately over the site of fracture. Cases of suspected fracture should not be moved without first applying a splint.

Burns and scalds.—If severe a Medical Officer should be sent for at once. Death from shock may occur unless treatment for this is immediately undertaken—rest and warmth by means of blankets and hot-water bottles or by immersion in a warm bath. Then, when the warmth of the body is thoroughly restored, attention should be directed to the local conditions,

Medical Notes—*continued.*

Burns and Scalds—continued.

being careful to expose for this purpose only one limb at a time. Dressings of simple aseptic or non-irritating antiseptic oils, or ointment or vaseline, spread on muslin or similar light material, should be applied and covered with absorbent wool and bandage. Slight cases should just be dressed as above. Cover from the air. Slices of potato can be applied with advantage to the wounds if slight.

Death, signs of:—

(*a*) Respiration ceased. May be tested by applying mirror to lips or feather to mouth, or by the movement or otherwise of a glass of water on abdomen.
(*b*) Circulation ceased. No pulse at wrist, heart-beat not felt or heard.
(*c*) Face. Fixed sculptural expression.
(*d*) Condition of eyes. Loss of transparency and of elasticity of eyeball.
(*e*) Pallor of skin. Doughy inelastic feel.
(*f*) Discoloration of skin on dependent parts after a time.
(*g*) Muscles are flabby immediately after death but rigid afterwards (rigor mortis).
(*h*) Decomposition setting in is an absolute sign of death. Green colour of the abdomen is the first indication.

Interval of time after death :—

1. If body is rigid, death probably has occurred longer than 3 hours.
2. If there are discoloured patches on dependent parts, longer than 8 hours.
3. If putrefaction has set in, longer than 12 hours.
4. If rigidity has passed off, longer than 16 hours.

Dislocation.—Dislocation will be recognised by deformity being present at a joint. Reduction should be left to the Medical Officer. Support the part and keep it at rest.

Drowning.—Restoration by Schäfer method. If breathing has ceased, immediately on removal from the water, place the patient face downwards on the ground, with the arms drawn forward and the face turned to the side. Then, without stopping to remove or loosen clothing, commence artificial respiration. To effect artificial respiration, put yourself astride, or on one side of the patient's body, in a kneeling or squatting position, facing his head. Placing your hands flat on the small of his back, with the thumbs parallel and nearly touching, and the fingers spread out over the lowest ribs, lean forward with the arms straight and steadily allow the weight of your body to fall on the wrists, and so produce a firm, downward pressure, which must not be violent, on the loins and the lower part of the back. This part of the operation should occupy the time necessary to count—slowly—*one, two, three.* By this means the air (and water, if there be any) is driven out of the patient's lungs. Water and slime from the air passages may also run out. Immediately after making the downward pressure, swing backwards so as to relax the pressure and allow air to enter

Medical Notes—*continued.*

Drowning—continued.

the lungs. Do not lift the hands from the patient's body. This part of the operation should occupy the time necessary to count—slowly—*one, two.* Repeat this forward and backward movement (pressure and relaxation of pressure) 12 or 15 times a minute, without any marked pause between the movements. Whilst the operator is carrying out artificial respiration, others may, if there be opportunity, busy themselves with applying hot flannels, hot bottles, &c., between the thighs and to the armpits and feet, or promote circulation by friction, but no attempt should be made to remove wet clothing, or give restoratives by the mouth, till natural breathing has recommenced. When this has taken place, allow the patient to lie on the right side and apply friction over the surface of the body by using handkerchiefs, flannels, &c., rubbing legs, arms, and body, all towards the heart, and continue after the patient has been wrapped in blankets or dry clothing. As soon as possible after complete recovery of respiration remove patient to nearest shelter. On restoration, and if power of swallowing has returned, small quantities of warm coffee, tea, milk, wine, &c., may be given. Encourage patient to sleep, but watch carefully for some time and allow free circulation of air around patient.

Note.—Artificial respiration must also be resorted to in case of suffocation by charcoal fumes or coal gas, mining accidents, hanging, lightning stroke, and severe electric shock.

Fainting:—

Lay patient on his back, with the head low.
Loosen clothing.
Allow plenty of fresh air.

Feeling faint.—Sit down, and put head between knees.

Feet, care of:—

Every effort should be made to keep the feet clean and dry.

Remember that a dirty foot is an unsound foot. See that the feet are washed, even if no other part of the body is. Socks should be taken off at the end of the march, be flattened out, and well shaken. Put on a clean pair if possible; if not, put the left sock on the right foot, and *vice versâ.* No rub or scratch, however slight, should be neglected.

Blisters or sores must be kept clean and dressed with vaseline or some ointment. Fluid in a blister should be let out through a small pin prick made at its lowest part

Chafes should be treated with boric powder or smeared with vaseline or ointment or some form of grease.

Boots should be greased whenever the opportunity occurs. If wet, stuff the boots with dry grass, oats, straw, or paper, till they are dry, and do not put them near the fire.

Never march with bare feet in your boots. If your socks are worn out, get some strips of cotton, or linen, or flannel, to wrap round them.

Do not wear tight boots or tight puttees, which impede circulation.

Medical Notes—*continued.*

Feet, care of:—continued.

When a man is being fitted with boots, he should wear two pairs of socks.

The toes are the most readily attacked, because of the wetness of socks from perspiration, even when marching on dry ground. When marching across rivers or over snow, care must be taken to have the socks changed at the halt.

Fits:—

Lay patient on his back, with the head slightly raised.

Loosen the clothes about the neck and chest and prevent him from biting his tongue by placing the handle of a toothbrush, or similar article, as a gag, between his teeth.

Employ sufficient restraint only to prevent him injuring himself.

Do not give stimulants. He will come to in time.

Fractures (v. *Broken Limbs*).

Frost-bite:—

Frost-bite and numbness occur most frequently when there is lack of food and sleep. They may be prevented by movement, because the circulation is then increased. Therefore, even on sentry duty, keep moving about, and do not stand still. The fingers, toes, ears, and nose are the parts of the body usually attacked by frost-bite, as the circulation of the blood is slowest there. These parts should therefore be smeared with grease before trenchwork. Whenever these parts begin to feel frozen begin to rub.

In real frost-bite, the part affected becomes a dead white, often without the person noticing it.

Drinking alcohol gives temporary warmth, but its after-effects are to lower the temperature of the body. Therefore, alcohol should be avoided, if one is going to be exposed to cold.

The rum ration should be taken when it is possible to obtain protection afterwards from the cold, such as when returning from the trenches to billets.

The first symptom of frost-bite is generally cold in the part, then pain, then loss of sensation. When any of them are present, it is bad to warm the part before the fire. Rub it instead with a dry glove, or with snow, or a cloth steeped in water and wrung dry. After the part has been rubbed well, dry it well and smear it with grease. If the symptoms continue, the part will become swollen and change colour. If this occurs, it is dangerous, and the soldier must report at once to the surgeon.

If a comrade falls down unconscious, affected by the cold, the following steps must be taken while waiting the arrival of the surgeon:—Warm wraps must not be put over him, and he must be kept away from the fire. If possible, carry him into a room or place without a fire, remove the clothes, and rub hard with a cloth soaked in water or snow, and wrung dry, and perform artificial respiration. In any case, perform artificial respiration. When consciousness has returned, give him some warm tea, cover him up warmly, and let him remain quiet.

Medical Notes—*continued.*

Gas.

Cloud gas (chlorine, phosgene, &c.) is poisonous, causing choking, suffocation and unconsciousness. Men who are affected by gas must keep the small box respirator or gas helmet on, and should be removed into pure air as soon as possible No man suffering from the effects of gas is to be allowed to walk to the dressing station. The gas, being heavy, lies in the bottom of trenches and in dugouts for a considerable time after it has blown away from ground level; it should be removed by anti-gas fans, the small box respirator or gas helmet being kept on until it has all been dispersed. Dugouts may be cleared fairly quickly by a fire in the middle of the floor.

Many gas shells now in use contain lachrymators, which are poisonous and necessitate the small box respirator or gas helmet being worn.

Gunshot Wounds (v. *Wounds*):—

Infectious diseases:—

Isolate the patient, segregate the people who have been in contact with him. Do not forget to make arrangements about their food and water. Before disinfection is carried out, and in order to prevent the clothes, &c., being taken away, placing a seal on the door is a very useful practice. All useless and dirty kit should be burnt. Disinfection will be carried out by the order and under the supervision of a medical officer.

Poisoning:—

(*a*) Corrosive:—

Cause: such acids as vitriol, cresol, carbolic acid; or alkalis as caustic soda, strong ammonia.

Symptoms: great pain, immediately after poison has been swallowed, in mouth and throat, which look as if scalded. Lips stained and blistered. Shock, difficulty of breathing, and breath smells sour.

Treatment: do *not* give emetics. Give, for acids, whitening, chalk, wall plaster, or washing soda, mixed with water; for alkalis, weak vinegar or lime-juice. Milk and raw eggs good in either case.

(*b*) Irritant:—

Cause: decomposed food (ptomaine), arsenic, mercury, phosphorus

Symptoms: inflammation and pain in stomach, vomiting, &c.

Treatment: emetics,* warm water to wash out; then milk and eggs.

(*c*) Systemic:—

Cause: Opium, narcotics, strychnine, prussic acid.

Symptoms: action on nerves and brain, heart failure, drowsiness, difficulty in breathing.

Treatment: emetics,* then stimulants (hot coffee, weak alcohol). If narcotics suspected, walk patient about.

* A tablespoonful of mustard (or salt) in tumbler of water (warm for choice).

Medical Notes—*continued.*

Snake bite or poisoned wound :—

Apply a ligature or tourniquet above the bite, *i.e.*, between it and the heart. Suck the wound.

Make ½-inch deep cruciform incision on the wound with a clean knife and rub in crystals or solution of permanganate of potash, or some antiseptic.

Give stimulants such as brandy, sal volatile, or hot black coffee.

If breathing is bad artificial respiration should be tried.

Sunstroke or heatstroke :—

Place patient at once in shade or cool place.

Allow plenty of fresh air.

Raise head and remove clothing from neck and upper part of body.

Douche head, neck and spine, or whole body, with cold water.

Do not give stimulants.

Trench Foot :—

Is caused by standing about with wet feet in cold weather, and also by the constriction of circulation caused by keeping boots and puttees on for long periods without removing them. Symptoms do not generally appear till the 3rd or 4th day. There is an early loss of sensation, and the feet become puffy and doughy to the feel (œdematous), in bad cases even purple or blue.

To prevent, do not wear tight boots or puttees, take them off daily, rub well with anti-frostbite grease before going into trenches and whilst in trenches, so that the grease is well absorbed by the skin. Keep moving, have dry stockings (gumboots if possible), change frequently into dry socks wearing two pairs if feasible. Hot soup, tea or cocoa at night. Rum or alcohol are comforting but lower the temperature of the body, and should therefore not be drunk unless warmth and comfort are obtainable immediately afterwards. Practically the only treatment is to dry, massage twice a day, rest and keep the feet up. Bad cases may last two months or more.

Wounds :—

The greatest possible cleanliness is necessary in the dressing of wounds. Any dirt or foreign matter introduced into them greatly increases their danger and the time occupied before they are healed. Every wound gives rise to a certain amount of bleeding. In cases where it is not severe, no particular attention need be paid to it, the pressure effected by the firmly bandaged dressing sufficing to arrest it; where, however, the bleeding is severe and the blood comes out in jets, efforts should be made to arrest it before applying the dressing (v. *Bleeding*). Having stopped the bleeding, apply the first field-dressing, taking care to use that belonging to the wounded man and not your own.

In dressing the wound interfere with it as little as possible; nothing should come into contact with the wound but the inner layer of the dressing where it has not been handled. If the dressing contains a small tube of iodine, this must be opened and iodine applied to the wound and the surface of the skin around it. (This will smart considerably.) Apply the dressing and bandage firmly on. Do not bandage too tightly especially over bony parts, such as the wrist or ankle, as there is danger to the limb if you do so, as the flow of blood through it may be arrested, and the limb thereby die.

Medical Notes—*continued.*

Very many wounds are complicated by fractures or breaks in the bone. In such cases, after the bleeding has been arrested and the wound dressed, splints should be applied to each side of the injured limb in order to keep the ends of the broken bone from rubbing against one another (v. *Broken Limbs*). They must be so applied that they fix the ends of the broken bone, and care should be taken not to bandage them on too tightly, nor should a bandage be tied directly over the part where the bone is broken. Take to Medical Officer as soon as possible.

RULES FOR THE PRESERVATION OF HEALTH ON FIELD SERVICE.

I.—Things that every Officer and Man can do to Preserve his own Health.

Remember that disease attacks you from outside; it is your business to keep it outside.

The following rules will help you to do so :—

Water.—Don't drink untreated water if you can get treated water.

Always start on the march and go on outpost or trench work with your water-bottle full. Cold weak tea (without milk or sugar) tends to assuage thirst.

Don't drink directly you feel thirsty; the oftener you drink the thirstier you will become. Drink as little as possible at a time, more especially if you are hot, and make up your mind to arrive at the end of a march with some water still left in your bottle.

Conservancy.—*Never* allow either urine or solid matter to remain exposed after they have been passed. The man who does or allows this is exposing his comrades to the greatest of all dangers on service—a greater danger than the fire of the enemy. Cover at once. Remember that urine is just as dangerous as solid matter.

Food.—Never start on the march with an empty stomach if you can help it.

Never go on outpost or any detached duty without enough food to carry you over your probable time of absence, with a margin.

Personal cleanliness.—Remember that dirt is one of the commonest causes of disease. Dirt on your hands may mean poison in your food. Next in importance come those parts of your body that are apt to chafe—as the inside of your thighs, private parts, &c. A bath is often an impossibility, but a wet cloth can do much to cleanse.

Remember that dirty clothes mean a dirty body; clean them as often as you can. If water is not available, crumple up the clothes, shake them well, and sun-dry them if possible.

Vermin may be killed with petrol or hot ironing. It is comparatively simple, by attention to personal cleanliness, to destroy full-grown lice; but the eggs are killed with difficulty, for they are deposited in the

Rules for the Preservation of Health, &c.—*continued.*

seams of under-clothing, trousers, &c. Brush thoroughly, apply heat, or rub in the special grease (vermijelli), which smothers the young on emerging from the eggs. Dust also with vermin powder.

II.—Things an Officer can do to Preserve the Health of his Men.

Water.—On arrival in camp, or on taking up an outpost, see at once to the position of the water supply, and make arrangements for boiling. The collection of fuel for this purpose should be the first sanitary fatigue arranged for.

Conservancy.—Latrines and urinals should be fixed as soon as possible after arrival at a camp or outpost, and be placed where they cannot endanger kitchens or water supply.

Do not let your men ease themselves promiscuously.

Always leave your camp clean; others may have to occupy it after you, and they will suffer if you neglect this duty.

Food.—Remember that on service all disease is swallowed. See, therefore, that the cooking is carried out in as cleanly a manner as possible, and that food is protected from dirt both before and after cooking.

Feet.—Inspect the feet of your men regularly, and see that they do not neglect the smallest break in the skin.

Personal cleanliness.—See that your men get every opportunity of washing or dry-cleaning their clothes.

Miscellaneous.—Rest your men as much as possible. At halts, let them sit or lie down.

Always make them rig up some kind of shelter at night, for the head if for no other part of the body.

Watch your men, and see that every man that falls out often on the march, or any man noticed in camp going to the latrine oftener than usual, is made to report himself sick at once. The serious diseases of camp life all begin with diarrhœa, and this should, therefore, be looked on as a danger signal. It may mean nothing, but it should never be overlooked.

Clothing is intended to protect from heat, cold, and damp. See that your men use it accordingly. Warn them especially against neglecting to change wet clothes, when they can do so.

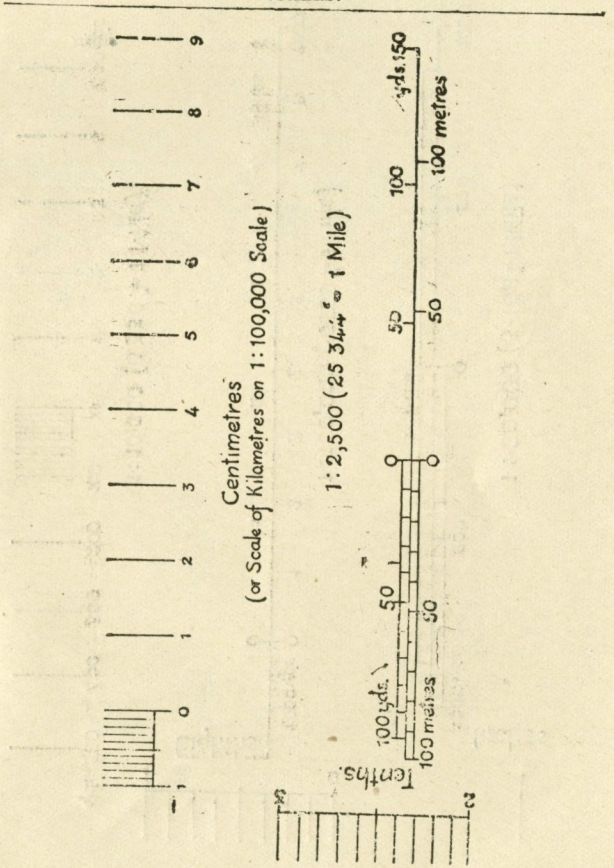
MISCELLANEOUS.

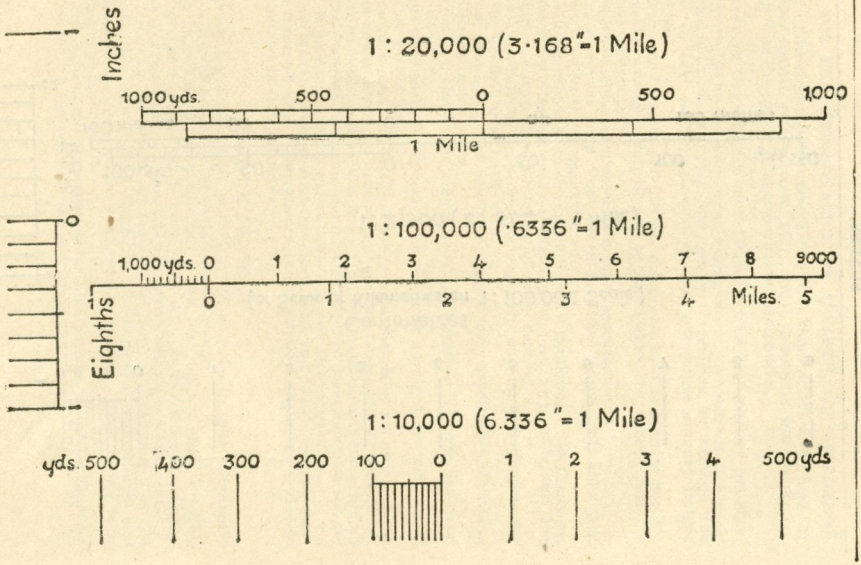
To prevent *wet boots* from shrinking fill them with oats overnight; the oats will swell and keep the boots from shrinking.

If you have difficulty in pulling on a wet boot, light a piece of paper, drop it into the boot, and let it burn itself out. It will not hurt the wet boot, but will cause a film of steam inside, which will act as a lubricant.

The "*Rule of the Road*" in France, Belgium, and Germany is the opposite to that obtaining in England: *i.e.*, horsemen and vehicles and troops keep to the *Right* of the road, and pass others going in the same direction on the latter's *Left*.

A round of ammunition, or *3 pennies* or 5 halfpennies (French or English) weigh 1 ounce. A halfpenny is one inch in diameter.




Inches
1 : 20,000 (3·168" = 1 Mile)
1000 yds.
500
0
500
1,000
1 Mile
Eighths
1 : 100,000 (·6336" = 1 Mile)
1,000 yds. 0 1 2 3 4 5 6 7 8 9000
0 1 2 3 4 Miles. 5
1 : 10,000 (6.336" = 1 Mile)
yds. 500 400 300 200 100 0 1 2 3 4 500 yds