

## **Beaufort Wind Force Scale – matching activity**

Here are the 13 levels of the Beaufort Scale, which can be printed and cut up, to use as cards to match up.

For younger participants, you may wish to restrict them to just the lower end of the scale, to avoid having too many cards to sort.

The levels have been grouped in this document into Force 0-7 and Force 8-12, for ease of printing. You may wish to print Force 8-12 on a different colour card, so that it is easy to extract the higher levels and very quickly make the task a smaller one.

There are 7 different types of information, although you may wish to keep the first three together (i.e. not cut them up), to make the task easier, or not include certain types:

- Force number
- Speed
- Description
- Conditions at Sea and on Land
- Diagram
- Flag (for F0-F7 only)
- Waves (for F0-F7 only)
- 

The answer grid rubrics are also given, at the end of this file.

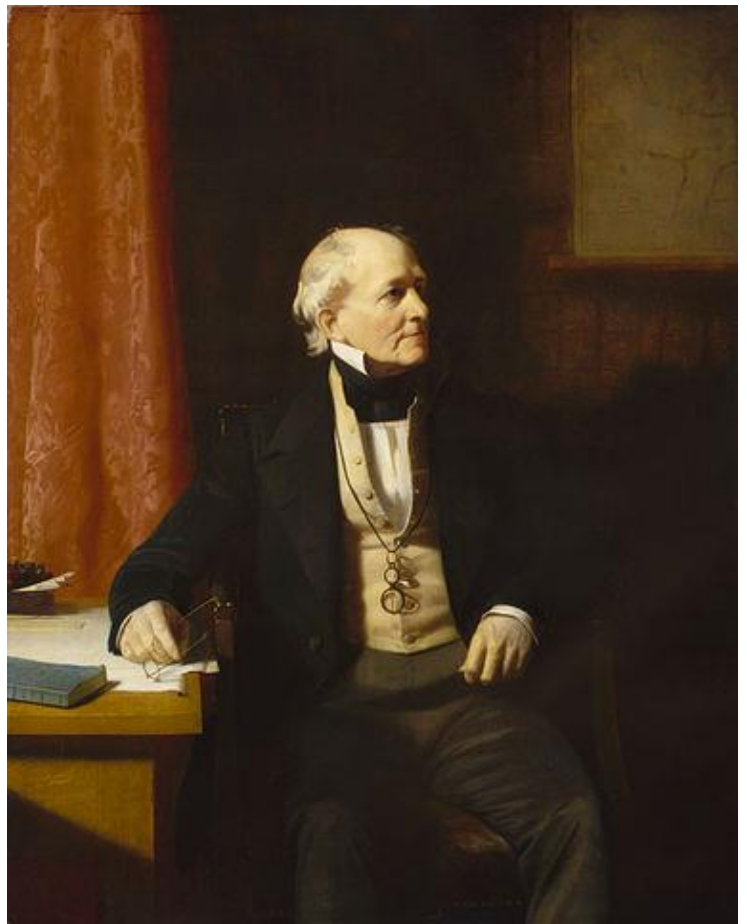
### Diagrams credits:

Stephen Pearce, National Maritime Museum; Howtoons.com; David Seidman “The Complete Sailor”

For the Word file, contact [robertchaney1971@gmail.com](mailto:robertchaney1971@gmail.com) , 1<sup>st</sup> Kilkenny Beaver Scouts

## Admiral Francis Beaufort

- born in Navan, Co. Meath in 1774 – 240 years ago
- invented the Beaufort Wind Force Scale for indicating wind speed 210 years ago
- Royal Navy officer
  
- relates wind speed to observed conditions at sea or on land
- Scale goes from 0 (Calm) up to 12 (Hurricane)



|                                     |  |  |
|-------------------------------------|--|--|
| <p><b>Force</b></p> <p><b>0</b></p> | <p><b>Speed</b></p> <p>0 knots</p> <p>0 km/h</p> | <p><b>Calm</b></p>                       |
| <p><b>Force</b></p> <p><b>1</b></p> | <p><b>Speed</b></p> <p>2 knots</p> <p>3 km/h</p> | <p><b>Light</b></p> <p><b>Air</b></p>    |
| <p><b>Force</b></p> <p><b>2</b></p> | <p><b>Speed</b></p> <p>5 knots</p> <p>9 km/h</p> | <p><b>Light</b></p> <p><b>Breeze</b></p> |

|                                     |   |                                   |
|-------------------------------------|---|-----------------------------------|
| <p><b>Force</b></p> <p><b>3</b></p> | <p><b>Speed</b></p> <p>9 knots<br/>15 km/h</p>  | <p><b>Gentle<br/>Breeze</b></p>   |
| <p><b>Force</b></p> <p><b>4</b></p> | <p><b>Speed</b></p> <p>13 knots<br/>25 km/h</p> | <p><b>Moderate<br/>Breeze</b></p> |
| <p><b>Force</b></p> <p><b>5</b></p> | <p><b>Speed</b></p> <p>19 knots<br/>35 km/h</p> | <p><b>Fresh<br/>Breeze</b></p>    |

**Force**

**6**

**Speed**

24 knots  
45 km/h

**Strong  
Breeze**

**Force**

**7**

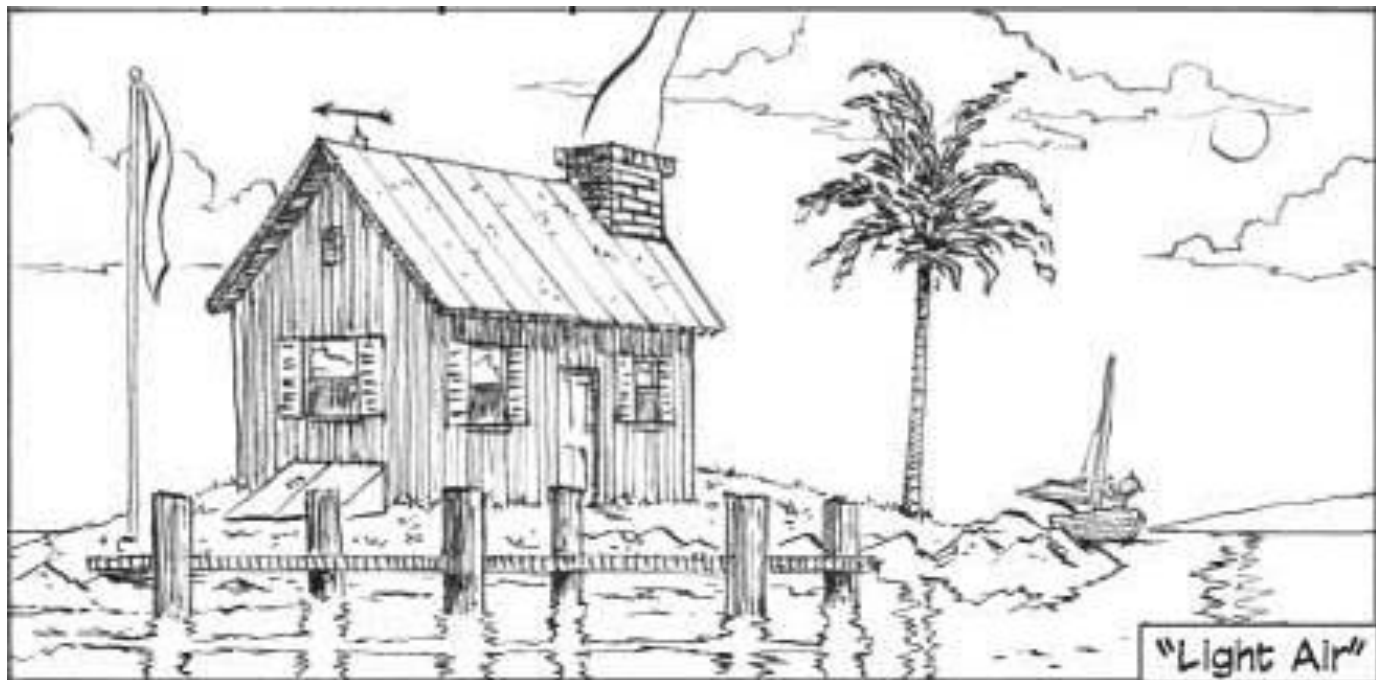
**Speed**

30 knots  
56 km/h

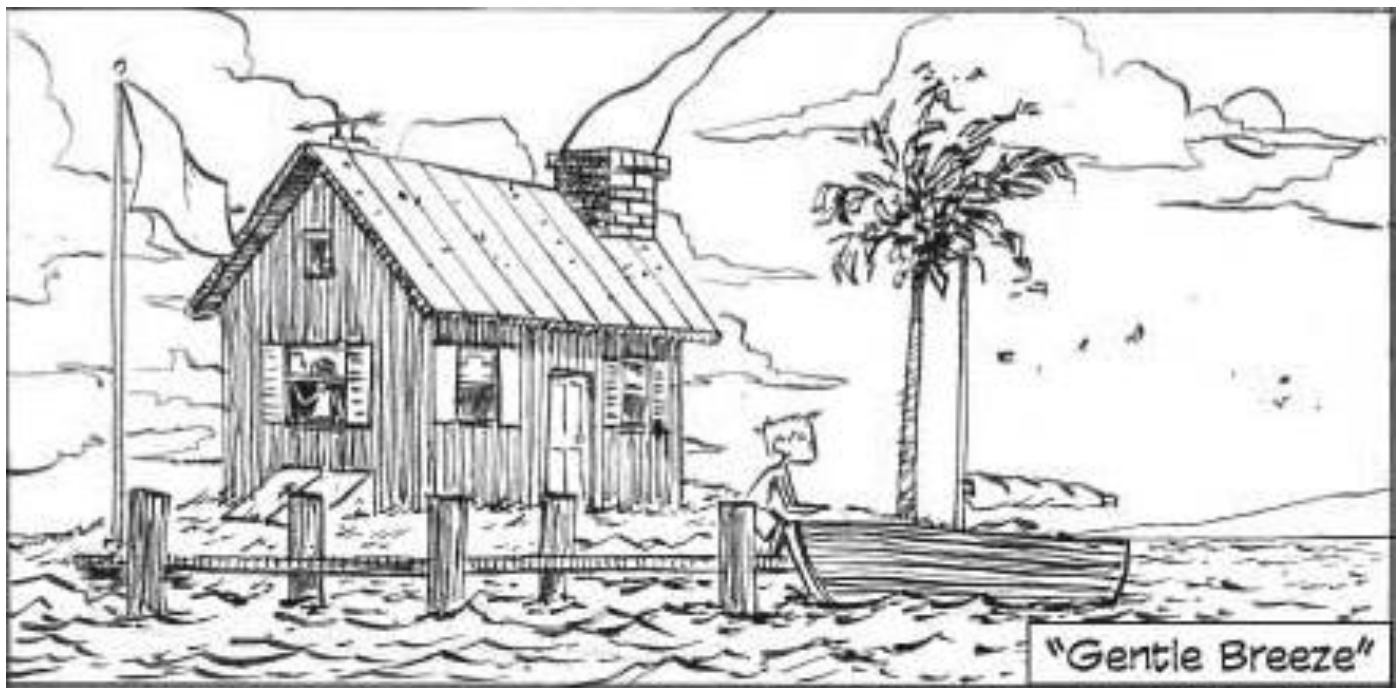
**Moderate  
Gale**

|             |   |
|-------------|---|
| <b>SEA</b>  | <ul style="list-style-type: none"> <li>• No wind</li> <li>• Sea like a mirror</li> </ul>  |
| <b>LAND</b> | <ul style="list-style-type: none"> <li>• Smoke rises straight up</li> </ul>   |
| <b>SEA</b>  | <ul style="list-style-type: none"> <li>• ripples</li> <li>• no foam crests</li> </ul>   |
| <b>LAND</b> | <ul style="list-style-type: none"> <li>• direction of wind shown by smoke, but not by wind vanes</li> <li>• smoke drifts gently</li> </ul>    |
| <b>SEA</b>  | <ul style="list-style-type: none"> <li>• small wavelets</li> <li>• crests have glassy appearance</li> </ul>                                   |
| <b>LAND</b> | <ul style="list-style-type: none"> <li>• wind felt on face</li> <li>• leaves rustle</li> <li>• ordinary weather vane moved by wind</li> </ul> |
| <b>SEA</b>  | <ul style="list-style-type: none"> <li>• large wavelets</li> <li>• crests begin to break</li> </ul>   |
| <b>LAND</b> | <ul style="list-style-type: none"> <li>• leaves and small twigs on trees move</li> </ul>  |

|             |   |
|-------------|---|
| <b>SEA</b>  | <ul style="list-style-type: none"><li>• small waves</li><li>• fairly frequent white horses</li></ul>                    |
| <b>LAND</b> | <ul style="list-style-type: none"><li>• dust and paper blows on the ground</li><li>• small branches move</li></ul>      |
| <b>SEA</b>  | <ul style="list-style-type: none"><li>• moderate waves</li><li>• many white horses are formed</li></ul>                 |
| <b>LAND</b> | <ul style="list-style-type: none"><li>• small trees start to sway</li><li>• wavelets form on inland waters</li></ul>    |
| <b>SEA</b>  | <ul style="list-style-type: none"><li>• large waves begin to form</li><li>• white foam crests are everywhere</li></ul>  |
| <b>LAND</b> | <ul style="list-style-type: none"><li>• large branches move</li></ul>   |
| <b>SEA</b>  | <ul style="list-style-type: none"><li>• sea heaps up</li><li>• white foam from breaking waves</li></ul>                 |
| <b>LAND</b> | <ul style="list-style-type: none"><li>• whole trees sway</li><li>• hard to walk</li><li>• umbrellas discarded</li></ul> |







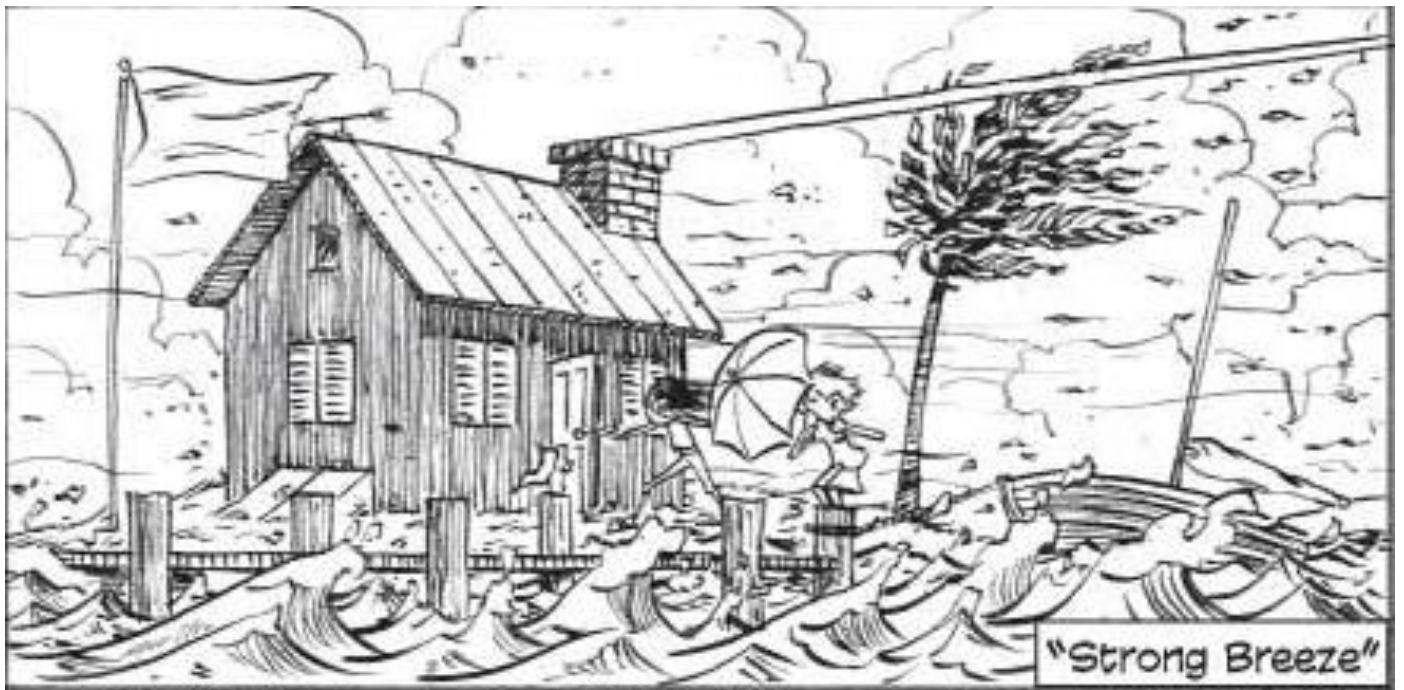
"Gentle Breeze"



"Moderate Breeze"



"Fresh Breeze"



"Strong Breeze"



"Near Gale"

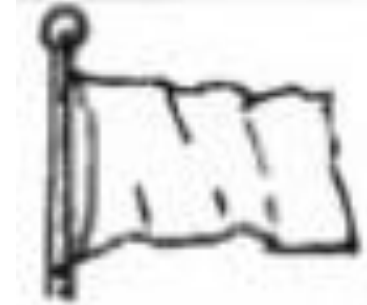
Flag hangs limp



Flag occasionally extends



Flag snaps



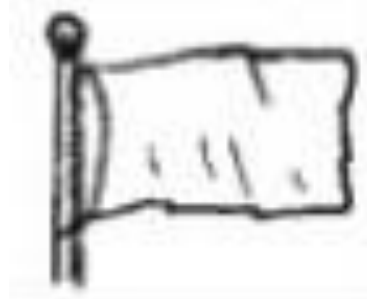
Flag hangs limp



Flag flaps



Flag extended



Flag stirs

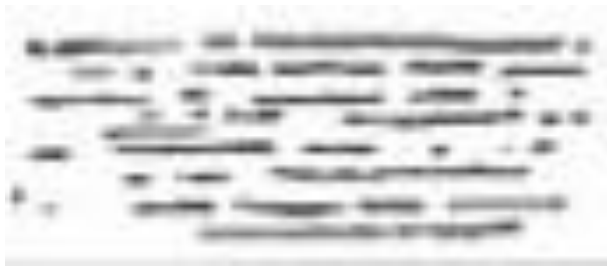


Flag ripples





Flat



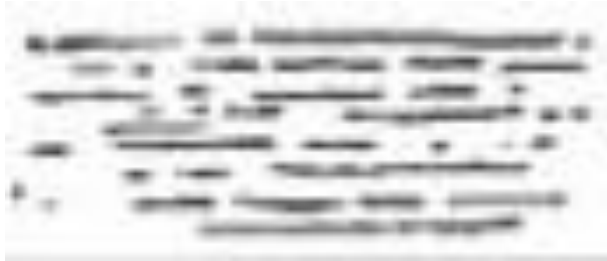
Large wavelets



Larger waves



Ripples



Small waves



Sea heaps up; white foam



Small wavelets



Moderate waves



The following Force 8 to Force 12 descriptions could be printed on a different colour card, so that they could be included or left out, depending on the age and capabilities of the scouts completing the matching activity:

|             |  |
|-------------|--|
| <b>SEA</b>  | <ul style="list-style-type: none"> <li>• moderate high waves</li> <li>• edges of crests begin to break</li> </ul>  |
| <b>LAND</b> | <ul style="list-style-type: none"> <li>• breaks twigs off trees</li> <li>• very hard to walk</li> </ul>  |
| <b>SEA</b>  | <ul style="list-style-type: none"> <li>• high waves</li> <li>• crests of waves begin to tumble</li> </ul>  |
| <b>LAND</b> | <ul style="list-style-type: none"> <li>• branches break</li> <li>• slight structural damage occurs</li> <li>• chimney pots and slates removed</li> </ul> |
| <b>SEA</b>  | <ul style="list-style-type: none"> <li>• very high waves</li> <li>• surface of sea takes on a white appearance</li> </ul>                                |
| <b>LAND</b> | <ul style="list-style-type: none"> <li>• trees blown down</li> <li>• houses damaged</li> </ul>   |
| <b>SEA</b>  | <ul style="list-style-type: none"> <li>• exceptionally high waves</li> <li>• sea covered with long white patches of foam</li> </ul>                      |
| <b>LAND</b> | <ul style="list-style-type: none"> <li>• widespread damage</li> </ul>  |

|             |  |
|-------------|--|
| <b>SEA</b>  | <ul style="list-style-type: none"> <li>• huge waves; air filled with spray</li> <li>• sea white horses with driving spray</li> </ul> |
| <b>LAND</b> | <ul style="list-style-type: none"> <li>• countryside is devastated</li> </ul>  |

|                              |                                     |                        |
|------------------------------|-------------------------------------|------------------------|
| <b>Force</b><br><br><b>8</b> | <b>Speed</b><br>37 knots<br>68 km/h | <b>Fresh<br/>Gale</b>  |
| <b>Force</b><br><br><b>9</b> | <b>Speed</b><br>44 knots<br>81 km/h | <b>Strong<br/>Gale</b> |

|                                      |  |                                 |
|--------------------------------------|--|---------------------------------|
| <p><b>Force</b></p> <p><b>10</b></p> | <p><b>Speed</b></p> <p>51 knots<br/>98 km/h</p>  | <p><b>Storm</b></p>             |
| <p><b>Force</b></p> <p><b>11</b></p> | <p><b>Speed</b></p> <p>59 knots<br/>110 km/h</p> | <p><b>Violent<br/>Storm</b></p> |
| <p><b>Force</b></p> <p><b>12</b></p> | <p><b>Speed</b></p> <p>19 knots<br/>118 km/h</p> | <p><b>Hurricane</b></p>         |



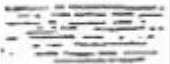


















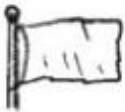

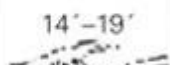
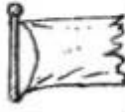

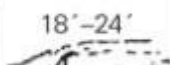


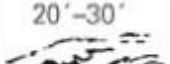






"Violent storm"



"Hurricane"

| FORCE    | MPH<br>(KNOTS)<br>★ | PRESSURE<br>LBS./<br>SQ. FT. | DESC.           | WAVE<br>PATTERN  | WAVE<br>HEIGHTS  | EFFECTS<br>ON LAND   | SMALL<br>CRUISER  |
|----------|---------------------|------------------------------|-----------------|--|--|--|---|
| Force 1  | 1-3<br>(1-3)        | .004-.036                    | Light airs      | Ripples  | Flat<br>      | Flag hangs limp, windvanes do not respond.<br>                      | Use motor. Steerageway possible; full main and large drifter.<br>          |
| Force 2  | 4-7<br>(4-6)        | .064-.196                    | Light breeze    | Small wavelets   | 0-5'<br>      | Flag stirs, leaves rustle, wind felt on face, wind vanes move.<br>  | Boat begins to heel, full main and drifter or #1 genoa.<br>                |
| Force 3  | 8-12<br>(7-10)      | .256-.576                    | Gentle breeze   | Large wavelets   | 5'-2'<br>     | Flag occasionally extends, leaves and twigs in constant motion.<br> | Comfortable sailing. Noticeable heeling; full main and #1 genoa.<br>       |
| Force 4  | 13-18<br>(11-16)    | .676-1.29                    | Moderate breeze | Small waves; numerous whitecaps                                | 2'-4'<br>     | Flag flaps, small branches move, dust and paper raised.<br>         | Great sailing. Boat making speed. Full main and #1 genoa.<br>              |
| Force 5  | 19-24<br>(17-21)    | 1.44-2.30                    | Fresh breeze    | Moderate waves; many whitecaps; some spray                     | 4'-8'<br>     | Flag ripples, small leafy trees begin to sway.<br>                  | Leeward rail near water. Single reef in main and #2 genoa.<br>             |
| Force 6  | 25-31<br>(22-27)    | 2.5-3.84                     | Strong breeze   | Larger waves; whitecaps everywhere; more spray                 | 8'-13'<br>    | Flag snaps, large branches in motion, whistling in wires.<br>       | Sailing becomes strenuous. Second reef in main and working jib.<br>        |
| Force 7  | 32-38<br>(28-33)    | 4.09-5.77                    | Moderate gale   | Sea heaps up; white foam in streaks                            | 12'-15'<br> | Flag extended, whole trees in motion.<br>                          | Progress to windward impossible. Three reefs in main and working jib.<br> |
| Force 8  | 39-46<br>(34-40)    | 6.08-8.46                    | Fresh gale      | Waves begin to heighten and roll                               | 14'-19'<br> | Twigs and small branches broken, difficult to walk.<br>           | Limit of boat's sailing ability. Use motor or seek shelter.<br>          |
| Force 9  | 47-54<br>(41-47)    | 8.83-11.6                    | Strong gale     | High waves; dense streaks of foam; spray may reduce visibility | 18'-24'<br> | Slight structural damage occurs.<br>                              | Run under bare poles, lie ahull, or sit to sea anchor.<br>               |
| Force 10 | 55-63<br>(48-55)    | 12.1-15.8                    | Whole gale      | Very high rolling waves with long overhanging crests           | 20'-30'<br> | Trees broken or uprooted, considerable damage.<br>                | Swear oaths you will not keep once back on land.<br>                     |



|          |  |             |                        |
|----------|--|-------------|------------------------|
| <b>0</b> | <b>SPEED</b><br>0 Knots<br>0 mph<br>0 km/h | <b>SEA</b>  | Sea like a mirror      |
|          |  | <b>LAND</b> | Smoke rises vertically |

"Calm"

|          |  |             |   |
|----------|--|-------------|---|
| <b>1</b> | <b>SPEED</b><br>1-3 Knots<br>1-3 mph<br>1-6 km/h | <b>SEA</b>  | Ripples with the appearance of scales are formed, but without foam crests |
|          |  | <b>LAND</b> | Direction of wind shown by smoke but not by wind vanes                    |

"Light Air"

|          |   |             |  |
|----------|---|-------------|--|
| <b>2</b> | <b>SPEED</b><br>4-6 Knots<br>4-7 mph<br>7-11 km/h | <b>SEA</b>  | Small wavelets. Crests have a glassy appearance and do not break |
|          |   | <b>LAND</b> | Wind felt on face; leaves rustle; ordinary vane moved by wind    |

"Light Breeze"

|          |  |             |  |
|----------|--|-------------|--|
| <b>3</b> | <b>SPEED</b><br>7-10 Knots<br>8-12 mph<br>12-19 km/h | <b>SEA</b>  | Large wavelets. Crests begin to break. Foam of glassy appearance.  |
|          |  | <b>LAND</b> | Leaves and small twigs in constant motion; wind extends light flag |

"Gentle Breeze"

|          |  |             |  |
|----------|--|-------------|--|
| <b>4</b> | <b>SPEED</b><br>11-16 Knots<br>13-18 mph<br>20-29 km/h | <b>SEA</b>  | Small waves, becoming longer, fairly frequent white horses |
|          |  | <b>LAND</b> | Raises dust and loose paper; small branches are moved      |

"Moderate Breeze"

|          |  |             |   |
|----------|--|-------------|---|
| <b>5</b> | <b>SPEED</b><br>17-21 Knots<br>19-24 mph<br>30-39 km/h | <b>SEA</b>  | Moderate waves, taking a more pronounced long form; many white horses are formed. |
|          |  | <b>LAND</b> | Small trees in leaf begin to sway; wavelets form on inland waters                 |

"Fresh Breeze"

|          |  |             |  |
|----------|--|-------------|--|
| <b>6</b> | <b>SPEED</b><br>22-27 Knots<br>25-31 mph<br>40-50 km/h | <b>SEA</b>  | Large waves begin to form; the white foam crests are more extensive everywhere.        |
|          |  | <b>LAND</b> | Large branches in motion; whistling heard in telegraph wires; umbrellas use difficult. |

"Strong Breeze"

|          |  |             |  |
|----------|--|-------------|--|
| <b>7</b> | <b>SPEED</b><br>28-33 Knots<br>32-38 mph<br>51-62 km/h | <b>SEA</b>  | Sea heaps up and white foam from breaking waves starts to blow in streaks with wind. |
|          |  | <b>LAND</b> | Whole trees in motion; umbrellas discarded; inconvenience felt when walking          |

"Near Gale"

|          |  |             |   |
|----------|--|-------------|---|
| <b>8</b> | <b>SPEED</b><br>34-40 Knots<br>39-46 mph<br>63-75 km/h | <b>SEA</b>  | Moderate high waves of greater length; edges of crests begin to break into spindrift. |
|          |  | <b>LAND</b> | Breaks twigs off trees; generally impedes progress                                    |

"Gale"

|          |  |             |  |
|----------|--|-------------|--|
| <b>9</b> | <b>SPEED</b><br>41-47 Knots<br>47-54 mph<br>76-87 km/h | <b>SEA</b>  | High waves. Crests of waves begin to tumble and roll over. Spray may affect visibility |
|          |  | <b>LAND</b> | Slight structural damage occurs; chimney pots and slates removed                       |

"Strong Gale"

|           |   |             |  |
|-----------|---|-------------|--|
| <b>10</b> | <b>SPEED</b><br>48-55 Knots<br>55-63 mph<br>88-102 km/h | <b>SEA</b>  | Very high waves. Surface of the sea takes on a white appearance. Visibility affected |
|           |   | <b>LAND</b> | Seldom experienced inland; trees uprooted; considerable structural damage occurs     |

"Storm"

|           |  |             |   |
|-----------|--|-------------|---|
| <b>11</b> | <b>SPEED</b><br>56-63 Knots<br>64-72 mph<br>103-117 km/h | <b>SEA</b>  | Exceptionally high waves. The sea is covered with long white patches of foam. |
|           |  | <b>LAND</b> | Very rarely experienced on land; accompanied by widespread damage.            |

"Violent storm"

|           |   |             |   |
|-----------|---|-------------|---|
| <b>12</b> | <b>SPEED</b><br>over 63 Knots<br>over 72 mph<br>over 117 km/h | <b>SEA</b>  | Huge waves; air is filled with foam and spray. Sea white with driving spray; visibility very seriously affected |
|           |   | <b>LAND</b> | Countryside is devastated   |

"Hurricane"