

# DICTIONARY OF AVIATION

ROBERT MORRIS PIERCE

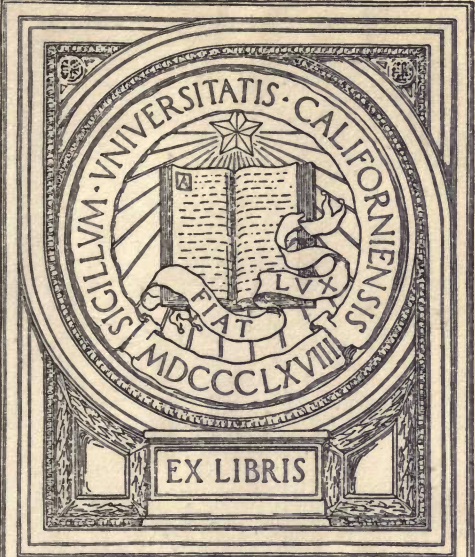
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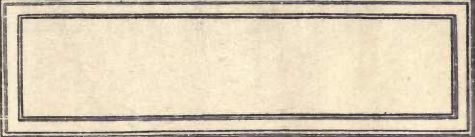
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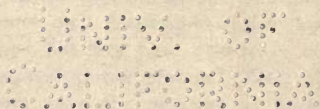




Dictionary  
of  
**Aviation**

By  
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*Author of Dictionary of Hard Words; Problems of Number and Measure; editor of International French-English and English-French Dictionary; Ideofonic Texts for Acquiring Languages; etc.*

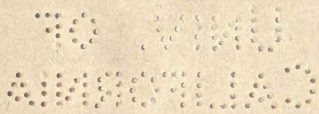


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## PREFACE

**Scope.** In the making of this dictionary the attempt has been to produce a word-book for the use of persons interested in aviation from any of the various points of view from which it may be contemplated, or from any of the several starting-points from which it may be pursued. The subject itself is indeed somewhat new, and not yet highly differentiated. Aviation as a whole involves in some degree not only various other arts, such as the arts of mechanical construction and manipulation; but various sciences, such as physics, mathematics, mechanics, meteorology, climatology, astronomy, geography, and ornithology; as well as various professions and occupations, such as transportation, navigation, sport, politics, law, warfare, literature, etc. Airships have not only to be constructed and operated, but they have also to be considered as factors in a world-transforming process. Their gauzy wings cast strange shadows upon the pathway of humanity. No man can tell just how and when and where these airy mechanisms may metamorphose the face of the globe, modify the structure and distribution of the human race, and unravel or weave anew the social fabric. The scope of this book is therefore wider than might at first thought seem advisable.

Aeronautics has often been considered as distinct from, or larger than, and embracing, aviation. When, about three years ago, this dictionary was first (in great part) compiled, and announced as being in preparation, I called it a Dictionary of Aeronautics. Since that time, however, the word *aviation* has come into very wide use; and as the book is primarily in-

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tended for the use of persons interested in the more prominent of these two subjects, and as the more prominent of them seems to be dynamic flight or *aviation* in the narrower or more 'proper' sense, rather than *aeronautics* or aerostation and air-sailing generally, in the regular old-fashioned sense, I do not now hesitate to call the book a Dictionary of Aviation. To put the thing in other words, aeronautics seems to me to be getting to be considered merely as a side-show or old-fashioned aspect of aviation, and I therefore make this book primarily for the aviators and their kindred, rather than for the aeronauts and balloonists. A further reason for the adoption of this title is the fact that the word *aviation* has itself come to be used sometimes as the more inclusive term, embracing aeronautics and ballooning, as well as dynamic flight; and it seems to me likely that this inclusive sense of the word *aviation* will become quite common, especially as, historically, the attempts at dynamic flight seem to antedate, or at least predominate over, the idea of aerostation.

As there apparently exists no dictionary of meteorology, and as the subject is of great importance in aviation, the number of meteorologic terms in this dictionary is larger than might otherwise be necessary.

Aviation will most likely give rise to a group of arts and industries of titanic proportions and become a factor of prodigious power in the evolution of mankind. For this reason it is interesting to show its terminology somewhat fully. Hence the vocabulary of this dictionary includes words useful to writers and translators of books and articles on aviation as well as to aviators themselves. It is the undifferentiated vocabulary not alone of a great manufacturing industry, a great sport, a great military factor; but also of a new mode of life of mankind: of romance, and travel, and fancy.

Aviation lends itself with peculiar ease not only to imaginative and poetic literature, but to sociologic speculation, and I merely record the words and phrases which I have found in actual use in the literature of aviation and of certain phases of all these other closely allied subjects.

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Most technical glossaries and dictionaries are blunderingly made. They are often characterized by \*(1) meagerness of vocabulary; \*(2) paucity, and absence of classification, of phrases; \*(3) lack of alternate spellings; \*(4) lack or inaccuracy of pronunciations; (5) lack of etymologies; \*(6) inaccuracy of definitions; \*(7) inadequate cross-references; \*(8) defective classification of the parts of speech, and differentiation of the senses, of the title-words; \*(9) badness of typography; \*(10) highness of price; (11) lack of quotations from, or references to, the literature of the subject, in support of the usage recorded.

In the present volume I have tried to overcome the deficiencies marked above with a star (\*). Further improvements, at least from some points of view, would be the introduction of etymologies and references. But altho I have one or more good references or quotations from reputable books or periodicals for practically every word, and every sense of every word, in the book, I have withheld them all, as well as all etymologies, encyclopedic features, and pictorial illustrations, from the present edition.

I have been fortunate in securing certain specific criticisms, especially among the meteorologic terms, from the beginning of the book to about the word *governing-plane*, from A. Lawrence Rotch, founder of the meteorologic observing station at Blue Hill, near Boston, Massachusetts, and professor in Harvard University.

**Vocabulary.** The vocabulary of this dictionary is thus necessarily, from the scope of the subject treated, quite an extensive one. Besides the multitude of words used in the nomenclatures of the above subjects, in so far as they relate to aviation, many words and phrases are included which may, on the one hand, seem bizarre or fanciful (*rocket-rising*, adj.; *scareship*, n., etc.), and, on the other hand, self-explanatory (*air-balloon*, *aviation-meet*, etc.). In such a new subject, however, what seems bizarre today may not seem bizarre tomorrow, even to the same individual; and what seems, when recorded, self-explanatory or matter-of-course, is often, in

reality, neither. Besides, the fact that a word exists, is, in itself, interesting. A glance thru a well-arranged vocabulary often suggests a useful term or expression whose existence would not otherwise be suspected.

Sometimes simple and compound words which one would suppose to be in common use, do not exist in actual usage. What seems to be the obvious meaning or spelling or pronunciation of a word is often not really the true one. It is often, on the contrary, quite difficult to get at the facts of the occurrence, meanings, spellings, and pronunciations of words, even by dint of much study. Then, too, various readers have various degrees of intelligence, and various habits. Some use a dictionary often, others seldom. Some are natives, others are foreigners. Some are aviators, others are writers. Moreover, it is apt to be just those persons who consider these things so very obvious after they are explained, who are apt to make the worst blunders in using words.

Nevertheless, many nonce-words, temporary combinations, etc., such as *aeroplanitis*, *corkscrew* (verb), *aero-neck*, *aviation-committee*, *aviation-goer*, *barometer-reading*, *raviator*, are excluded.

**Spellings.** The spellings or word-forms given in title-place are in the main those which are most likely to be looked for by the general reader. Under each title-word are given in brackets the other current spellings of the word. In some cases mention is also made of spellings no longer in current use. These are confined mainly to obsolescent forms and forms valuable because more nearly fonetic than those in current use. No attempt has been made to record all the cases in which separate words or solid words are often or generally used instead of hyphenated forms (*wing warping* for *wing-warping*; *thunderstorm* for *thunder-storm*, etc.); or all cases in which nouns have also assumptiv or adjectival uses.

Cognate forms having the same meaning as the title-word but differing from it in pronunciation, are classified as 'synonymous cognates.'

When a title-word is of two or more parts of speech, or when two or more title-words are spelt just alike but are of different parts of speech, or of different origin, or are for any other reason treated separately, the oldest part of speech, or the oldest title-word, is placed first, the others following somewhat in the order of their first known appearance in the literature of the subjects treated in this book.

**Definitions.** When several definitions are given, their order is in the main historical, the oldest sense being placed first, with the more recent senses following in the sequence of their temporal development. Fortunately this sequence is often closely identical with the sequence of their logical development.

**Pronunciation.** The pronunciation of the title-words is in every case indicated by a full respelling. Under each title-word are given, in somewhat normalized or universalized form, its most acceptable or proper natural pronunciation or pronunciations current today in the English-speaking world at large.

Where several pronunciations are given without classification, the forms following the first form are usually to be considered as individual, local, or functional variants in good usage.

**Phonetic Notation.** The sounds of speech are noted in this dictionary by means of a system of letters which, for convenience, are arranged in the order g, k, etc. This system of letters, so arranged, I have named *gammakap* (from *gamma* and *kappa*), by analogy to the word *alfabet*, which denotes a system of letters arranged in the order a, b (or alfa, beta), etc. The system is a modified, amplified, and improved form of the international alfabet which sprang into special prominence about the year 1885 thru the efforts of Paul Passy, of Paris, and others, and which has since that time been fostered and developed by the International Phonetic Association (20 rue de la Madeleine, Bour-la-Reine, Seine, France).

THIS amplified form of the roman alphabet used in the re-spellings of the title-words throught this dictionary has been undergoing a most remarkable advancement during the last quarter of a century. It is by far the most diversely used and highly perfected means as yet devised for indicating simply and accurately, the pronunciation of all languages in any popular world-wide system. It will doubtless undergo further modification of detail as time goes on, but the principles which have guided the selection of its letters from the alphabets of the world, its flexibility, and the extent and manner of its present use, bespeak its capacity for development and foretell its universality. It has already been applied to several hundred languages and dialects and is now in active competition with local and old-fashioned systems of fonetic spelling, not only in dictionaries and grammars, and textbooks on fonetics, but also in general literature.

THIS system of fonetic notation is in general accord with the systems used in Murray's New English Dictionary (Oxford), Wright's English Dialect Dictionary (Oxford), Funk's Standard Dictionary (New York), and a large number of bilingual dictionaries. It is similar to the alphabets advocated by the American Filological Association, the International Fonetic Association, by committees of the Modern Language Association and the National Educational Association, and used by filologists the world over. It is based upon the ordinary spelling of all the languages of the world which are written in roman letters: as, for example, English, German, French, Italian, Spanish, Latin. More different new books are using this system than all other systems of fonetic notation combined. This feature tends to render the pronunciations in the present volume equally servisable to aviators and other persons of all nationalities in all parts of the world.

Below are two tables. The first table shows the more important letters of the universal gammakap, arranged so as to give some idea of the place and manner of articulation of the sound or group of sounds which each symbol represents. Be-

sides the symbols (letters) for indicating the basic sound-qualities, which constitute the gammakap proper, this universal system includes, of course, other symbols (modifiers), for indicating voicelessness, nasality, and whisper, and the various degrees of length, stress, and pitch. The second table shows the letters of the English gammakap, with examples of words containing the sounds which the letters represent. In a few cases, examples from foreign languages have been added, to show the occurrence of practically the same sounds in those tongues.

UNIVERSAL GAMMAKAP

Letters inclosed in curvs ( ) indicate sounds made partly in the position where their letters are so inclosed, but mainly in the position where the same letters appear without curvs.

ORGANS	Throat	Soft and Hard Palate			Teeth		Lips	
		Back	Central	Front	or Gums	and Lip		
Sibilants	Wholly closed, then opened	ʔ	ç ç ç k g k	g k	j ç	d t d t	b p	Rounded
	Struck or trild	ç	ʒ ʒ			ʒ ʒ ʒ ʒ		Rounded
	So close as to produce friction	h h h	ʒ ʒ ç x		j ç	ʒ ʒ ʒ ʒ ʒ ʒ ʒ ʒ ʒ	v f v f w w ç ç	Rounded
Sonorants	Nose-passage open		ç ç	ʒ ʒ	n n	μ μ	m μ	Rounded
	Open at sides (of tongue) only		ʒ ʒ	ʒ ʒ	ʒ ʒ	ʒ ʒ		Rounded
	Open at top (of tongue) only					ʒ ʒ		Rounded
Resonants	High	Close	u	y	i			Rounded
		Open	w	ɪ	ɪ			Rounded
	Mid	Close	v	ə	e			Rounded
		Open	ɔ	ə	e			Rounded
	Low	Close	ɔ	ə	ə			Rounded
		Open	ɔ	ə	ə			Rounded

## ENGLISH GAMMAKAP

## Stridents

*Shut*

- g good (gʊd), linger ('lɪŋgəz), wriggle ('rɪgəl), gig (gɪg).  
 k cook (kʊk), kick (kɪk), bunk (bʌŋk), tickle ('tɪkəl), keep (ki:p).
- d deed (di:d), wind (waɪnd), widen ('waɪ-dn), meddle ('mɛdəl), bold (bɔ:ld).  
 t taught (tɔ:t), hint (hɪnt), whiten ('waɪ-tn), belt (belt), whittle ('wɪtl̩).
- b bib (bɪb), thimble ('θɪmbəl).  
 p peep (pi:p), limp (lɪmp).

*Fricativ*

- h who (hu), house (haʊs), hit (hɪt).
- j ye (ji), you (ju), dew (dju); German jung (jʊŋ).  
 ʒ cure (kɜ:z), pure (pɜ:z); German ich (ɪç).
- r dry (draɪ), laundry ('leɪn-dri).  
 r try (tri), pastry ('peɪ-stri).
- ð this (ðɪs), heathen ('hi-ðən), with (wɪð); Spanish todos ('tɔðɔs).  
 θ thin (θɪn), myth (mɪθ), width (wɪðθ); Spanish gracias ('grasias).
- ʒ azure ('æzəz), judge (dʒʌdʒ); French je (ʒə); Italian già (dʒa).  
 ʃ shoe (ʃu), chew (tʃu); sh (ʃ:); French chic (ʃik); German Schuh (ʃu:); Italian cinque ('tʃɪŋ-kwe); Spanish mucho ('mutʃɔ).
- z zeal (zi:l), rose (zɔ:z), his (hɪz).  
 s sister ('sɪstəz).
- v vivid ('vɪvɪd), of (ɒv).  
 f fife (faɪf).
- w win (wɪn), dwindle ('dwaɪndl̩).  
 w when (wen), quick (kwɪk), twine (twaɪn).

**Sonorants***Nasal*

- ŋ long (lɔ:ŋ), longer ('lɔ:ŋ-gəz), bank (bæŋk).  
 n nun (nʌn), gardener ('gɑ:z-dn-əz), cardinal ('kɑ:z-dn-ɪ),  
 hint (hɪnt).  
 N snare (sne:z).  
 m maim (meem), triumph ('trʌi-əmf), limp (lɪmp).  
 M humph (mm), smear (smɪ:z).

*Oral*

- l lull (lʌl), cardinal ('kɑ:z-dn-ɪ), tattle ('tætl).  
 z play (plee), slow (slɔɔ).  
 z red (zɛd), ear (ɪ:z), earth (ɜ:θ), very ('vezi).  
 s free (fɜi), throw (θɔɔ).

**Resonants***High-close*

- u whoever (,hu'evəz), shoe (ʃu), unit ('ju-nɪt), cower  
 ('kau-əz); French tout (tu), tour (tu:ɾ); German Zu-  
 fall ('tsu:fal).  
 i react (zi'ækt), eat (ɪt), scoriae ('sko:-zi:i), buoyant ('bei-  
 ənt); French ni (ni), pire (pi:ɾ); German Lied (li:t).

*High-open*

- o full (fʊl), poor (pɔ:z), shoe (ʃu), unite (jʊ'nait); Ger-  
 man Muff (mʊf).  
 ɪ pity ('pɪtɪ), hated ('hæ-tɪd), axis ('æksɪs), foreign  
 ('fɔ:ɪn), carriage ('kærɪdʒ), senate ('senɪt).  
 ɪ it (ɪt), ear (ɪ:z), eat (ɪt), high (haɪ), why (waɪ), boy  
 (bɔɪ); German bin (bɪn).

*Mid-close*

- o poetic (pə'etɪk), note (nɔt); French pot (po), côte  
 (ko:t); German Sohn ('zɔ:n), Italian leone (le'o:-ne).  
 ə over ('ɔv-vəz), sofa ('sɔf-fə), again (ə'gen), truism ('trʊ-  
 ɪzəm), taken ('tæ-kən), chocolate ('tʃɔkə-lət), chest-  
 nut ('tʃɛsnət), tackle ('tækəl).  
 e aereal (e'ɪ:-zi-əl), gate (geet); French été (e'te); Ger-  
 man Reh (ɛ:); Italian pere ('pe:-re).

*Mid-open*

- ʌ *but* (bat), *under* ('ʌndəz).  
 ɔ *door* (dɔ:z), *obey* (ɔ'beɪ), *note* (nɔt); French *note* (nɔt), *tort* (tɔ:r); German *Gott* (gɔt).  
 ɛ *bed* (bed), *bear* (be:z), *gate* (geet), *example* (eg'zɑ:m-pəl); French *fait* (fɛ), *tête* (tɛ:t); German *Bär* (be:r), *Bett* (bet); Italian *tempo* ('tɛm:pɔ), *bene* ('be:ne).

*Low-close*

- ɔ *autumnal* (c'tʌmnl), *law* (lɔ:); Italian *poco* ('pɔ:kɔ).  
 ʊ *fur* (fɜ:z), *turtle* (tɜ:tɫ), *hurry* ('hɜ:ɹɪ).  
 æ *cat* (kæt).

*Low-open*

- ɑ *far* (fɑ:z), *barter* ('bɑ:təz), *cow* (kaʊ), *why* (waɪ),  
 French *pas* (pa), *pâte* (pa:t); German *Mal* (ma:l), *ab* (ap), *bei* (baɪ); Italian *amare* (a'ma:re).  
 ɒ *hot* (hɒt), *horn* (hɔ:zn), *boy* (bɔɪ).  
 ɑ *ask* (ɑ:sk), *high* (haɪ); French *patte* (pat), *part* (pɑ:r).

**Compound Sounds.** Among the consonants attention may be called to the affricate *dʒ*, as in *judge* (dʒʌdʒ), and its voiceless mate *tʃ*, as in *church* (tʃɜ:rtʃ).

Among the vowels may be noted eight normal rising diphthongs, as follows: *ou*, as in *fool* (fuʊl), *ii*, as in *see* (siɪ); *oo*, as in *note* (nɔt); *ee*, as in *gate* (geet); *au*, as in *now* (naʊ); *ai*, as in *wise* (waɪz); *ɔɪ*, as in *boy* (bɔɪ); *aɪ*, as in *kite* (kaɪt). The last four diphthongs (*au*, *ai*, *ɔɪ*, *aɪ*), when followed by a syllable beginning with a vowel, usually become *au*, *ai*, *ɔi*, *ai*, as in *tower* ('tau-əz), *quiet* ('kwai-ət), *buoyant* ('bɔi-ənt), *buyer* ('baɪ-əz).

There are also four normal falling diphthongs, after [i], [ɹ], [v], [f], as follows: *iu*, as in *purview* ('pɜ:liu), *diffidence* ('dɪflɪu-əns), *feverfew* ('fri-vəz,fiu); *io*, as in *emolument* (ɪ'mɒliu-mənt); *iɔ*, as in *lure* (liu:z); *iə*, as in *behavior* (bi'hæ-viəz).

Besides these sixteen normal diphthongs, there is the one normal triphthong, *iou*, after [i], [v], and [f], as in *lieu* (fiu), *view* (viu), and *few* (fiu).

**Duration.** Extra length, or duration, of elementary



sounds, especially in the case of vowel sounds, is indicated by the length-mark (:) placed just after the letter representing the sound in question, as in *calm* (ka:m), *law* (lɑ:), *air* (e:z), *fan-blast* ('fæn,blɑ:st).

**Syllabication and Stress.** A syllable is a prominence of sonorousness or loudness: a wave, as it were, of sonority, rising above the general level of speech.

A syllable may be called *static* when at its inception the force of the breath-impuls remains the same as it was just before, or changes only at the same rate at which it was before changing.

A syllable may be called *dynamic* when at its inception the force of the breath-impuls is suddenly increased. The first or initial syllable of any utterance is of course a dynamic syllable.

Between a dynamic syllable and a static syllable, as in the word *better* ('betəz), mentioned above, or between two contiguous static syllables, as in the word *logically* ('lɒdʒɪkə-lɪ), there is no point of division lying between two sounds of different quality. In so far as there exists any definite point of syllabic division in such cases, it must always be located within the limits of a sound of minimum sonority. In the word *better*, this sound is the [t]; in *logically*, the [d] or the [k]. These sounds belong to neither syllable more than to the other, but each one of them constitutes a nexus in which the two syllables meet.

Every dynamic syllable, on the other hand, must always have a definite starting-point, located either (1) at the beginning of the word or utterance, as, in the word *better* ('betəz), at the beginning of the [b]; (2) between two medial sounds of different quality, as, in the word *baker* ('beɪ-kəz), at the beginning of the [k], and, in the word *coolie* ('kʊlɪ), at the beginning of the [l]; or (3) within the limits of some medial sound which, were there no new breath-impuls, would be a single sound, as, in the word *rat-trap* ('zæt,tɹæp), at the beginning of the second [t], and, in the word *coolly* ('kʊlɪ-lɪ), at the beginning of the second [l]. When a (second) new dy-

dynamic syllable or breath-impuls thus begins within a sound, the sound is called double or geminated, and is, throughout this dictionary, represented (as here) by two separate letters.

When, as is always the case at the inception of a static syllable, the intersyllabic trough lies within the limits of a single sound (of minimum sonority), as, in the word *better* ('betəz), within the [t], the letter representing this sound of minimum sonority sufficiently indicates the position of the intersyllabic trough. It is neither necessary nor beneficial further to indicate its position, for unless in uttering the word a new breath-impuls is gratuitously introduced, or some error made in the sounds themselves, the correct pronunciation will necessarily result.

When, on the other hand, as is always the case at the inception of a dynamic syllable, the intersyllabic trough lies just before a certain sound, as before the [b] in *better* or before the [b] or the [k] in *baker*, it is often most necessary and beneficial to indicate its position. Throughout all the pronunciations in this dictionary this intersyllabic trough is, except initially or where already indicated by a stress-mark (see just below, in the paragraph on *Stress*), indicated by means of a hyphen or impuls-mark (-).

**Stress.** Stress, or dynamic accent, is the relative emphasis with which a sound, syllable, or sequence of syllables is uttered. It is the intensity or degree of energy characterizing a breath-impuls used in speech. It is the force or vigor imparted to any given utterance by the breath.

In this dictionary the starting-point of every syllable having chief stress (that is, having the primary degree of force of a new or reinforced breath-impuls) is always indicated by means of a special symbol, the chief stress-mark ('), placed just before the stressed syllable; and the starting-point of every syllable having secondary stress is, wherever practicable, indicated by means of the secondary stress-mark (,) placed just before the stressed syllable. The starting-points of other non-initial dynamic syllables having only tertiary, quaternary, or other weak stress, are left unmarked except by the hyphen or

general symbol of reinforced breath-impuls (-), as described above in the paragraph on *Syllabication* (page 12).

**Abbreviations and Signs.** Abbreviations are used only for the names of the parts of speech.

**LIST OF ABBREVIATIONS**

<i>adj.</i>	adjectiv	<i>pl.</i>	plural
<i>adj.-pron.</i>	adjectiv-pronoun	<i>pron.</i>	pronoun
<i>adv.</i>	adverb	<i>n.</i>	noun
<i>conj.</i>	conjunction	<i>noun-pron.</i>	noun-pronoun
<i>interj.</i>	interjection	<i>v.</i>	verb

In illustrativ frases, as under the title-word *trim*, the title-word, where it occurs in the sense illustrated, is markt by means of a star or asterisk (\*) just preceding the word, in order to aid the reader in seeing it or in identifying it.

**Spelling Reform.** The reformation of spelling presents itself under three modes: simplified spelling, clarified spelling, and fonetic spelling. Simplified spelling and clarified spelling are alike in being but amendments of the current orthograpy, while fonetic spelling is a relativly independent system of orthograpy based upon pronunciation. All three of these modes of refermd spelling are used to a certain extent in this dictionary.

**Simplified Spelling.** The current spelling may be simplified to some extent by omission of silent letters, by the amendment of certain glaring irregularities, and so on. This is the method used by the Simplified Spelling Board (1 Madison Avenue, New York) and the Simplified Spelling Society (44 Great Russell Street, London, W. C., England).

Simplified spellings are used in the definitions of this dictionary largely on their merits as media thru which to help the reader easily to grasp the pronunciation of the words. Besides most of the forms listed by the Spelling Board, I have occasionally used forms such as *giv*, *liv*, *impuls*, *servis*, etc. Where simplified spellings would on any account fail of this object and render the text unduly obscure, their use has often

been avoided. In the case of the word *fugoid*, which is used in the text in this form (simplified initially), the simplified form is, for the reader's convenience, given in title-place, with a cross-reference to the more conventional spelling (*phugoid*).

I insert the simpler forms among the variant spellings in this dictionary not solely because they are advocated by the Board and others, but because many of them either have long existed or do now exist to a considerable extent in current use in literature; and also because almost all of them are either in accord with what I consider to be a scientifically practicable system of standardized fonetic orthography, such as is used in the re-spellings given in this book to indicate pronunciations and is, in my opinion, destined eventually to supersede the current English cacegraphy.

The following are the rules governing the simplifications contained in the list of about 3300 words published by the Simplified Spelling Board on March 6, 1909 (Circular No. 23). Aside from a few slight changes in the wording, some minor adjustments necessitated by a more accurate marking of the pronunciations, etc., and one additional example under Rules 12 and 17, the rules and examples are given exactly as published by the Board.

To facilitate acceptance it was deemed expedient by the Board in some cases to restrict the rule to a limited number of the words in a given class. In these cases the expression 'Restricted Rule' has been used. Any one who chooses to extend the rule at once to all the words of a given class is of course free to do so. After each rule is given a list, either of all the words affected (if they are not many), or of a few examples of the large number of words covered by the rule. In the latter case 'Examples' is prefixed, and 'etc.' is added. If the Board's official recommendation applies to all words containing the letter, sequence of letters, or suffix, affected, in the pronunciation indicated, the expression 'General Rule' is used. For some small classes and for isolated amendments no rule is given.

**RULES OF SIMPLIFIED SPELLING**

1. **ae, æ** or **e**, not final. General Rule: Choose **e**. Examples: *anesthetic, chimera, era, esthetic, ether, medieval, paleontology*, etc.

2. **-bt**, with **b** silent. General Rule: Omit **b**. *det, dettor, dout, indetted, redout, redouted, redoutable*.

3. **ea**, pronounced [e]. General Rule: Drop **a**. Examples: *hed, spred, sted, tred, thret, helth, welth, dremt, ment, plesant*, etc.

4. **ea**, pronounced [a], before **r**. General Rule: Drop **e**. *karken, hart, harth*.

5. **-ed** or **'d**, pronounced [d]. General Rule: Use simple **d** in all cases (reducing a double consonant). Examples: *aimd, armd, burnd, deemd, dimd, feld, fild, hangd, rained, stird, veild*, etc.

6. **-ed** or **-t**, pronounced [t], the preceding single consonant being doubled before **-ed** (-pped, -ssed) and left single before **-t** (-pt, -st). General Rule: Choose **-t** in all cases. Examples: *dipt, dript, dropt, stept, stopt, blest, prest, mist, blusht, washt, wisht, lockt, packt*, etc.

7. **-ence** or **-ense** (Latin *-ensa*). Restricted Rule: Choose **-ense**. *defense, offense, pretense*; also *license* (Latin *-entia*).

8. **-ette** or **-et**. General Rule: Choose **-et**. Examples: *coquet, epaulet, etiquet, omelet, quartet, quintet, septet, sextet*, etc.

9. **gh** or **f**, pronounced [f]. Restricted Rule: Choose **f**. *draft*, not *draught*.

10. **-gh**, silent: (1) **-ough** or **-ow**, pronounced [au, au]. Restricted Rule: Choose **-ow**. *plow*. (2) **-ough** or **-o**, pronounced [ɔo, o, ɔ]. Restricted Rule: Choose **-o**. *altho, tho, thoro, boro, -boro* (in place names), *furlo*. (3) **-ough** or **-o**, pronounced [uu, u, u]. *through, thro', thro*. Restricted Rule: Choose **thro**, but advance it now to **thru**.

11. **-ice**, unstrest, pronounced [ɪs]. General Rule: Spell **-is**. Examples: *artifis, coppis, cornis, crevis, edifis, justis, notis, servis*, etc.

12. **-ile**, unstrest, pronounced [ɪl, ɪ]. General Rule: Omit **e**. Examples: *agil, futil, servil, juvenil*, etc. When otherwise pronounced, as [aɪl, ɪl], retain **-ile**.

13. **-ine**, unstrest, pronounced [ɪn]. General Rule: Omit **e**. Examples: *determin, doctrin, engin, examin, genuin, imagin, pristin*, etc. When otherwise pronounced, as [aɪn, ɪn], retain **-ine**.

14. **-ise**, unstrest, pronounced [ɪs]. General Rule: Omit **e**. *anis, mortis, practis, premis, promis, treatis*.

15. **-ise** or **-ize** (from Greek), pronounced [aɪz], suffix of verbs. General Rule: Choose **-ize**. Examples: *civilize, criticize, exorcize, legalize, organize*; etc.

16. **-ite**, unstrest, pronounced [ɪt]. General Rule: Omit **e**. Examples: *apposit, definit, infinit, preterit, requisit*, etc. When otherwise pronounced, as [art, it], retain **-ite**.

17. **-ive**, unstrest or with only subordinate stress, pronounced [ɪv, ɪv]. General Rule: Omit **e**. Examples: *activ, adjectiv, detectiv, executiv, motiv, nativ, progressiv, adjectivly*, etc.

18. **-ll** or **-l** (**-ill** or **-il**). General Rule: Choose **-l**. *distil, fulfil, instil*; like *until, compel, impel*, etc.

19. **-ll-** or **-l-** (**-ill-** or **-il-**, **-ull-** or **-ul-**), before **-ful** or **-ness**. General Rule: Choose **-l**. *skilful, wilful, dulness, fulness*.

20. **-mb**, with **b** silent. Restricted Rule: Omit **b**. *crum, dum, lam, lim, num, thum*.

21. **-mn**, with **n** silent. Restricted Rule: Omit **n**. *Autum, colum, solem*.

22. **oe**, **œ**, or **e**, not final. General Rule: Choose **e**. Examples: *ecumenical, esophagus, phenix, subpena*, etc.; like *economy, solecism*, etc.

23. **-our** or **-or**. General Rule: Choose **-or**. Examples: *ardor, candor, clamor, color, favor, flavor, honor, humor, labor, rumor, tumor, valor, vigor*, etc.; also, *arbor, harbor, neighbor*, etc.

24. **ph** or **f**, pronounced [f]. Restricted Rule: Choose **f**. *fantasm, fantasy, fantom, sulfate, sulfur*; like *fancy, frantic, frenzy, coffer, coffin*, etc., which originally had *ph*.

25. **ph**, pronounced [f]. General Rule: Use **f**. *camfor, cifer*; *alfabet, diafram, pamflet*; *autograf, bibliografy, biografy, fonograf, fotograf, paragraf, telegraf, telefone*.

26. **-rr** or **-r**. General Rule: Choose **-r**. *bur, pur*; like *cur, fur, blur, slur, spur, car, far, fir, stir*, etc.

27. **-re** or **-er**, pronounced [æz]. General Rule: Choose **-er**. Examples: *accouter, center, fiber, meter, miter, niter, saltpeter, scepter, sepulcher, somber, specter, theater*, etc.; like *diameter, number*, etc.

28. **s** or **z** (in the root). Restricted Rule: Choose **z**. *apprize, assize, comprize, enterprize, raze, surprize, teazel*. (See also Rule 15.)

29. **s** medial, silent. Restricted Rule: Drop **s**. *aile, ile, ilet, iland*.

30. **ue**, silent, after **-g**. Restricted Rule: Omit **ue**. *catalog, decalog, demagog, pedagog, prolog, colleg, leag, harang, tung*.

31. **ve**, after **-l** or **-r**, pronounced [v]. General Rule: Omit **e**. Examples: *delv, shelv, twelv, selv, carv, curv, nerv, serv, deserv, reserv, starv*, etc.

**Clarified Spelling.** The current spelling may be clarified or made considerably clearer by the substitution of certain letters of definite fonetic value for the ordinary letters closely resembling them or associated with them in the popular mind, wherever these ordinary letters, in the particular context in which they occur, have the exact value of the fonetic letters. This mode of spelling reform has been in vogue for thousands of years. It has recently been used in English in the works of Dr. Francis A. March and others, but in a crude and inaccurate manner and to a very limited extent. It has been used in Italian with considerable accuracy throuth the dictionaries and grammars of P. Petrecchi.

In English \*(g) may thus be substituted for (g), \*(gh) for (gh); (ʃ) for (s), (ʃh) for (sh); \*(z) for (z); (z) for (s); \*(w) for (w), \*(wh) for (wh); (ŋ) for (n); (N) for (n); (M) for (m); (l) for (l); \*(r), \*(g), (z), (s) for (r); \*(o) for (u); \*(i), \*(i) for (i); (ə), \*(e) for (e); (o), (c), \*(e) for (o); (au), (aw) for (ou), (aw) for (ow); (æ), \*(a), \*(a), (ə) for (a), etc.

In the present volume only the letters here markt with a star (\*) have been used in this way. Further clarification or at least simplification, has been effected, throuth this book, by always using (ff) for (ff), (ffi) for (ffi), (fi) for (fi), (ffl) for (ffl), (fl) for (fl), (oe) for (œ), except in certain words adepth from French, and (ae) for (æ). This is quite common practis now-a-days, as in newspaper and job composition.

To this extent clarified spelling has also been used throuth this book, except (in this Preface) in the table of the English gammakap and in certain other places where the exact current spellings of certain words have to be given for

illustrative purposes; and (in the body of the book) in the title-words, alternate spellings, cognate forms, etc. Clarified spelling is thus used not only because of its intrinsic merits but also in order to familiarize the reader with the fonetic value of certain letters.

In italic type, (*g*) has been used in this dictionary for (*g*) when not having the sound [g], [g]. Various other modifications or clarifications are desirable in connection with the italic letters *a*, *æ*, *e*, *i*, *l*, *m*, *n*, *o*, *r*, *s*, *u*, *v*, *w*, and *y*. They admit of being conformed to and differentiated along with the corresponding roman letters.

The double hyphen (≡) has been used thruout this dictionary, except in the boldface type, as a substitute for the ordinary hyphen for joining the elements of compound words, etc.

**Fonetic Spelling.** The current spelling of English, along with that of other languages, is, in my opinion, likely to be replaced by one or more systems of fonetic spelling. Fonetic shorthand has already replaced or supplemented the current spelling for reportorial and other purposes. Various systems of roman-letter fonetic spelling have already supplemented the current spelling in the respellings given in dictionaries and grammars. Fonetic texts are coming into common use in schools, and young people will soon be using them in preference to texts printed in the current cacegraphy. Fonetic spelling is used in the present volume in the respellings of the title-words, in the representation of their pronunciation. For a more complete exposition of this subject the reader may refer to my Dictionary of Hard Words, published last year.

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1019 Flatiron Building  
New York, *March 3, 1911*



# Dictionary of Aviation

- abduction** ,æb'dakʃən *n.* a leading or drawing away; the act of abducting; the muscular withdrawal, as of a forelimb or wing, outward or away from the axis or median line of the body or part to which the limb is attached: the opposite of *adduction*.
- abutment-area** ə'batmənt,ɛ:-zi-ə *n.* the area of an abutment-plane.
- abutment-fin** ə'batmənt,fin *n.* a fin-like abutment-plane: distinguished from *directive fin*. see under *fin*.
- abutment-plane** ə'batmənt,plæn *n.* a plane or aerofoil, in an aerodone, which acts as an abutment or support.
- acentric** ə'sentrik *adj.* not centric; not having the center of resistance coincident with the line of flight: as, an \*acentric aerodone, aerodrome, or flying-machine.
- acrobat** 'ækrə,bæt *n.* a marsupial quadruped of the genus *Acrobates*, provided with a patagium by which it is enabled to take flying leaps thru the air; one of the *Acrobata*.
- actinograph** ,ækt'ɪnə,gzə:f *n.* [also spelt *actinograf*] an instrument for automatically registering the variations of actinic or chemic influence of radiations from any source, especially the sun.
- actinometer** ,æktɪ'nəmɪ-təz *n.* an instrument for measuring the actinic influence of radiations from the sun, etc.
- actinometry** ,æktɪ'nəmɪ-tɪ *n.* the art of measuring the actinic influence of radiations from the sun, etc.
- action-radius** 'ækʃən,zæ-di-əs *n.* the radius of action of an airship; the radius of the circle or area of the earth's surface over which the activities, movements, or operations of a dirigible balloon extend; the distance, measured radially in any direction from the starting-point, which an air-vessel is capable of covering; the cruising-radius.
- acuteness** ə'kʃu:t-nɪs *n.* the quality or character of being acute, or long and pointed, as are the wings of some birds; sharpness, pointedness.
- adduction** ə'dakʃən *n.* a drawing or bringing toward or inward; the act of adducting; the muscular drawing in, as

of a forelimb or wing, toward the axis or median line of the body or part to which the limb is attached: the opposite of *abduction*.

**adiabat** 'ædi-ə,bæt *n.* an adiabatic line or curve; an adiabatic.

**adiabatic** ,ædi-ə'bætɪk *adj.* without transference: said of change of volume of a mass of air, or other fluid, unaccompanied by any transference of heat to or from surrounding masses of air, or, that is, by either gain or loss in the total heat-energy contained within the mass.

*adiabatic change*, a change or variation, as in the temperature of an air-mass, under adiabatic conditions; an alteration which is unaccompanied by any transfer of (internal) heat-energy to other (external) masses or localities.

*adiabatic curve*, a curved line showing the relation between the pressure and the volume of a fluid under adiabatic conditions; a curve which exhibits the relation of the volume of a fluid to the external pressure upon it, when there is no transference of heat-energy either to or from the fluid.

*adiabatic gradient*, see under *gradient*.

*adiabatic law*, the law or principle relating to adiabatic change, as of the volume or temperature of a mass of air or other fluid; the rule as to the expansion or contraction, or the variation in temperature, of an air-mass when subjected to different external pressures, but without any loss or gain in the total thermal energy possessed by the mass.

**adiabatic** ,ædi-ə'bætɪk *n.* a line or other graphic representation (on a weather-map) of adiabatic changes; an adiabatic line or curve; an adiabat: as, the \*adiabatic of dry air.

**adjusting-plane** ə'dʒʌstɪŋ,pleɪn *n.* a small plane or aerofoil, as at the extremity of a wing-tip, used to adjust the lateral balance of a flying-machine; an adjusting-surface.

**adjusting-surface** ə'dʒʌstɪŋ,sɜːfɪs *n.* an adjusting-plane.

**aerial** ,e'ɪ:-zi-əl *adj.* [also spelt *aërial* and, formerly, *aereal*]

1. of air as a substance; consisting or composed of air; of the nature of air; aeriform, air-like, gaseous; thin or attenuated as air; ethereal, shadowy; light as air; airy.

2. of the whole body of air, or atmosphere; pertaining to or produced in or by the air or atmosphere; atmospheric; existing, moving, flying, floating, or functioning in the atmosphere; placed aloft; lofty, elevated.

*aerial architecture*, airship architecture.

*aerial battleship*, a battleship of the air; an aerial warship; a flying-machine conceived as being used in aerial warfare.

*aerial bird*, a bird that habitually moves chiefly by flight in the air: distinguished from walking, waddling, and swimming birds.

*aerial age*, the age of aerial navigation; the flying age.

*aerial car*, a car used for traveling in the air, as the basket of a balloon, or a car designed for an aerial railway.

*aerial engineering*, engineering as related to aerial navigation or aviation; the art of constructing and using air-machines.

*aerial ferry*, an airship which serves as a ferry by taking passengers across a river, bay, or the like.

*aerial flight*. see under *flight*.

*aerial image*, an image appearing suspended in the air, caused by the convergence of rays of light reflected or refracted from objects thru strata of air of different densities; a mirage.

*aerial liner*, same meaning as *air liner*. see under *air* (adjective).

*aerial machine*, a machine or apparatus for air-sailing; an air-machine; a balloon.

*aerial mammals*, the bats.

*aerial navigation*, navigation of the air; air-navigation; the art of floating, sailing, or flying in the air or atmosphere; aeronautics; aerial flight; aviation.

*aerial navigator*. see under *navigator*.

*aerial perspective*, perspective in the air; the expression of space by any means, such as sharpness of edge, vividness of color, etc.

*aerial photograph*, a photograph taken by means of a camera suspended in the air, as in a balloon or airship.

*aerial poison*, miasma.

*aerial omnibus*, an aerial vehicle designed to carry passengers regularly; a public airship.

*aerial railway*

1. a railway consisting of guide-rails or a wireway stretch between posts, supporting and guiding an elongated balloon or aerostat driven by power.

2. a conveying-apparatus or system of transportation by cars suspended from a rail, cable, or rope in the air above them; an aerial tramway; a wire-rope tramway; a wire-tramway, wireway, or wire-road; a cable-railroad or cableway.

*aerial scout*, a scout or scouting-machine of the air; an aerial observer; an air-scout.

*aerial ship*, a ship for sailing or traveling in the air; an aerial vessel; an airship.

*aerial steamer*, an airship or flying-machine propelled by a steam-engine.

*aerial telegraphy*, telegraphy thru the air, by means of kites.

*aerial torpedo*, a torpedo designed for action in the air; also, an airship so manipulated, as by wireless telegraphy from the ground, as to function in the air like a torpedo-boat.

*aerial warfare*, warfare in the air, carried on by means of airships.

*aerial wheel*, a wheel fitted with planes or blades, designed for lifting or propelling an airship.

**aerialism** ,e'ɪ:-zi-ə,lɪzəm *n.* [also spelt *aërialism*] aerial navigation; aeronautics; aviation.

**aerialist** ,e'ɪ:-zi-ə-lɪst *n.* [also spelt *aërialist*] one who is occupied with matters aerial; aeronaut; aviator.

**aerially** ,e'ɪ:-zi-ə-lɪ *adv.* [also spelt *aërially*] in an aerial manner.

**aerian** ,e'ɪ:-zi-ən *adj.* [also spelt *aërian*] aerial.

**aerie** 'eə-ə-zɪ *adj.* same meaning as *aery*.

**aerie** 'e:-zɪ, 'ɪ:-zɪ *n.* same meaning as *aery*.

**aeriferous** ,eə-ə'zɪfə-zəs *adj.* [also spelt *aëriferous*] conveying air.

**aeriform** 'eə-əzɪ,fə:zɪm *adj.* [also spelt *aëriform*] having the form or nature of air; gaseous.

**aeritime** 'eə-əzɪ,tɪm *adj.* [also spelt *aëritime*] of or pertaining to the air, or aerial navigation, employments, or interest: as, \*aeritime law.

**aero** 'eə-ə,zə *adj.* [also spelt *aëro*] aeronautical; aerial.

**aero** 'eə-ə,zə *n.* [also spelt *aëro*] an aeronautical apparatus; an aerocar; an airship; an aeroplane.

**aerobat** 'eə-əzə,bæt *n.* [also spelt *aërobat*] a dirigible balloon or airship; a flying-machine; an aerodrome.

**aerobate** 'eə-əzə,bet *intr.* [also spelt *aërobate*] walk (as if) on air.

**aerobatic** ,eə-əzə'bætɪk *adj.* [also spelt *aërobatic*] pertaining to an aerobat.

**aerobatics** ,eə-əzə'bætɪks *n.* [also spelt *aërobatics*] the art of constructing and using aerobats or airships; aerial navigation; aeronautics.

**aerobiplane** ,eə-əzə'baɪ,plæn *n.* [also spelt *aërobiplane*] a flying-machine exhibited by D. S. Brown in England in 1873-4, consisting of two planes of equal size, placed one before the other in the same plane, and connected by a rod.

**aerocar** 'eə-əzə,kɑ:z *n.* [also spelt *aërocar*] a car, conveyance, or vehicle for traveling in the air; an aeronautical car or vessel; an airship; a flying-machine; a flyer.

**aeroclinoscope** ,ɛɛ-əzə'klɪn-ə,skop *n.* [also spelt *aëroclinoscope*] a wether=signal consisting of a vertical axis with movable arms either of which may be raised or deprest according to the increase or decrease of the barometric pressure in the quarter to which it points, thus showing the direction of the wind and state of the wether to be expected.

**aero-club** 'ɛɛ-ə-zɔ,kɫʌb *n.* [also spelt *aëro=club*, *aero club*] a club devoted to aeronautics; an aviation=society.

**aerocondenser** ,ɛɛ-əzə-kən'densəz *n.* [also spelt *aërocondenser*] a system of tubes thru which the steam in a steam=engin is pæst and condenset into water by circulation of the outer air around the tubes.

**aerocruiser** 'ɛɛ-əzə,ksou-səz *n.* [also spelt *aërocruiser*] a cruiser of the air; an airship used for cruising.

**aerocurve** 'ɛɛ-əzə,kɜ:v *n.* [also spelt *aërocurve*, *aerocurv*]

1. a curvd aerofœil; a thin mobile structure, natural or artificial, adapted to sustentation and presenting a curvd surface to the air.

2. a flying=machine or glider in which the sustaining=surfaces are aerocurvs; a soaring=machine with curvd supporting=surfaces; an aerocurv flyer.

**aerocyst** 'ɛɛ-əzə,sɪst *n.* [also spelt *aërocyst*] in plants, an air=vessel or bladder; an air=cell.

**aerodock** 'ɛɛ-əzə,dɔk *n.* [also spelt *aërodock*] a dock for airships; an airship=shed.

**aerodone** 'ɛɛ-əzə,don *n.* [also spelt *aërodone*] a gliding= or soaring=machine, especially one which is destitute of propelling=apparatus or auxiliary parts.

**aerodnetic** ,ɛɛ-ə-zɔ-də'netɪk *adj.* of aerodones, etc.

**aerodnetics** ,ɛɛ-ə-zɔ-də'netɪks *n.* [also spelt *aërodnetics*] the science of aerodones, or gliders and soarers; knowledge of aerodromes, birds, insects, and other flyers or flying creatures, in flight; that portion of aerodromics or aviation net included in the aerodynamics of flight; the study of soaring flight.

**aerodrome** 'ɛɛ-əzə,drom *n.* [also spelt *aërodrome*]

1. a gliding= or soaring=machine, especially the tandem monoplane invented by S. P. Langley and successfully tested by him near Washington, D. C., in 1896; a power=driven aerodone; a flying=machine; an aeroplane; a flyer.

2. a house or shed for storing an airship; a balloon=shed; an airship=garage.

3. a course, track, or ground where airships or flyers are tested or flown; an aviation=course; a flying=ground.

**aerodromic** ,ɛɛ-əzə'drɔmɪk *adj.* [also spelt *aërodromic*] of aerodromes.

*aerodromic radius*, see under *radius*.

*aerodromic wing=center*, see under *wing=center*.

**aerodromics** ,æ-ə-zə'drɒmɪks *n.* [also spelt *aërodromics*] the science of aerodromes or flying=machines; knowledge of natural or artificial flyers; the study of aerial flight; aviation.

**aerodromometer** ,æ-ə-zə-drə'mɒmɪ-təz *n.* [also spelt *aërodromometer*] an instrument for measuring the velocity of gas=streams devised by Zwaardemaker of Utrecht, Holland.

**aerodynamic** ,æ-ə-zə,dar'næmɪk *adj.* [also spelt *aërodynamic*] of or pertaining to the energy of gaseous fluids; relating to the forces of the air, atmosphere, and other gases, in motion.

*aerodynamic balance*, a device in which an aeroplane or other aerofoil is balanced and rotated about a vertical axis, so that the pressure of the air upon it may be studied.

*aerodynamic radius*, see under *radius*.

*aerodynamic wing=center*, see under *wing=center*.

**aerodynamical** ,æ-ə-zə,dar'næmɪ-kəl *adj.* [also spelt *aërodynamical*] pertaining to aerodynamics; relating to motion thru the air.

**aerodynamically** ,æ-ə-zə,dar'næmɪkə-lɪ *adv.* [also spelt *aërodynamically*] in an aerodynamic manner; in respect to aerodynamics.

**aerodynamics** ,æ-ə-zə,dar'næmɪks *n.* [also spelt *aërodynamics*] the dynamics (especially the kinetics) of aeriform bodies or gaseous fluids; the science of the forces of the air or atmosphere, and other gases.

**aerodyne** 'æ-ə-zə,dæɪn *n.* [also spelt *aërodyne*] a power-driven flyer of the aeroplane type.

**aerofoil** 'æ-ə-zə,fɔɪl *n.* [also spelt *aërofoil*] a thin structure, plane or curved, natural or artificial, adapted for motion and sustentation in the air; an aeroplane or aerocurve; a wing, or the wings collectively, of a flyer.

*plane aerofoil*, an aerofoil whose surfaces are plane; a simple aeroplane; an aeroplane (*sense* 1).

**aerognosy** ,æ-ə'zɒɡnə-sɪ [also spelt *aërognosy*] same meaning as *aerology*.

**aerogram** 'æ-ə-zə,gzæm *n.* [also spelt *aërogram*] a message transmitted thru the air by wireless telegraphy; a Hertzian=wave telegram; a wireless message.

**aerographer** ,æ-ə'zɒɡzə-fəz *n.* [also spelt *aërographer*, *aerografer*] one who describes the air or atmosphere; a meteorologist.

**aerographic** ,æ-ə-zə'gzæfɪk *adj.* [also spelt *aërographic*, *aerografic*] of aerography.

**aerographical** ,æ-æzə'gʒæfɪ-kəl *adj.* [also spelt *aërographical*, *aerografical*] same meaning as *aerographic*.

**aerography** ,æ-æ'zɔgzə-fɪ *n.* [also spelt *aërography*, *aerography*] a description of the air or atmosphere.

**aerolite** 'æ-æzə,lɪt *n.* [also spelt *aërolite*] a stone or portion of solid matter which has fallen thru the air or atmosphere to the earth from outer space; a meteorite.

**aerolith** 'æ-æzə,lɪθ *n.* [also spelt *aërolith*] same meaning as *aerolite*.

**aerolithology** ,æ-æ-zə-lɪ'θɔlə-dʒɪ *n.* [also spelt *aërolithology*] the science of aeroliths or aerolites.

**aerolitic** ,æ-æzə'lɪtɪk *adj.* [also spelt *aërolitic*] of aerolites; meteoric.

**aerocomotion** ,æ-æ-zə,lɔkə'mɔʊ-ʃən *n.* [also spelt *aëro-comotion*] locomotion thru the air or atmosphere.

**aerological** ,æ-æzə'lɔdʒɪ-kəl *adj.* [also spelt *aërological*] of aerology; aerologic.

**aerologist** ,æ-æ'zɔlə-dʒɪst *n.* [also spelt *aërologist*] one versed in aerology.

**aerology** ,æ-æ'zɔlə-dʒɪ *n.* [also spelt *aërology*] the science of the air, especially of the upper air; the study of the earth's atmosphere; aerognosy; aerofysics.

**aeromad** 'æ-æzə,mæd *adj.* mad or crazy about aeronautics, aeroplanes, or aviation; afflicted with flying-fever.

**aeroman** 'æ-æzə,mæn *n.* an airman; an aviator.

**aeromancer** 'æ-æzə,mænsəz *n.* [also spelt *aëromancer*] one who practises aeromancy.

**aeromancy** 'æ-æzə,mænsɪ *n.* [also spelt *aëromancy*]

1. divination by means of the air and winds or other atmospheric phenomena.

2. the art of forecasting changes in the weather.

**aerometer** ,æ-æ'zɔmɪ-təz *n.* [also spelt *aërometer*] an instrument for ascertaining the weight or density of the air and other gases.

**aerometry** ,æ-æ'zɔmɪ-tʃɪ *n.* [also spelt *aërometry*] the science of measuring the weight or density of air and other gases, and of determining the laws of their pressure, elasticity, rarefaction, and condensation; pneumatics.

**aeromobile** ,æ-æ-zə-mɔ'brɪl *n.* [also spelt *aëromobile*] a vehicle which moves thru the air; an automobile of the air; an airship; specifically, a flying-machine of the helicopter type, designed by E. Berliner of Washington, D. C.

**aeromotor** ,æ-æzə,mɔʊ-təz *n.* [also spelt *aero-motor*, *aëromotor*]

1. a motor-vehicle for navigating the air; a motor-driven air-craft; an airship.

2. a motor or power-plant for use in an aeroplane; an airship=engin.

**aeronat** 'eə-əzə,næt *n.* [also spelt *aëronat*] a dirigible balloon; a lighter-than-air airship.

**aeronaunomy** ,eə-əzə'nc:-nə-mɪ *n.* [also spelt *aëronaunomy*] management or regulation of aeronautic affairs.

**aeronaut** 'eə-əzə,nc:t *n.* [also spelt *aëronaut*] one who sails, flies, or floats in the air; an aerial navigator; a balloonist; an operator or pilot of an aircraft; an airman; an aviator.

**aeronautic** ,eə-əzə'nc:-tɪk *adj.* [also spelt *aëronautic*] pertaining to aerial navigation.

**aeronautica** ,eə-əzə'nc:-tɪ-kə *n.* [also spelt *aëronautica*] same meaning as *aeronautics*.

**aeronautical** ,eə-əzə'nc:-tɪ-kəl *adj.* [also spelt *aëronautical*] same meaning as *aeronautic*.

**aeronautically** ,eə-əzə'nc:-tɪk-ɪ *adv.* [also spelt *aëronautically*] in an aeronautic manner; with respect to aeronautics.

**aeronautics** ,eə-əzə'nc:-tɪks *n.* [also spelt *aëronautics*] the art or practice of sailing, flying, or floating in the air; aerial navigation; ballooning. compare *aviation*.

**aeronautism** 'eə-əzə,nc:-tɪzəm *n.* [also spelt *aëronautism*] the practice, sport, or occupation of sailing, floating, or flying in the air; aeronautics; aviation.

**aeronavigation** ,eə-ə-zə,nævɪ'gʒe-ʃən *n.* [also spelt *aëronavigation*] the navigation of the air; aerial navigation.

**aeronavigator** ,eə-əzə'nævɪ,geɪz *n.* [also spelt *aëronavigator*; a navigator of the air; an aerial navigator; an aeronaut; an aviator.

**aeronef** 'eə-əzə,nɛf *n.* [also spelt *aëronef*] an airship; specifically, any flying-machine which has no gas-vessel; any heavier-than-air flyer, as an aeroplane, helicopter, or ornithopter.

**aeronon** 'eə-əzə,nɒn *n.* [also spelt *aëronon*] a dirigible balloon or airship, especially one whose equipage and movements resemble those of a fish or other swimming creature.

**aerophilous** ,eə-ə'zɒfɪ-ləs *adj.* [also spelt *aërophilous*, *aerofilous*] air-loving: said of certain organisms.

**aerophobia** ,eə-əzə'fɒ-bi-ə *n.* [also spelt *aërophobia*, *aerofobia*] fear or dread of air; aerofoby.

**aerophobic** ,eə-əzə'fɒ-bɪk *adj.* [also spelt *aërophobic*, *aerofobic*] of aerofobia; afraid of air.

**aerophoby** ,eə-ə'zɒfə-bɪ, 'eə-əzə,fɒbɪ *n.* [also spelt *aërophoby*, *aerofoby*] same meaning as *aerophobia*.

**aerophysical** ,eə-əzə'fɪzɪ-kəl *adj.* [also spelt *aërophysical*, *aero=physical*, *aerophysical*] of aerofysics; of or pertaining



to the physical features, conditions or properties of the air or atmosphere, as heat, cold, dryness, humidity.

**aerophysicist** ,eə-əzə'fɪzɪ-sɪst *n.* [also spelt *aërophysicist*, *aerofysicist*] one skilled in aerofysics; a meteorologist.

**aerophysics** ,eə-əzə'fɪzɪks *n.* [also spelt *aërophysics*, *aerofysics*] the physics of the atmosphere.

**aerophyte** 'eə-əzə'faɪt *n.* [also spelt *aërophyte*, *aerofyte*] an air-plant.

**aeropirate** 'eə-əzə,pɑɪ-zət *n.* [also spelt *aëropirate*] a pirate of the air; a piratical airship.

**aeroplane** 'eə-əzə,plæn, (*improperly*) 'eɪ-zə,plæn, 'eɪ-zɪ-ə-plæn *n.* [also spelt *aëroplane*, *aëro-plane*]

1. a thin plane, natural or artificial, adapted to motion and sustentation in the air; a plane or curved aerofoil; an air-plane; a wind-plane; a sustaining-, supporting-, or gliding-plane, or wing, in a flyer.

*ballasted aeroplane*, an aeroplane equilibrated by means of ballast, for experimental purposes.

*inclined aeroplane*, an aeroplane or plane aerofoil which is in an inclined position in the air or other fluid, as in aerodynamic experimentation: distinguished from *horizontal plane*.

*simple aeroplane*, an aeroplane having simple curvature; a plane aerofoil.

*wave-action aeroplane*, a flexible aeroplane or aerofoil designed to afford sustentation or propulsion to a flying-machine by being rapidly undulated; a wave-surface.

2. any flying-machine supported or sustained in the air by one or more aeroplanes or aerocurves; a flyer whose supporting-surfaces are fixed structures having plane or approximately plane gliding-surfaces; a heavier-than-air airship upheld or sustained primarily by the pressure or reaction of the atmosphere upon plane or curved surfaces moving at an angle with the axis of flight or with the line of direction of the pressure of the air; a motor-driven gliding- or soaring-machine; a glider: distinguished from *helicopter* and *ornithopter*.

*helicopter aeroplane*, an aeroplane flying-machine combined with a helicopter; a combination of a helicopter with an aeroplane, as that designed by Bertin.

**aeroplane** 'eə-əzə,plæn *adj.* [also spelt *aëroplane*]

1. consisting of, or having the form of an aeroplane or aeroplanes: as, \*aeroplane rudders.

2. having the characteristics of, or related to, airships of the type known as the aeroplane: as, an \*aeroplane flying-machine, the \*aeroplane type of flyer, \*aeroplane flight.

- aeroplane** 'εε-εζε,πλεεν *intr.* [also spelt *aëroplane*] navigate the air in an aeroplane; drive an aeroplane flyer; plane.
- aeroplane-accident** 'εε-εζε-πλεεν,æksi-dnt *n.* an accident to an aeroplane flying-machine; a disaster incidental to aeroplaning.
- aeroplane-experiment** 'εε-εζε-πλεεν-ικ,spezi-mənt *n.* an experiment in constructing or managing aeroplanes or flying-machines.
- aeroplane-flight** 'εε-εζε-πλεεν,flaɪt *n.* [also spelt *aëroplane-flight*] a flight in or of an aeroplane flying-machine.
- aeroplane-owner** 'εε-εζε-πλεεν,ɔ-nəz *n.* [also spelt *aëroplane-owner*] the owner of an aeroplane; one who owns an aeroplane flyer.
- aeroplaner** 'εε-εζε,πλεε-nəz *n.* [also spelt *aëroplaner*] one who drives or operates an aeroplane; an aeroplanist.
- aeroplane-race** 'εε-εζε-πλεεν,zεes *n.* a race by aeroplane flying-machines; a match of aeroplanes.
- aeroplane-term** 'εε-εζε-πλεεν,tɜ:zm *n.* [also spelt *aëroplane-term*] a term used especially in reference to aeroplanes; a word peculiar to the art of aeroplaning.
- aeroplane-tour** 'εε-εζε-πλεεν,tu:z *n.* an air-tour made by means of aeroplane flying-machines; an extended trip by aeroplane.
- aeroplane-work** 'εε-εζε-πλεεν,wɜ:zk *n.* [also spelt *aëroplane-work*] work done by, or by means of aeroplanes; the performances executed by aeroplanists.
- aeroplaning** 'εε-εζε,πλεε-nɪŋ *n.* [also spelt *aëroplaning*] the art, occupation, or sport of driving or operating aeroplanes; the act or process of flying in a machine of the aeroplane type; the action of soaring or gliding in a flyer.
- aeroplanist** 'εε-εζε,πλεε-nɪst *n.* [also spelt *aëroplanist*] one skilful in operating an aeroplane; one who practises the sport or occupation of aeroplaning; an aviator who uses a flyer of the aeroplane type.
- aeropleustic** ,εε-εζε'plu:stɪk *adj.* [also spelt *aëropleustic*] of or pertaining to navigation of the air; aeronautic.
- aero-radius** 'εε-ε-ζε,zεe-di-əs *n.* the radius of action of an aeroplane or airship; action-radius; cruising-radius.
- aerosack** 'εε-εζε,sæk *n.* [also spelt *aërosack*] a sack or bag with a hoop in its mouth, mounted on a stick and supported by the wind, similarly to the Japanese May-carp.
- aeroscaphe** 'εε-εζε,skeef *n.* an air-boat or aerial skiff proposed by de Louvrié in 1863, consisting of a supporting-plane stiffened by cords fastened to a mast above and to a car below and capable of being folded or reefed.
- aeroscepsy** 'εε-εζε,skepsi *n.* [also spelt *aëroscepsy*] ability

to perceiv the state of the air or atmosfere; susceptiblity to atmosfERIC conditions, such as insects, snails and certain other animals are supposed to possess; the sense of aerōscopy.

**aeroscope** 'εε-εζε,skop *n.* [also spelt *aëroscope*] an apparatus for collecting microscōpic objects from the air, consisting of an inspirator and a glass collecting-vessel smeard with glycerin.

**aeroscopic** ,εε-εζε'skōpik *adj.* [also spelt *aëroscopic*] pertaining to or expressing aerōscopy.

**aerōscopy** ,εε-εζε'skōp-ri *n.* [also spelt *aëroscopy*]

1. divination by means of the air; wether-prefecy.

2. examination or observation of the atmosfere; the practis of meteorology.

3. (in *zoology*) the exercise of the faculty of aerōscopy.

**aerosiderite** ,εε-εζε'sidε,zait *n.* [also spelt *aërosiderite*] a meteorite consisting essentially of metallic iron.

**aerosiderolite** ,εε-εζε'sidεzε,łait *n.* [also spelt *aërosiderolite*] a meteorite containing both stone and iron.

**aerosphere** 'εε-εζε,sfı:z *n.* [also spelt *aërosphere*, *aerofsere*] the body of air which surrounds the earth; the aerial globe; the entire atmosfere.

**aerostat** 'εε-εζε,stæt *n.* [also spelt *aërostat*]

1. an apparatus which will float or sustain itself in the air; specifically, a balloon or a lighter-than-air airship.

2. (*rare*) an aeronaut; a balloonist.

3. (*rare*) a tracheal dilatation constituting an air-sac, as in the abdomen of the honey-bee.

**aerostatic** ,εε-εζε'stætık *adj.* [also spelt *aërostatic*]

1. pertaining to aerostatics (*sense 1*).

*aerostatic balance*, an instgument, constructed on the same principle as the baremeter, for ascertaining the weight of the air.

2. pertaining to aerostatics (*sense 2*) or aerostation; aeronautic.

*aerostatic park*, a balloon-park.

**aerostatica** ,εε-εζε'stætı-kε *n.* [also spelt *aërostatica*] same meaning as *aerostatics*.

**aerostatical** ,εε-εζε'stætı-kεł *adj.* [also spelt *aërostatical*] same meaning as *aerostatic*.

**aerostatics** ,εε-εζε'stætıks *n.* [also spelt *aërostatics*]

1. the statics of the air and other gases; the science of aeriform or gaseous matter in equilibrium.

2. the art of ballooning; aerostation; balloonry.

**aerostation** ,εε-εζε'stεe-ʃεn *n.* [also spelt *aërostation*]

1. (*obsolete*) aerostatics (*sense 1*).

2. the art or practice of using or managing aerostats; aerial navigation; ballooning.

**aero-surface** 'æ-ə-zə, sɜːfɪs *n.* a material surface, as in a kite, used for aerial sustentation or the like; an aerofoil.

**aerotherapeutics** ,æ-ə-zə-θɛ-zə'pɔː-tɪks *n.* [also spelt *aërotherapeutics*] the treatment of disease by varying the pressure and modifying the composition of the air surrounding the patient.

**aerotube** 'æ-ə-zə,tʃuːb *n.* [also spelt *aërotube*] a proposed flying-machine of the aeroplane type with tubular sustaining-surfaces designed by W. Pars of Seattle, Washington.

**aeroyacht** 'æ-ə-zə,jət *n.* [also spelt *aëroyacht*] an aerial yacht; a fancied airship of the racing or cruising type; a pleasure-ship of the air.

**aery** 'æ-ə-zɪ *adj.* [also spelt *aerie*] airy, aerial; ethereal.

**aery** 'e:-zɪ, 'ɪ:-zɪ *n.* [also spelt *aerie*; synonymous cognates *airy, eyry, eyrie*; plural *aeries*]

1. the nest of a bird of prey, as an eagle or a hawk; a lofty nest of any large bird.

2. the brood in the nest; the young of a bird of prey.

3. an elevated habitation or situation.

**aery** 'e:-zɪ *intr.* bld or have an aery.

**afflux** 'æ,fɹʌks *n.* a flowing to or toward, as of air; affluxion; inflow: the opposite of *efflux*.

**afloat** ə'flɔːt *adv.* in a floating or suspended condition; buoyed up or sustained in or on a fluid; in stable or moving equilibrium in the air.

**aft** ɑːft *adv.* in or near the hinder part or stern of an airship; toward the stern.

*fore and aft*, from the fore toward the after part or vice versa; lengthwise; longitudinally.

**after** 'ɑːf-tɛz *adj.* located in the rear; as, the \*after side of a bird's feather; also, situated nearer the stern or hinder portion of an airship; belonging to the sternward part.

**after-car** 'ɑːf-tɛz,kɑːz *n.* the car situated toward the stern; the hindermost car in an airship having two cars.

**after-cell** 'ɑːf-tɛz,sɛl *n.* the rear or hinder cell of a cellular kite.

**afterglow** 'ɑːf-tɛz,glɔː *n.* the glow often seen in the western sky after sunset.

**afterpart** 'ɑːf-tɛz,pɑːzt *n.* the after or hinder part, as of an airship; the rear portion; the stern.

**aftershaft** 'ɑːf-tɛz,ʃɑːft *n.* a supplementary shaft or feather growing out of the stem of a bird's feather; a hyporachis; a hypoptilum. compare *foreglow*.

**aileron** 'æ-ɪ,zən *n.* a little wing or wing-like part; a

hinged wing=tip in an aeroplane for maintaining lateral balance; a stabilizing=plane; a balancing=plane.

**aileron-work** 'æ-lɪ-zən, wɪ:z k n. work executed by an aeroplanist by means of ailerons; balancing=work done by the aid of independently=moving wing=tips.

**aileroon** ,æ-lɪ'zʊn n. same meaning as *aileron*.

**air** ɛ:z n.

1. the transparent, colorless, gaseous substance which envelops the earth; also, occasionally, any particular portion or region of the atmosphere: as, to sail the \*airs.

*flammable air*, hydrogen gas.

*open air*, the unconfined space outside buildings, etc. exposed to the weather.

*take the air*, start off to fly or float in the air, as an aeroplane when leaving the ground; begin flight; take to the air.

*take to the air*, same meaning as *take the air*.

2. the whole body of the air surrounding, or above the surface of, the earth; the (apparently) free space above our heads; the atmosphere.

*high air*, the open (higher) air; the highway of the airy regions; that part of the air which is not within the jurisdiction of any nation.

*upper air*, the upper or higher regions of the air or atmosphere; the higher atmosphere.

3. a special state or condition of the atmosphere; weather, climate: as, night \*air, one's native \*air.

4. air in motion; a breeze or light wind; a current. or draft; as, there is no \*air to speak of tonight.

*light air*, an air or breeze (numbered 1 in Beaufort's scale) having a velocity of about 1.7 meters per second.

**air** ɛ:z adj. of or pertaining to the air; also, used in the air; as, an \*air propeller.

*air liner*, a liner or passenger=ship of the air; an airship supposed to make regular point-to=point trips; an aerial liner.

*air motion*, the motion of the air; the mode of movement of the currents of the atmosphere.

*air power*, same meaning as *air=power*.

*air propeller*, same meaning as *air=propeller*.

**air-bag** 'ɛ:z,bæg n.

1. a bag or secondary balloon containing air and carried inside the gasbag or gas=vessel of a balloon or airship, or an air=space in or between the parts of a balloon=envelop, for maintaining the shape of the main envelop or for regulating ascent and descent.

*internal air-bag*, an air-bag placed inside of the main gasbag or envelop of a balloon or airship to preserv the form of the gasbag or the tautness of the envelop, or to regulate ascent and descent; a ballonnet.

2. a bag containing air for breathing-purposes, sometimes taken along in a balloon for use in emergencies.

3. a spherical or cylindrical bag inflated with air, used to convey signals from balloons.

4. a bag inflated with air taken along in a flying-machine for use as a float for the machine or as a life-preserver for the aviator, in case of falling into water.

**air-ball** 'e:z,bɔ:l n. a toy rubber ball inflated with air.

**air-balloon** 'e:z-bə,lʊn n. [also spelt *air balloon*]

1. (in fireworks) same as *balloon* (sense 1).

2. a balloon inflated with hydrogen or some light gas other than heated air; an inflammable-air balloon; distinguished from *fire-balloon* (sense 1) and *hot-air balloon*, under *balloon* (sense 2).

3. a balloon or bag-like receptacle, as at the lower part of the gas-bag of a Clement-Bayard dirigible balloon, designed to contain air for regulating the craft.

**air-ballonet** 'e:z-bælə,nɛt n. [also spelt *air-ballonette* and, less properly, *air-ballonnet*, *air-balloonet*] a ballonnet filled with air.

**air-balloonist** 'e:z-bə,lʊ-nɪst n. one skilled in making ascents in, or managing air-balloons; a balloonist; an aeronaut.

**air-beaten** 'e:z,bii-tɪn adj. wether-beaten from long exposure to the air.

**air-billow** 'e:z,bɪlə n. a billow of air; a long gentle air-wave.

**air-bird** 'e:z,bɜ:zd n. a bird which habitually lives in the air: distinguished from *land-bird* and *water-bird*.

**air-bladder** 'e:z,blædəz n. a bladder or sac filled with air, as in an insect or plant; an air-float; also, the swimming-bladder of a fish.

**air-blower** 'e:z,bloʊ-əz n. a machine for blowing air; a blower.

**air-boat** 'e:z,bʊt n. [also spelt *airboat*] a boat or vessel for sailing in or navigating the air; an airship; a sky-boat.

**air-bomb** 'e:z,bɒm n. [also spelt *air bomb*, *air-bom*] a bomb designed for use in the air, or adapted for being thrown from an airship.

**air-bone** 'e:z,bʊn n. a hollow bone containing air, as in birds.

**air-borne** 'e:z,bɔ:zn adj. borne or carried on or in the air.

- air-bottle** 'e:z,betl *n.* a bottle used for collecting and containing a sample of atmospheric air, as while ballooning at certain heights or in certain localities.
- air-buoy** 'e:z,bou-ı *n.* a buoy designed to float or sustain itself in the air or atmosphere.
- air-car** 'e:z,kɑ:z *n.*
1. a car designed to travel thru the air; an aerial car; an air-machine; a flying-machine.
  2. a modified balloon or aerostat designed to travel upon the wires or rails of an aerial railway.
- air-cell** 'e:z,sel *n.* one of the numerous cells or cavities in birds, insects, and certain other flying creatures (and also, sometimes, in animals which do not fly), held by some to be related to respiration or aeration of the blood and by others to be related to the equilibrating or balancing of the body in flight.
- air-chamber** 'e:z,tʃeem-bəz *n.* a chamber or cavity filled with air in an animal or plant, as the camera or lœculus in the nautilus.
- air-chauffeur** 'e:z-ʃo,fə:-zɪŋ *n.* chauffeur in the air; the driving of aeroplanes or other flying-machines in the manner characteristic of a traind chauffeur.
- air-cooled** 'e:z,kould *adj.* cooled by air; having the condensing-apparatus cooled, and the contained gas condensed by circulation of the outer air: as, an \*air-cooled motor.
- air-craft** 'e:z,kɑ:ft *n.* [plural *air-craft*] a craft, vessel, or ship for sailing in the air; an airship; a flying-machine.
- aircraft** 'e:z,kɑ:ft *n.* the craft or trade having to do with the air; the art of aerial navigation; aviation.
- air-cruise** 'e:z,kru:z *n.* a cruise, or sail to and fro, thru the air; an aerial cruise.
- air-cruiser** 'e:z,kru:z-əz *n.* an aerial cruiser; an armed airship designed for swift transport, etc.
- air-current** 'e:z,kəzənt *n.* a current or stream of air; an atmospheric current.
- air-dash** 'e:z,dæʃ *n.* a dash or sudden flight into or thru the air.
- air-disturbance** 'e:z-dɪ,stə:b-əns *n.* a disturbance of the air; a commotion or turbulence due to atmospheric currents.
- airdom** 'e:z-dəm *n.* the dominion of the air; the domain or realm of the atmosphere.
- air-drainage** 'e:z,dreɪ-nɪdʒ *n.* the habitual movements of the air near the surface of the ground; the ground currents, collectively, which characterize the atmosphere above a given land area.
- air-drift** 'e:z,dɪft *n.* the drift or steady course of the air;

- the movement of the atmosphere as driven along by the forces acting on it.
- air-fight** 'e:z,faɪt *n.* a fight or battle which occurs in the air or atmosphere; an aerial battle.
- air-filled** 'e:z,fiɪd *adj.* [also spelt *air=fild*] filled with air, as a fire-balloon or an air-bag.
- air-fleet** 'e:z,flɪɪt *n.* a fleet of airships; an aerial fleet.
- air-flight** 'e:z,flaɪt *n.* a flight in the air; an aerial flight.
- air-float** 'e:z,flʊʊt *n.* a float or air-bladder in certain algae, serving to buoy the plant up in the water; an air-vesicle.
- air-flow** 'e:z,flʊʊ *n.* the flow or movement of the air; the streaming movement of the atmosphere.
- air-flyer** 'e:z,flaɪ-əz *n.* [also spelt *air=flier*] a machine designed to fly in the air; a flying-machine.
- air-flying** 'e:z,flaɪ-ɪŋ *n.* the art of artificial flight thru the air; human flight; aviation.
- air-friction** 'e:z,fsɪkʃən *n.* the friction of the parts of a moving mechanism against the surrounding air, as distinguished from the friction of the bearing-surfaces; the wind-age.
- air-gage** 'e:z,gædʒ *n.* [also spelt *air=gauge*] a gage or instrument for measuring the pressure of air or gases.
- air-gliding** 'e:z,glɑɪ-dɪŋ *n.* the art of gliding or skimming thru the air.
- air-going** 'e:z,gʊʊ-ɪŋ *adj.* adapted for going into the air; designed or fit for air-flight, or for use in the air as, \*air-going craft; \*air-going artillery.
- airgonaut** 'e:z-gə,nɔ:t *n.* an aeronaut; an Argonaut of the air; an air-sailor.
- air-harbor** 'e:z,hɑ:z-bəz *n.* a harbor, on the earth, for use or shelter of airships.
- air-hog** 'e:z,hɒg *n.* a human hog of the air; an aeronaut who drops sand-ballast on pedestrians, or acts as if he owned the whole atmosphere.
- airhole** 'e:z,hʊʊl *n.* [also spelt *air=hole*] a hole or orifice thru which air may escape or enter.
- air-inflated** 'e:z-ɪn,flæ-tɪd *adj.* inflated or filled with air, as a bag.
- air-jockey** 'e:z,dʒɒkɪ *n.* a jockey who rides in the air; the rider or driver of an airship; an expert aviator.
- air-jockeying** 'e:z,dʒɒkɪ-ɪŋ *n.* the action of jockeying or riding skilfully in the air.
- air-journey** 'e:z,dʒɜ:nɪ *n.* a journey in the air; an air-trip.
- air-king** 'e:z,kɪŋ *n.* a king of the air; a champion aviator.
- air-lane** 'e:z,leɪn *n.* a lane or road thru the air; an air-road; an airway.



**air-layer** 'e:z,læe-əz *n.* a layer or stratum of air.

**airless** 'e:z-ləs *adj.* destitute of air; without air: as, \*airless space.

**air-level** 'e:z,ləvəl *n.* a level, or a horizontal plane or tract of constant altitude, in the air; a reach of atmosphere at a certain height above the earth.

**air-line** 'e:z,lain *n.* [also spelt *air line*]

1. a line as direct as tho drawn or stretcht straight thru the air; a bee=line.

2. a line of transportation thru the air; an aerial line of travel or transport.

**air-log** 'e:z,lɔg *n.* a device for measuring the rapidity of an airship's motion.

**air-machine** 'e:z-mə,ʃin *n.* a machine designed to fly in the air; a flying=machine.

**airman** 'e:z-mən *n.* [plural *airmen*] a man skild in managing air=craft; a workman used to working on airships; a sailor of the air; an aeronaut; an aviator.

**air-manometer** 'e:z-mə,nəmɪ-təz *n.* same meaning as *air=gage*.

**airmanship** 'e:z-mən,ʃɪp *n.* the art or skill of a good airman; the practis of managing balloons or air=craft; aeronautism; aeronautics; aviation.

**air-mass** 'e:z,mɑ:s *n.* a mass or volume of atmospheric air.

**air-mastery** 'e:z,mastə-zɪ *n.* mastery of the air by man thru the attainment of the power to fly; the conquest of the air.

**air-meet** 'e:z,mɪt *n.* same meaning as *air=meeting*.

**air-meeting** 'e:z,mɪ-tɪŋ *n.* a meeting or cōcourse of aviators for practis or races in the air; an air=meet; a flying=meet.

**airmen** 'e:z-mən *n. pl.* see *airman*.

**air-meter** 'e:z,mɪ-təz *n.* an apparatus for measuring the quantity or rate of flow of air.

**air-mixture** 'e:z,mɪkstʃəz *n.* the mixture or cōposition of the air or atmosphere; the cōstitution of an air=mass.

**air-naval** *adj.* of an air navy; pertaining to aerial navies.

**air-navigation** 'e:z,nævɪ,gæe-ʃən *n.* [also spelt *air navigation*] navigation of the air or atmosphere; aerial navigation.

**air-navigator** 'e:z,nævɪ-ge-təz *n.* a navigator of the air; an air=sailor.

**airometer** ,e:z'əmɪ-təz *n.* same meaning as *air=meter*.

**air-pilot** 'e:z,pai-lət *n.* a pilot who works in the air; the pilot or driver of an airship; an aviator.

**air-pipe** 'e:z,pai-p *n.* [also spelt *air pipe*] an air=tube.

**air-plane** 'e:z,plæn *n.*

1. (*rare*) a plane designed to glide thru the air; an aeroplane.
  2. (*rare*) an imaginary inclined plane in the air.
  3. an air-level: as, Moisant sought the higher \*air-planes.
- air-plant** 'e:z,plɑ:nt *n.* a plant which derives, or appears to derive its nourishment from the air exclusively, as certain epiphytic orchids and bromeliaceae; an aerofyte.
- air-power** 'e:z,pau-əz *n.* political or commercial power or influence due to the control of the air; aerial strength.
- air-pressure** 'e:z,pʁeʃəz *n.* the pressure of the air; atmospheric pressure; barometric pressure.
- air-proof** ,e:z'psuuf, (*assumptively*) 'e:z,psuuf *adj.* impervious to air; air-tight.
- air-proofing** 'e:z,psuuf-ɪŋ *n.* a rendering proof against the passage of air, as the envelop of a gas-vessel; a making air-tight or impervious to air.
- air-propeller** 'e:z-psə,peləz *n.* a propeller designed for use in the air; an airship-propeller; an aerial propeller; an air-screw.
- air-pump** 'e:z,pʌmp *n.* a pump or machine for the exhaustion, compression, or transmission of air.
- air-race** 'e:z,zɛs *n.* a race in the air; a flying-race.
- air-racer** 'e:z,zɛe-səz *n.* one who races in the air; a racing aviator; also, an aerial racing-machine; a speed-machine.
- air-rarefaction** 'e:z-zæzi,fækʃən *n.* rarefaction of the air; atmospheric rarefaction.
- air-reaction** 'e:z-zɪ,ækʃən *n.* the reaction of the air, as upon a flying-machine.
- air-resistance** 'e:z-zɪ,zɪstəns *n.* the resistance of the air or atmosphere.
- air-road** 'e:z,zʊd *n.* a road of air; a way or highway in the air; an airway; an air-lane; a sky-road.
- air-route** 'e:z,zʊt *n.* a route of travel thru the air; a course or line of air-travel.
- air-runner** 'e:z,zʌnəz *n.*
1. an apparatus or machine which runs or courses thru the air or atmosphere; an aerodrome; an aeroplane; a flyer.
  2. something that runs thru, or pierces the air or atmosphere, as a Hertzian wave.
- air-sac** 'e:z,sæk *n.* [also spelt *air-sack*]
1. one of the membranous sacs or bag-like receptacles in the hollow bones and the cavities of the body of birds, which communicate with the lungs; a large air-cell; an air-space; an air-receptacle; a pneumatocyst.
  2. one of the sacs or elongated cavities which form the ultimate branches of the lungs of animals.

**air-sack** 'e:z,sæk *n.* a sack or bag inflated with air, as in a kite=balloon; an air=bag.

**airsailer** 'e:z,see-ləz *n.* an apparatus for sailing in the air; a glider; a flyer.

**air-sailing** 'e:z,see-lɪŋ *n.* the art of sailing in the air; air=navigation.

**air-sailor** 'e:z,see-ləz *n.* a sailor of the air; an aeronaut; an airman.

**air-scout** 'e:z,skaut *n.* a scout who operates in the air; an aerial observer.

**air-screw** 'e:z,skrou *n.* a screw propeller used in or acting on the air; an air propeller.

**air-shark** 'e:z,ʃɑ:zək *n.* a dangerous or shark-like species of air=craft conceivd as being useful in war; an aerial shark.

**air-shield** 'e:z,ʃiild *n.* [also spelt *airshield*] a shield, on an air=craft, for protection against the air.

**airship** 'e:z,ʃɪp *n.* a ship or vessel designed for sailing in or navigating the air; an aerial ship; a balloon; an air=machine; a flying=machine; an aeroplane; a flyer; also sometimes, specifically, a dirigible balloon or aeronat, as distinguished from a heavier-than-air flying=machine or aeropnef.

*buoyant airship*, an airship which is buoyant or capable of floating or remaining suspended in the air without the aid of lifting=machinery, or aeroplanes; a lighter-than-air airship; a dirigible balloon; an aeronat.

**airship-ascension** 'e:z-ʃɪp-ə,senʃən *n.* an ascension or ascent into the air, made by an airship, dirigible balloon, or flying=machine.

**airship-battalion** 'e:z-ʃɪp-bə,tæliən *n.* an army battalion whose duty it is to operate or tend the government airships.

**airship-commander** 'e:z-ʃɪp-kə,mɑ:n-dəz *n.* the commander or captain of an airship.

**airship-company** 'e:z-ʃɪp,kampə-nɪ *n.* a company or corporation whose business it is to operate airships.

**airship-construction** 'e:z-ʃɪp-kən,strʌkʃən *n.* the construction or bilding of airships.

**airship-driver** 'e:z-ʃɪp,draɪ-vəz *n.* one who drives an airship; a chauffeur of the air.

**airship-engine** 'e:z-ʃɪp,ɛndʒɪn *n.* [also spelt *airship=engin*] the engin or driving=machinery of an airship; the motor or power=plant of a flying=machine.

**airship-flight** 'e:z-ʃɪp,flaɪt *n.* a flight made by airship: as, a transatlantic \*airship=flight.

**airship-gazer** 'e:z-ʃɪp,gæe-zəz *n.* one who gazes or looks expectantly skyward for airships.

- airship-hall** 'e:z-ʃɪp,hɑ:l n. a hall or house for sheltering airships; the hangar or shed at an air-station; an airship-house.
- airship-harbor** 'e:z-ʃɪp,hɑ:z-bəz n. a harbor or refuge, on the ground, for airships; an earth-harbor for air-craft.
- airship-house** 'e:z-ʃɪp,haʊs n. a house where an airship or dirigible balloon is kept; a balloon-house; a balloon-shed; an aerodrome.
- airship-line** 'e:z-ʃɪp,laɪn n. a line for point-to-point transportation by airship; an aerial transport line.
- airshipping** 'e:z,ʃɪpɪŋ n. [also spelt *air=shipping*] the use of airships; aerial navigation.
- airshipshape** 'e:z-ʃɪp,ʃeɪp adj. in the shape or condition appropriate or usual for a good airship; shipshape in an aerial sense.
- airship-station** 'e:z-ʃɪp,steɪ-ʃən n. a station at which airships are kept, as for purposes of defense.
- airship-wrecking** 'e:z-ʃɪp,zekɪŋ n. the wrecking or destroying of airships, for criminal purposes.
- airsick** 'e:z,sɪk adj. sick or ill because of traveling in the air.
- airsickness** 'e:z,sɪkɪnɪs n. a supposed sickness due to motion thru the air; nausea; seasickness.
- air-skipper** 'e:z,skɪpər n. a skipper who works in the air; the captain or driver of an airship; an aviator.
- air-space** 'e:z,speɪs n. a space filled with air, as between the two layers of fabric of the double surfacing of an aeroplane.
- air-squadron** 'e:z,skwədɹən n. a squadron which operates in the air; an aerial squadron.
- air-station** 'e:z,steɪ-ʃən n. a station, on the earth, where airships may arrive and depart.
- air-strata** 'e:z,streɪ-tə n. see *air=stratum*.
- air-stratum** 'e:z,streɪ-təm n. [plural *air=strata*] a stratum of the air; an air-layer.
- air-stream** 'e:z,stri:m n. a stream or current of air; an atmospheric stream.
- air-supply** 'e:z-sə,plɪ n. the supply or provision of air, as that available for the use of a fan-wheel or blower.
- air-surf** 'e:z,sɜ:zɪ n. the surf of the air; the aerial surf; the swell of the breaking air-currents or winds.
- air-swirl** 'e:z,sɜ:zɪ n. a swirl or eddy in the air; an atmospheric vortex or whirl.
- air-tight** ,e:z'taɪt, (*assumptively*) 'e:z,tɑɪt adj. so tight or close as to be impermeable to air; air-proof.
- air-tour** 'e:z,tu:z n. a tour or journey in the air; an air-trip.

**air-touring** 'ɛ:z,tu:-zɪŋ *n.* the making of air=tours; air=travel.

**air-track** 'ɛ:z,tɹæk *n.* [also spelt *airtrack*, *air track*] a track or definite course in the air; an aerial race=track.

**air-traveler** 'ɛ:z,tɹævə-ləz *n.* [also spelt *air=traveller*]

1. an apparatus which travels in the air; a dirigible; a flying=machine; an aerodrome.

2. one who travels in the air; an aerial voyager.

**air-traveling** 'ɛ:z,tɹævə-lɪŋ *n.* [also spelt *air=travelling*] the art or occupation of traveling in the air.

**air-trick** 'ɛ:z,tɹɪk *n.* a trick or exploit performed in the air; an exhibition of air=jockeying.

**air-trip** 'ɛ:z,tɹɪp *n.* a trip or journey in the air; an air=journey.

**air-tube** 'ɛ:z,tʃəub *n.* a tube for conducting air, as in connection with a ballonet; an air=pipe.

**air-turbine** 'ɛ:z,tɹɪ:z-baɪn *n.* a wheel of turbinate form driven by the wind or other air=current.

**air-valve** 'ɛ:z,vælv *n.* [also spelt *air=valv*] a valv for allowing air to pass.

**air-vehicle** 'ɛ:z,vɪ-i-kəl *n.* a vehicle designed for sailing the air; an aerial vehicle; an air=craft.

**air-velocity** 'ɛ:z-vɪ,ləsi-tɪ *n.* the velocity of the air; the rapidity of movement of the atmosphere or the air=currents.

**air-vessel** 'ɛ:z,vəsəl *n.*

1. any vessel containing air, as one of the tracheae or respiratory tubes of an insect, or a spiral vessel in a plant.

2. a vessel or bag inflated or capable of being inflated with air, and placed inside the gas=bag of a balloon for keeping the main envelop in shape, or regulating ascent and descent; an air=bag; an air=chamber.

**airward** 'ɛ:z-wəzd *adv.* [synonymous cognate *airwards*] toward the air; upward; skyward.

**air-wave** 'ɛ:z,wæv *n.* a wave of air; an atmospheric undulation.

**airway** 'ɛ:z,wɛɪ *n.* a way or road in the air or atmosphere; an aerial way; an air=road; an air=lane.

**air-wheel** 'ɛ:z,wɪl *n.* a wheeling or rotary movement of the air or atmosphere; a cyclone or an anticyclone.

**air-wizard** 'ɛ:z,wɪzəzd *n.* a wizard or magician who has power over the air; an aviator endowed with magic powers.

**air-woman** 'ɛ:z,womən [plural *air=women*] a woman skilful in managing air=craft; a female aviator; an aviatrix.

**airworthiness** 'ɛ:z,wɜ:ðɪ-nɪs *n.* the state of being air=worthy; airworthy character or condition; fitness for service in the air.

**airworthy** 'e:z,wɒzðɪ *adj.* [also spelt *air-worthy*] worthy or fit for service in the air; staunch and well adapted to encounter stormy airs: said of an airship.

**airy** 'e:-zɪ *adj.*

1. performed or taking place in the air or atmosphere; of, belonging to, or appropriate to the air; aerial; aërian: as, \*airy navies.

2. placed high in the air; open or exposed to the air; aerial; lofty; ethereal: as, an \*airy mountain-top, \*airy heaven.

3. exposed to the open air; abounding in free air; breezy: as, an \*airy mode of life.

4. composed or made of air; air-like; buoyant, light, frail, elastic: as, \*airy, frail, and fairy craft; noiseless, \*airy flight.

**airy** 'e:-zɪ *n.* same meaning as *aery*.

**ala** 'eɛ-lə *n.* a winglike part.

*ala spuria*, the false or bastard wing of a bird; the alula.

**alar** 'eɛ-ləz *adj.* of a wing or wings; winglike; wing-shaped.

*alar expanse*, see *expanse*.

*alar extent*, see *extent*.

*alar tract*, the tract or area which constitutes the surface of a bird's wing; the wing-tract.

**alary** 'eɛ-lə-zɪ *adj.* of alae or wings: as, \*alary aerostation.

**alate** 'eɛ,lət *adj.* having wings or side appendages resembling wings; winged.

**alated** 'eɛ,lətɪd *adj.* winged; having wings.

**alation** ,e'lɛe-ʃən *n.* winged condition; the mode in which the wings of an insect are formed or disposed upon the body.

**albatross** 'ælbə,tɹɒs *n.* [also spelt *albatros*] a sea-bird of the petrel family which inhabits the southern seas and the entire Pacific ocean and is noted for its soaring.

*great albatross*, the largest of sea-fowls, *Diomedea exulans*; the albatross.

*mechanical albatross*, an aeroplane flying-machine.

**alcohol** 'ælkə,həl *n.* a limpid colorless liquid, ethyl hydrate, used as a fuel in engines.

*absolute alcohol*, alcohol entirely free from water; anhydrous alcohol; pure alcohol.

*denatured alcohol*, alcohol which has been deprived of certain of its natural characteristics by imparting to it a disagreeable odor and nauseating property by adding to it a certain percentage of benzine or other substances, in order to prevent its use as an intoxicant while promoting its use in the arts, as a fuel, etc.

**aliform** 'æli,fə:zm *adj.* having the form of a wing; wing-shaped, winglike; alate; pterygerid.

**alight** ə'laɪt *intr.* [preterit *alighted, alit*] settle or ledge upon the ground or elsewhere, after descending thru the air above; dismount, get down, or land from a balloon or airship; land under control, on a particular spot or object, by floating, flying, or falling lightly, as a bird from the wing; descend, settle (and dismount).

**alighting-area** ə'laɪ-tɪŋ,ɛ:zi-ə *n.* an area or tract of ground to be used by aviators for landing their machines and alighting.

**alighting-gear** ə'laɪ-tɪŋ,gɪ:z *n.* the gear or apparatus (in an air-craft) which is used in alighting or coming to earth; the landing-gear.

**aliped** 'æli,pɛd *adj.* wing-footed, as a bat.

**aloft** ə'lə:ft *adv.*

1. high up in the air or sky; at a great elevation, relatively, above the earth; on high.

2. on or to a higher part of a balloon or airship.

**alpaca** ,ælpækə *n.* a fabric made of the wool of a species of Peruvian llama, used in making balloon-envelops.

**altimeter** ,æltɪmɪ-təz *n.* an instrument for measuring altitudes, as a quadrant, sextant, or theodolite.

**altitude** 'æltɪ,tʃud *n.* height or elevation above the ground, or, in a stricter sense, above the level of the sea; height in the air; loftiness: as, flying at frigid \*altitudes.

**altitude-control** 'æltɪ-tʃud-kən,tʃʊəl *n.* the controlling-apparatus by which the altitude of an airship is regulated; the control by the manipulation of which the altitude-rudder is operated.

**altitude-prize** 'æltɪ-tʃud,pʁaɪz *n.* a prize or reward offered or won for attaining a specially high altitude in an airship; a height-prize.

**altitude-record** 'æltɪ-tʃud,zɛkərd *n.* a record for altitude; a height-record.

**altitude-rudder** 'æltɪ-tʃud,zʌdəz *n.* the rudder by which the altitude of an airship is controlled.

**alto** 'æltə *adj.* high, highest: as, \*alto clouds.

**alto-cumulus** ,æltə'kʃumjʊ-ləs *n.* [plural *alto-cumuli*] high cumulus, consisting of whitish or grayish balls or masses, with shaded portions, usually grouped in flocks or rows, often so close together that their edges meet; cumulo-cirrus.

**alto-nimbus** ,æltə'nɪmbəs *n.* [plural *alto-nimbi*] high nimbus, a dull-colored cloud formed at the top of a mass of air flowing in under an advancing cumulus or cumulo-nimbus, and afterward giving rise to rain.

**alto-stratus** ,æltó'stree-təs *n.* high stratus, a thin veil-like cloud of a gray or blue color exhibiting, when near the sun or moon, a brighter portion which sometimes produces a corona; strato=cirrus.

*spotted alto-stratus*, mackerel sky.

**alula** 'æliu-lə *n.* the false or bastard wing of a bird; the ala spuria.

**aluminium** ,æliu'mini-əm *n.* same meaning as *aluminum*.

**aluminum** ə'liu-mi-nəm *n.* a whitish, ductile, malleable, and very light metal often used in airship-construction; aluminium.

*aluminum bronze*, a strong, yellowish metal, an alloy of aluminum and copper.

**amidships** ə'mɪd,ʃɪps *adv.* in or toward the middle of an airship; midway between stem and stern.

**ample** 'æmpəl *adj.* both long and broad without being pointed, as the wing of a heron or crane.

**anchor** 'æŋkəz *n.* a large pronged hook or similar appliance attached to a balloon or airship by a rope, used for establishing a connection with the earth preparatory to landing, or for holding or mooring the airship to the ground or to some fixed object; a grapnel.

**anchor** 'æŋkəz *v.*

1. *tr.* secure (a balloon or airship) with an anchor; place at, or bring to, anchor.

2. *intr.* cast anchor; come to anchor: said either of the crew or the airship.

**anchorage** 'æŋkə-zɪdʒ *n.* the action of anchoring; the state of being anchored; conditions admitting of anchoring; a place for anchoring.

**anchorage-post** 'æŋkəzɪdʒ,pəʊst *n.* a lofty steel post or lattice tower, proposed as a means for anchoring dirigible balloons.

**anchor-hook** 'æŋkəz,hʊk *n.* one of the hooks or prongs of an anchor or grapnel; a grapnel-hook.

**anchoring-part** 'æŋkəzɪŋ,pɑ:zɪt *n.* one of the parts or portions of a dirigible balloon to which the anchor-ropes or grapnel-ropes are attached.

**anchoring-ring** 'æŋkəzɪŋ,zɪŋ *n.* a ring on a dirigible balloon to which the anchor-rope is attached.

**anchoring-rope** 'æŋkəzɪŋ,zəʊp *n.* same meaning as *anchor-rope*.

**anchoring-rule** 'æŋkəzɪŋ,zʊl *n.* one of the rules or regulations about the anchoring of dirigible or other balloons.

**anchor-ring** 'æŋkəz,zɪŋ *n.* the ring of an anchor, to which the anchor-rope is fastened.



**anchor-rope** 'æŋkəz,ʒəp *n.*

1. a rope by which the anchor is attached to the balloon or airship; an anchoring-rope; a grapnel-rope.

2. a rope or line by which a kite is sometimes anchored or secured to the earth, to prevent it from being carried away by the wind which supports it.

**anemobarometer** ə,nemə-bə'zəmɪ-təz, ,æni-mə-bə'zəmɪ-təz *n.* a wind-barometer; an instrument for obtaining air-pressure and wind-pressure by causing the air to pass thru a tube or tubes and act upon enclosed barometers.

**anemocinemograph** ə,nemə-sɪ'nemə,gzɑ:f, ,æni-mə-sɪ'nemə,gzɑ:f *n.* [also spelt *anemocinemograf*] an instrument which records the variations in the velocity of the wind.

**anemogen** ə'nemə-dʒɪn *n.* an apparatus for producing and experimenting upon air-currents similar to the natural winds of the atmosphere.

**anemograph** ə'nemə,gzɑ:f *n.* [also spelt *anemograf*] an instrument for recording the direction or force of the wind; a wind-register.

**anemographic** ə,nemə'gzæfɪk *adj.* [also spelt *anemografic*] of or pertaining to anemography; produced by an anemograf or wind-register.

**anemogram** ə'nemə,gzæm *n.* a graphic record of the pressure or direction of the wind, produced by an anemograf or wind-register.

**anemography** ,æni'mөгzə-fi *n.* [also spelt *anemografy*]

1. description of the winds; a treatise on winds.

2. the art of recording the direction and force of winds.

**anemological** ə,nemə'ledʒɪ-kəl, ,ænimə'ledʒɪ-kəl, *adj.* of or pertaining to anemology.

**anemology** ,æni'mөлə-dʒɪ *n.* the science of the winds.

**anemometer** ,æni'məmɪ-təz *n.* an instrument for measuring the velocity, pressure, or other properties of the wind; a wind-gage; a wind-meter.

*Biram's anemometer*, a form of wind-gage.

*calibration of an anemometer*, the conversion of anemometer-readings into true wind-velocities or wind-powers by application of whirling-apparatus methods.

*Hagemann's anemometer*, a suction anemometer by which the velocity is found from the rarefaction produced within a vertical tube by the wind.

*helicoid anemometer*, a modified form of Woltman's anemometer in which the plates are bent into helicoidal surfaces like those of a screw propeller; a helicoidal anemometer.

*Hooke's anemometer*, a pendulum anemometer.

*Lander's anemometer*, an anemometer or anemograf in which a rubber bellows lifts a float suspended in glycerin.

*Lind's anemometer*, an anemometer consisting of an inverted glass sifon partly filled with water, mounted on a wethervane.

*pendulum anemometer*, an anemometer, first described in 1666, in which a metal pendulum is hung broadside to the wind, the velocity of the wind being measured by the deflection of the pendulum from the vertical; Hooke's anemometer.

*reflecting anemometer*, same as *Aimé's nephoscope*. see under *nephoscope*.

*Robinson's anemometer*, an anemometer in which four hollow hemispheric cups revolve on a vertical axis.

**anemometric** ə,nemə'metɪk, æni-mə'metɪk *adj.* of or pertaining to anemometry.

**anemometrical** ə,nemə'metɪk-əl, æni-mə'metɪk-əl *adj.* same meaning as *anemometric*.

**anemometrograph** ə,nemə'metɪg-rə:f, æni-mə'metɪg-rə:f *n.* [also spelt *anemometrograf*] an anemograf.

**anemometry** æni'məmi-tɪ *n.* the process or art of measuring the force and velocity of the wind.

**anemonal** ə'nemə-nəl *adj.* of or pertaining to the wind.

**anemophobia** ə,nemə'fɔ-bi-ə, ænəmə'fɔ-bi-ə *n.* [also spelt *anemofobia*] a morbid fear of high winds.

**anemoscope** ə'nemə,skop *n.* an instrument for showing the direction of the wind; a wind-vane.

**aneroid** 'ænə,zəɪd *adj.* without wetness; destitute of liquid: applied to a kind of barometer which measures the pressure of the atmosphere not by its action on a column of mercury as does the ordinary barometer, but by its action on the elastic lid of a box containing a vacuum.

**aneroid** 'ænə,zəɪd *n.* an aneroid barometer.

**angle** 'æŋgəl *n.* the space included between meeting lines or planes; also, the degree of inclination of two lines to each other, as of the line of flight to a horizontal base-line.

*angle of ascent*, the positive angle of inclination to the horizontal at which an aeroplane flying-machine makes an ascent into the air.

*angle of attack*, same meaning as *angle of incidence*.

*angle of blade-travel*, the angle or degree of inclination at which a propeller-blade travels thru, or impinges upon the air; the angle of travel of a propeller-blade.

*angle of entry*, the angle at which the front edge of an aeroplane or aerocurve enters or goes into the air; the angle formed by the line of motion of an aerofœil with a line in the

same vertical plane and tangent to the advancing edge of the aerofœil; the entrant angle; the leading-angle: the opposite of *angle of trail*.

*angle of impact*, same meaning as *angle of incidence*.

*angle of incidence*, the angle at which an aerofœil, as a whole, strikes or impinges upon the air; the angle which the sustaining-planes of an air-craft, in entering the air, make with the apparent direction of the air-current; the angle formed by the line of motion of an aerofœil with the line (or chord of the curv) of intersection of the aerofœil with the vertical plane passing thru the aerofœil's line of motion; the angle of impact; the angle of attack.

*angle of the vertical*, see under *vertical* (noun).

*angle of the wing*, see under *wing* (noun, *sense 1*).

*angle of trail*, the angle at which the rear edge of an advancing aeroplane or aerocurv trails or is drawn along thru the air as it leaves it behind; the angle at which the following edge of an aerofœil leaves or comes out of the air; the angle formed by the line of motion of an aerofœil with a line in the same vertical plane and tangent to the following edge of the aerofœil; the trailing-angle: the opposite of *leading-angle* and *angle of entry*.

*carpal angle*, the bend or flexure of a bird's wing; the angle of the wing; the bend.

*entrant angle*, same meaning as *angle of entry*.

*law of the angle*, the law relating to the angle of incidence at which a wing or aerofœil is presented to the air.

*negative angle of incidence*, the angle of incidence of an aerofœil whose line of motion slants downward or below the horizontal; the negative angle of inclination of the line of flight of an aeroplane or aerocurv.

*negative angle of inclination*, the angle of the inclination of an aerofœil, or of its line of flight, when it slants or slopes downward, or below the horizontal.

*optima angle*, the best or most advantageous angle of incidence at which a wing, aeroplane, or aerofœil may be presented to the air.

*positive angle of inclination*, the angle of the inclination of an aerofœil, or of its line of flight, when it slants or slopes upward, or above the horizontal.

**antenna** ,æ'n'tenə *n.* [plural *antennae*] a receiving-device used in wireless telegraphy.

**antennae** ,æ'n'te,ni *n. pl.* see *antenna*.

**anthelion** ,æ'n'θri-li-ən *n.* [plural *antheria*] a luminous and usually colored ring or nimbus seen (single or in concentric series) surrounding the shadow of the observer's head pro-

jected on the under or upper surface of the clouds, or on a fog-bank, or on dew-covered grass, opposite to the sun; an aureola; a glory.

**anthropornis** ,ænthɔpɔːz-nɪs *n.* a flying-machine designed in the year 1877 by de Louvrié.

**anticyclonal** ,æntɪ-saɪˈkloʊ-nəl, ,æntɪˈsaɪ-klə-nəl *n.* same meaning as *anticyclonic*.

**anticyclone** ,æntɪˈsaɪˌklɒn *n.* a weather-condition presenting some features which are the opposites of those presented by a cyclone; the rotary outward flow of air from a region of high barometric pressure; also the whole system of high pressure and outward flow.

**anticyclonic** ,æntɪ-saɪˈklɒnɪk *adj.*

1. opposed to cyclonic: as, an \*anticyclonic theory.

2. related to, or having the nature of, an anticyclone.

*Galton's anticyclonic law*, the law of anticyclones announced by Galton in 1863; *Galton's anticyclonic rule*.

**anticyclonically** ,æntɪ-saɪˈklɒnɪ-kə-ly *adv.* in the manner of an anticyclone; in an anticyclonic manner.

**antisolar** ,æntɪˈsɔʊ-ləz, (*assumptively*) 'æntɪˌsɔʊ-ləz *adj.* situated at a point opposite to the sun, as the center of the rainbow or the gegenschein; located at the antelios.

**antisun** 'æntɪˌsʌn *n.*

1. the point in the sky diametrically opposite the sun.

2. the point in the sky opposite the sun in azimuth and at the same altitude as the sun above the horizon.

**antitrade** 'æntɪˌtreɪd *n.* a wind that blows steadily above the tradewind and in the opposite direction to it; an antitrade-wind; a return-trade.

**antitradewind** ,æntɪˈtreɪdˌwɪnd, (*by contrast*) 'æntɪˌtreɪd-wɪnd *n.* the wind or air-current above and opposite in direction to a tradewind; the antitrade; the countertrade; the return-trade.

**anti-twilight** ,æntɪˈtwɑɪˌlaɪt *n.* the twilight arc, as first seen in the east opposite the setting sun.

**Antwerp** 'ænˌtʊwɜp *n.* a kind of carrier-pigeon.

**aptera** 'æptə-zə *n. pl.* wingless insects, etc.

**apteral** 'æptə-zəl *adj.* wingless; (in zoology) apterous.

**apteran** 'æptə-zən *adj.* wingless.

**apteran** 'æptə-zən *n.* a wingless insect; one of the aptera.

**apterium** æpˈtɪː-zɪ-əm *n.* [plural *apteria*] a featherless tract on the skin of a bird; an apterion: distinguished from *pteryla*.

**apteroid** 'æptəˌzɔɪd *adj.* wingless; as of something relatively destitute of wings or sustaining-surfaces; similar to that of a wingless thing. compare *pterygoid*.

*apteroid aspect*, see under *aspect*.

**apteroid** 'æptə,zəɪd *n.* a bird destitute of developed wings, or with wings merely rudimentary, as the emu.

**arc** a:zk *n.* any part of the circumference of a circle or other curve.

*twilight arc*, see under *twilight*.

**arch** a:ztʃ *n.* a curved structure; a curve, or curved part, concave downward, as in the front edge of a wing; a droop.

**arched** a:ztʃt *adj.* [also spelt *archt*]

*arched form*, a form of wing-section characterized by an arch or droop; the dipping-front-edge form of wing-section.

**argon** 'a:z,gen *n.* a gaseous element, a constituent of the atmosphere.

**Ariel** 'e:-zi-əl *n.* one of the seven spirits or angel princes fancied to preside over the waters under the leadership of Michael; a prince or king of the air; an air-king.

**arise** ə'zaɪz *intr.* go or come up; ascend.

**arrow** 'æɹɔ *n.* a slender missile, usually pointed, feathered, and barbed, and shot from a bow.

*paper arrow*, a toy hand-thrown arrow or dart-like missile made of paper and consisting essentially of two elongated and pointed aeroplanes intersecting each other at right angles.

**arrowplane** 'æɹɔ,pleɪn *n.* an airship of the aeroplane type invented by L. G. W. Schroeder, resembling a paper arrow or dart in shape.

**arrowy** 'æɹɔ-ɪ *adj.* like that of an arrow; arrow-like: as, the \*arrowy swiftness of flight.

**ascend** *intr.* go up; mount; soar; rise; move to a higher level.

**ascending-motion** ə'sendɪŋ,məʊ-ʃən *n.* the motion by which a balloon ascends or mounts into or thru the air; the motion of ascent; the rising-movement.

**ascending-position** ə'sendɪŋ-pə,zɪʃən *n.* the position of the rudder of an aeroplane or flyer conducive to ascending or rising in the air.

**ascending-power** ə'sendɪŋ,pəʊ-əz *n.* power to ascend or rise; lift: as, the \*ascending-power of a balloon.

**ascension** ə'senʃən *n.*

1. the action of ascending, rising, or mounting; a going up into the air; ascent.

2. a balloon-ascent.

**ascensional** ə'senʃə-nl̩ *adj.* of or pertaining to ascension or ascent; rising.

**ascension-ground** ə'senʃən,gɹaʊnd *n.* a ground or open lot whence an ascension or ascent is made in a balloon or airship.

**ascensionist** ə'senʃə-nɪst *n.* one who makes balloon=ascensions; a balloonist.

**ascensive** ə'sensɪv *adj.* [also spelt *ascensiv*] of or pertaining to ascension; mounting or rising in the air.

**ascent** ə'sent *n.* a rising or mounting into the air; an ascension, as of a balloon or flyer; a balloon=ascent.

*double ascent*, an ascent made by two persons at once in the same machine; a two=man ascent.

*nocturnal ascent*, see *nocturnal*.

**aspect** 'æ,spɛkt *n.*

1. look, appearance, as of the sky or of a wether=map.

*aspect of a wether=map*, the appearance of a (daily) wether=map, its isobars, isotherms, etc., with reference to changes affecting a given point; the direction of the gradient at any given station.

*aspect of the sky*, the appearance of the sky, especially with reference to change of wether, etc.; the sky=aspect.

aspect.

*barometric aspect*, the aspect of a daily wether=map with reference to barometric pressure; the direction in which lies the point toward which the principle barometric gradient is rising.

*thermal aspect*, the aspect of a (daily) wether=map with reference to thermal conditions; the direction in which lies the point toward which the principle thermometric or temperature gradient is moving; the direction from which a change of temperature appears to be advancing toward a given station.

2. the appearance or look presented by an aerofœil according as it is viewd in the direction of flight, or at right angles to the plane of flight; the arrangement or dimensional proportions of an aeroplane, or other aerofœil, in relation to the direction of flight, or in relation to its position about its vertical axis. compare *attitude*.

*apteroid aspect*, an aspect or appearance unlike that of wings; wingless aspect; specifically, the aspect of an aeroplane or other aerofœil when it presents the appearance (if viewd in the direction of flight) as of something relatively destitute of wings or sustaining=surfaces; also, the appearance of an aerofœil the greater dimension of which is in the direction of flight (which is the reverse of the arrangement which obtains in the wing plan=form of birds).

*horizontal aspect*, the aspect of the horizontal dimensional proportions, or plan=form, of an aeroplane or other aerofœil; the appearance of an aerofœil as viewd in its horizontal extension or as posed in the plane of its flight.

*pterygoid aspect*, an aspect or appearance like that of wings; winglike or winged aspect; specifically, the aspect of an aeroplane or other aerofœil when it presents the appearance (if viewed in the direction of flight) as of something relatively well provided with wings or sustaining-surfaces; also, the appearance of an aerofœil the lesser dimension of which is in the direction of flight (which is the same as the arrangement which obtains in the wing plan-form of birds.

*vertical aspect*, the aspect of the vertical dimensional proportions, or the elevation, of an aeroplane or other aerofœil; the look or appearance of an aerofœil as viewed in the direction of flight.

**aspect-ratio** 'æ-spekt,zæe-ʃə *n.* the ratio of the two dimensions (in any given aspect) of a natural or artificial flyer; the proportion of the spread, span, or transverse dimension of an aerofœil to its depth, or fore-and-aft dimension.

**aspiration** ,æspə'zæe-ʃən *n.* the action of aspiring or breathing; the drawing of breath; specifically, the action of a bird or aerofœil in moving or soaring into the wind, that is, in making headway or progress against, and relative to, the wind, apparently by breathing or sucking; a mode of maintaining motion, as if by drawing or pulling forward, in flight, in a direction contrary to the wind.

**aspirator** 'æspə,zetəz *n.* an apparatus for drawing off air or other gas, and thus creating a partial vacuum.

**aspire** ə'spaɪz *intr.* breath forth; rise, mount up; specifically, move or soar into the wind, that is, make headway against, and relative to, the wind, as if by breathing, sucking, or drawing.

**astern** ə'stɜ:zn *adv.*

1. (*of place*) in or at the stern or hinder part or end of an airship; in the rear; aft.

2. (*of motion*) toward the stern; to the rear; aft.

**astronomy** ə'strɒnə-mɪ *n.* the science of the stars or heavenly bodies.

**atmosphere** 'ætmos,fɪ:z *n.* [also spelt *atmosfere*]

1. the sphere of air surrounding the earth; the whole body of terrestrial air; the gaseous envelop of the globe; the aerosphere.

2. the air of any particular place or locality, especially as influenced by weather-conditions: as, the \*atmosphere of a room, the \*atmosphere of Chicago.

3. a pressure of 15 pounds to the square inch, taken as the normal pressure exerted by the air at the surface of the earth: as, a pressure of three \*atmospheres.

**atmospheric** ,ætməs'fezɪk *adj.* [also spelt *atmosferic*] of or pertaining to the atmosfere or air; aerial.

**atmospherical** ,ætməs'fezɪ-kəl *adj.* [also spelt *atmosferical*] same meaning as *atmospheric*.

**atmospherically** ,ætməs'fezɪkə-lɪ *adv.* [also spelt *atmosferically*] with respect to the atmosfere; as regards air-conditions.

**atmospherology** ,ætməsfr'zələ-dʒɪ *n.* [also spelt *atmosferology*] the science of the atmosfere.

**attitude** 'ætɪ,tʃud *n.* a posture or disposition of the parts of an aerofeil relativ to the direction of flight; the position of an aeroplane about a transverse horizontal axis. compare *aspect*.

*ground attitude*, the attitude, posture, or angle of incidence of the aerofeils of a flying-machine while standing on the ground: distinguished from *flying-attitude*.

**aureola** 'czɪ-ə-lə *n.* a luminous emanation, ring, halo, or cloud radiating frem, or surrounding, a figure or an object; an anthelion; a glory; an aureole.

**aureole** 'c:-zi-ol *n.*

1. a luminous emanation, ring, halo, or cloud radiating frem, or surrounding, a figure or an object, such as observed, for example, around an electric arc produced in a vacuum; an aureola.

2. (in *meteorology*) the ring of white light about twelv degrees wide, with a ruddy border, sometimes seen around the sun or moon.

3. (in *astronomy*) the ring of light seen around the sun or moon in total eclipses of the sun.

**aurora** 'czɔ:-zə *n.*

1. the rising light of the morning; the dawn.

2. a luminous radiation, probably of electrical character, originating in the vicinity of the earth's northern (or southern) magnetic pole, visible from time to time by night, in the heavens, especially toward the northern or southern part of the sky; aurora borealis; northern (or southern) lights; merry-dancers; streamers.

*aurora australis*, the aurora of the southern sky; the southern lights.

*aurora borealis*, the northern lights.

**auroral** 'czɔ:-zəl *adj.* of or pertaining to the aurora, or to auroras: as, \*auroral arch, \*auroral beams, \*auroral corona, \*auroral distribution, \*auroral flashes, \*auroral needles, \*auroral period, \*auroral periodicity, \*auroral waves.

**auto-balloon** 'c:-tə-bə,lʊn *n.* a small dirigible balloon for ordinary purposes; a lighter-than-air flyabout.



- auto-ballooning** 'c:-tə-bə,lou-nɪŋ *n.* the use of auto-balloons; the action or sport of flying about in small dirigibles.
- avalanch-wind** 'ævə-lɑ:nʃ,wɪnd *n.* a wind produced by an avalanche, sometimes so violent as to tear a person's clothes to shreds.
- Aves** 'eɪ,vɪz *n. pl.* the birds; the feathered vertebrates.
- avian** 'eɪ-vi-ən *adj.* of or pertaining to birds.
- avian** 'eɪ-vi-ən *n.* a member of the class Aves; a bird.
- aviarist** 'eɪ-vi-ə-zɪst *n.* the keeper of an aviary.
- aviary** 'eɪ-vi-əri, 'eɪ-vi-ə-zɪ *n.* a large cage, house, or enclosure where birds are bred or kept; a bird-house.
- aviate** 'eɪ-vi,et *intr.* fly: as, "Flyer," the \*aviating cat.
- aviatic** ,eɪ-vi'ætɪk *adj.* of or relating to aviation.
- aviatics** ,eɪ-vi'ætɪks *n.* aviation.
- aviating** 'eɪ-vi,etɪŋ *n.* the art, occupation, or sport of flying; aviation.
- aviation** ,eɪ-vi'ee-ʃən, (less properly) ,ævi'ee-ʃən *n.* the art or act of flying; the science or practice of artificial flight; manflight: often restricted to flight by means of heavier-than-air machines. compare *aeronautics*.
- aviation-course** ,eɪ-vi'ee-ʃən,kɔ:z *n.* a course or track where airships or flyers are tested or flown; an aviation-track; an aerodrome.
- aviation-expert** ,eɪ-vi'ee-ʃən,ek-spɜ:t *n.* an expert on aviation; one who is skilled in the art or theory of artificial flight.
- aviation-field** ,eɪ-vi'ee-ʃən,fi:ld *n.* a field or tract of land where airships are tested or flown; a flying-ground.
- aviation-ground** ,eɪ-vi'ee-ʃən,gzaʊnd *n.* [commonly used in the plural] a ground, field, or tract of land where airships or flyers are tested or flown; an aviation-field.
- aviation-meet** ,eɪ-vi'ee-ʃən,mɪt *n.* a meet or meeting for practicing aviation or flying; an aviation-meeting; a flying-meet; an aero meet.
- aviation-park** ,eɪ-vi'ee-ʃən,pɑ:z *n.* a park or field devoted to or used for practicing aviation or flying; an aviation-field; a flying-ground.
- aviation-shed** ,eɪ-vi'ee-ʃən,ʃed *n.* a shed for housing a flying-machine; an aeroplane-shed; a hangar.
- aviation-supply** ,eɪ-vi'ee-ʃən-sə,pɫaɪ *n.* [commonly used in the plural, *aviation-supplies*] a supply or commodity used in connection with aviation, as a propeller-blade.
- aviation-tournament** ,eɪ-vi'ee-ʃən,tə:z-nə-mənt *n.* a tournament for practicing aviation or flying; a flying-meet.
- aviation-track** ,eɪ-vi'ee-ʃən,tɾæk *n.* a track or course where

airships or flyers are tested or flown; an aviation=course; an aerodrome.

**aviator** 'æe-vi,etəz *n.*

1. a flying=machine; a flyer.

2. one who flies, especially in heavier-than-air machines; one who practises aviation; a flyer, aeronaut, or airman.

**aviatorial** ,æe-vi-ə'tɔ:-zi-əl, ,ævi-ə'tɔ:-zi-əl *adj.* of or pertaining to aviators or aviation; relating to human flight.

**aviatory** 'æe-vi-ə,tɔ:-zi *adj.* of aviation.

**aviatress** 'æe-vi,etɪs *n.* a female aviator; a woman who drives a flying=machine.

**aviculture** 'æe-vi,kaltʃəz *n.* the rearing of birds; bird=fancying.

**avian** 'æe-vi-ən, 'ævi-ən *n.* a batlike type of aeroplane developed by Clément Ader, a French electrician, which, as a result of its performance of October 9, 1890, is noted for being the first power-driven, man-carrying aeroplane ever to attain flight.

**a-wing** ə'wiŋ *adv.* on the wing; flying.

**axillar** 'æksɪ-ləz *adj.* axillary.

**axillar** 'æksɪ-ləz *n.* [commonly used in the plural] any one of the feathers growing from the axilla or arm=pit of a bird; an axillary feather.

**axillary** 'æksɪ,lɛzi *adj.* of the axilla or arm=pit of a bird.

*axillary feathers*, the feathers growing from the axilla or arm=pit of a bird; the innermost feathers lining the wing; the axillars.

**azure** 'æzəz, 'æe-zəz *n.* the blue color of the clear sky; also, the unclouded vault of heaven.

**azure** 'æzəz, 'æe-zəz *adj.* colored like the clear sky; sky=blue; sky=colored, cerulean.

**backbone** 'bæk,bʊn *n.* [also spelt *back=bone*] the main support or axis; the chief substantial part, as of a dirigible; a rigid rod connecting the cells of a cellular kite.

**back-draft** 'bæk,dɾɑ:ft *n.* [also spelt *back draught*] the draft at the back, or in the rear of, a flying=machine; the wash.

**backflow** 'bæk,flʊ *n.* the flowing backward of the air when acted upon as by a propeller; slip.

**backsail** 'bæk,seɪl *n.* a sail situated at the back or hinder part of an airship; a sail-like tail.

**baffle-plate** 'bæfəl,plæt *n.* a metal plate used to baffle or direct the flow of air or other gas; a deflector.

**balance** 'bæləns *n.* a balanced condition; a state of equilibrium; equipoise.

*automatic balance*, balance or equilibration of a flying-machine by automatic or self-acting mechanism; automatic equilibrium; automatic stability.

**balance** 'bæləns *tr.* maintain in a state of equilibrium or equipoise; keep steady; equilibrate, stabilize, poise.

**balancer** 'bælən-səz *n.*

1. one of a pair of slender processes with clubbed ends placed near the insertion of the wings in a dipterous insect or a male cockroach, supposed to aid in balancing or equilibrating the insect; a halter; a poiser.

2. a rope for balancing or maintaining the equilibrium of a balloon; an equilibrator; a guide-rope.

**balancing-head** 'bælənsɪŋ,hed *n.* a head or fore-part of a kite, designed to aid in balancing or equilibrating.

**balancing-machinery** 'bælən-sɪŋ-məʃɪ-nə-zɪ *n.* machinery or apparatus in an aircraft, used for balancing or equilibrating.

**balancing-plane** 'bælənsɪŋ,pleɪn *n.* a plane or aeroplane used for balancing; an aerofoil employed for maintaining the equilibrium of a flying-machine; a balancing-surface; a stabilizing-surface; an aileron.

**balancing-rudder** 'bælənsɪŋ,rʌdəz *n.* a rudder in a flying-machine, used for balancing or equilibrating.

**balancing-skill** 'bælənsɪŋ,skɪl *n.* skill in balancing; dexterity in maintaining equipoise during flight.

**balancing-surface** 'bælənsɪŋ,sɜːfɪs *n.* an aerofoil surface used in balancing or equilibrating a flying-machine or airship; a stabilizing-surface; a balancing-plane.

**balancing-tail** 'bælənsɪŋ,tetl *n.* the tail of a kite or flying-machine designed for balancing or maintaining the equilibrium of the whole craft in the air; a trailer.

**ballast** 'bæləst *n.* heavy material, especially sand or gravel, carried in a balloon or airship and used to throw overboard and thus lighten the load, giving the craft a tendency to rise.

*floating ballast*, ballast which is designed to float upon the surface of water, as that sometimes attached to the guide-rope of a balloon.

**ballast** 'bæləst *tr.* furnish with ballast; regulate the ballast of.

**ballast-bag** 'bæləst,bæg *n.* a bag for containing ballast; a sand-bag.

**ballast-sand** 'bæləst,sænd *n.* sand used for ballast in a balloon or airship.

**ballast-thrower** 'bæləst,θrəʊə-z *n.* a device for throwing or discharging ballast from a balloon.

**ballonet** ,bælə'net *n.* [also spelt *ballonette* and, less properly, *ballonnet*, *balloonet*, *balloonette*]

1. a relatively small balloon or air=bag placed inside a larger balloon or aerostat and used for controlling the altitude or for keeping the envelop taut.

2. one of several subsidiary balloons or inflated gas=bags forming compartments or structural units in a dirigible balloon, for the purpose of safety in case of accident, or for insuring stability of form.

**ballonet** ,bælə'net *n.* see *ballonet*.

**ballon sonde** ,bælən'sənd *n.* [also spelt *ballon=sonde*; plural *ballons sondes*] same meaning as *sounding=balloon*.

**balloon** bæ'loun *n.*

1. (in fireworks) a pasteboard ball stuff with combustibles, fired from a mortar to a considerable height where it bursts and produces various luminous effects; an air=balloon (*sense 1*).

*air balloon*, same meaning as *air=balloon* (*sense 1*).

2. an airtight bag or hollow vessel fild with hydrogen gas, coal=gas, heated air, or any other gas lighter than common air, and often provided with a car and other appurtenances designed to rise and float in the atmosphere, alone or with persons on board.

*air balloon*, same meaning as *air=balloon* (*sense 2*).

*auxiliary balloon*, a balloon used in an auxiliary or secondary capacity.

*balloon photography*, fotografy from balloons; the art of taking fotografic pictures while traveling in a balloon.

*balloon principle*, the principle of the balloon or aerostat; the principle of atmospheric buoyancy; the lighter=than=air idea: distinguished from *flying principle*.

*captiv balloon*, see under *captiv*.

*coal=gas balloon*, a balloon whose gasbag is inflated with coal=gas.

*dirigible balloon*, a balloon which can be steerd or guided; a steerable balloon; a dirigible.

*elongated balloon*, a balloon which, insted of having a globular or pear=shaped gasbag, is longer than it is wide; a cylindric, cigar=shaped, or sausage=shaped balloon or dirigible.

*free balloon*, a balloon which is free from all connection with, or attachment to, the earth: distinguished from *captiv balloon*; also, an unmanned balloon, free from control, used for investigating the upper air.

*heated=air balloon*, same meaning as *hot=air balloon*.

*hot=air balloon*, same meaning as *fire=balloon*. compare *air=balloon* (*sense 2*).

*hydrogen balloon*, same meaning as *hydrogen=balloon*.

*inflammable=air balloon*, a balloon whose gasbag is filled with inflammable air, that is, with hydrogen gas; an air-balloon (*sense 2*); a hydrogen-balloon.

*internal balloon*, a subsidiary balloon, inside of the main gasbag; a ballonet.

*locomotive balloon*, a balloon which is capable of locomotion or movement from place to place; a dirigible balloon.

*luminous balloon*, a balloon which is rendered luminous at night by being artificially lighted, designed for signaling at night.

*manned balloon*, see under *manned*.

*non=lifting balloon*, see under *non=lifting*.

*paper balloon*, a balloon made of paper, such as one of the small hot-air balloons used in fireworks.

*parachute balloon*, a balloon fitted with a parachute apparatus.

*rarified=air balloon*, a balloon or aerostat in which the lifting-power is due to the rarification of the air in a hollow receptacle; a form of rigid balloon designed to be sustained in the atmosphere by means of a partial vacuum.

*self=registering balloon*, a balloon carrying self-registering meteorologic instruments, sent up in investigations of the atmosphere; a registration-balloon; a recording-balloon; an exploring-balloon; a sounding-balloon.

*spherical balloon*, a balloon whose gasbag is spherical in shape; an ordinary globular or pear-shaped balloon.

*steering balloon*, a balloon which is capable of being steered; a steerable balloon; a dirigible.

**balloon** bə'lu:n v.

1. *tr.* carry up or transport in, or as in, a balloon.

2. *intr.* make an ascent in a balloon or dirigible; make a series of balloon=trips or exhibitions.

**balloon-accident** bə'lu:n,æksɪ-dnt n. an accident to a balloon; a mishap to an aeronaut while making a balloon=trip.

**balloonacy** bə'lu:n-ə-sɪ n. lunacy about balloons; mania for ballooning; balloonomania.

**balloon-announcement** bə'lu:n-ə,nəʊns-mənt n. an announcement of a balloon=ascent; a notice that a balloon=ascension is about to be made.

**balloon-ascension** bə'lu:n-ə,senʃən n. an ascension made by a balloon; a balloon=ascent.

**balloon-ascent** bə'lu:n-ə,sent n. an ascent made by a balloon; a balloon=ascension.

**balloonatic** bə'lu:nə-tɪk n. a lunatic about balloons; one gone crazy over ballooning; one who is balloon=mad.

- balloonatic** bə'lu:nə-tɪk *adj.* like that of one who is a lunatic about ballooning; balloon=crazy.
- balloonation** ,bælʊ'næ-ʃən *n.* ballooning, ballooney, aeronautics.
- balloon-base** bə'lu:n,bæ:s *n.* a base or basis for the operating of balloons, as a water=ship.
- balloon-basket** bə'lu:n,bæ:-skɪt *n.* the basket or car of a balloon.
- balloon-business** bə'lu:n,bɪznɪz *n.* the business or occupation of making or operating balloons.
- balloon-car** bə'lu:n,kɑ:z *n.* the car or basket of a balloon.
- balloon-center** bə'lu:n,sentəz *n.* [also spelt *balloon=centre*] a center or rendezvous for balloons or balloonists; a town which serves as a central point or meeting=place for aeronauts.
- balloon-cloth** bə'lu:n,klə:θ *n.* the cloth of which the gasbag of a balloon or airship is made; balloon=fabric; envelop=stuff.
- balloon-cloud** bə'lu:n,kləud *n.* a balloon=shaped cloud; a cumulus or alto=cumulus cloud expanded at the top so as to resemble a rising balloon.
- balloon-club** bə'lu:n,kləb *n.* a club or association of balloonists; an aero=club.
- balloon-corps** bə'lu:n,kɔ:z *n.* an army=corps or organized body of troops whose duty is balloon=work; a balloon=section; a balloon=detachment.
- balloon-detachment** bə'lu:n-dɪ'tætʃmənt *n.* a detachment of an army in charge of ballooning; a balloon=corps; a balloon=section.
- balloon-dirigible** bə'lu:n,dɪrɪdʒə-bəl *n.* a dirigible balloon.
- balloon-dispatch** bə'lu:n-dɪ,spætʃ *n.* a dispatch transmitted by balloon; a message sent in a balloon.
- balloon-driver** bə'lu:n,draɪ-vəz *n.* the driver or pilot of a balloon; a balloonist; an aeronaut.
- balloon-envelop** bə'lu:n,envə-lɒp *n.* [also spelt *balloon=envelope*] the envelop, covering, or material of the gasbag of a balloon.
- ballooner** bə'lu:n-əz *n.* one who makes balloon=ascents; a balloonist; an aeronaut.
- ballooney** bə'lu:n-ə-zɪ *n.* [synonymous cognate *ballooney*] the art or practice of ascending in balloons; the management of balloons; aerostation (*sense 2*); aeronautics.
- balloonet** ,bælə,net *n.* see *ballonet*.
- balloonette** ,bælə'net *n.* see *ballonet*.

- balloon-experiment** bə'lu:n-ɪk,speɪz-mənt *n.* an experiment in ballooning; a balloon-test.
- balloon-expert** bə'lu:n,ɛk-spɜ:t *n.* an expert on balloons; one skilful in making or managing balloons.
- balloon-fabric** bə'lu:n,fæbrɪk *n.* a fabric for use in making balloons or gasbags; balloon-material; envelop-stuff.
- balloon-factory** bə'lu:n,fæktɔ-zɪ *n.* a factory or shop where balloons are made.
- balloon-farm** bə'lu:n,fɑ:zm *n.* a farm or enclosure occupied by balloons.
- balloon-flight** bə'lu:n,flaɪt *n.* a flight or ascension of a balloon; a balloon-ascent.
- balloon-flying** bə'lu:n,flaɪ-ɪŋ *n.* a flight or ascension of a balloon; a balloon-ascent.
- balloon-frame** bə'lu:n,freɪm *n.* the frame or framework of a balloon; the supporting-structure or skeleton of a balloon.
- balloon-gas** bə'lu:n,gæs *n.* gas used for inflating or filling balloons; inflating-gas.
- balloon-house** bə'lu:n,haʊs *n.* a house in which a balloon or dirigible is kept for shelter or repairs; a balloon-shed; an airship-house; an aerodrome.
- balloon-housing** bə'lu:n,haʊ-zɪŋ *n.* the process of housing or providing shelter for balloons.
- balloonical** bə'lu:n-ɪ-kəl *adj.* connected with balloons; aeronautic.
- balloonicism** bə'lu:n-ɪ,sɪzəm *n.* a word or phrase connected with ballooning; a technical term used by aeronauts.
- ballooning** bə'lu:n-ɪŋ *n.* the art, practice, or sport of ascending in or managing balloons; aeronautics; aerostation.
- ballooning-school** bə'lu:n-ɪŋ,sku:l *n.* a school where the art of ballooning is taught; a school of aeronautics.
- ballooning-trip** bə'lu:n-ɪŋ,tɪp *n.* a trip or journey made in a balloon; a balloon-trip; a balloon-journey; a balloon-flight.
- balloonism** bə'lu:n-ɪzəm *n.* the practice, sport, or fad of ballooning; ballooning; aeronautics.
- balloonist** bə'lu:n-ɪst *n.* one who ascends in or manages a balloon; one who practices ballooning; an aeronaut.
- balloon-journey** bə'lu:n,dʒɜ:nɪ *n.* a journey or voyage in a balloon; a balloon-trip.
- balloon-kite** bə'lu:n,kaɪt *n.* a cylindrical balloon or gasbag filled with hydrogen, and flown with a cord somewhat in the manner of ordinary kites, used for meteorologic, and now also for military purposes. compare *kite-balloon*.

- balloonless** bə'ʃu:n-ləs *adj.* destitute of a balloon or float-vessel; having no gasbag: as, \*balloonless dirigible airships.
- balloon-like** bə'ʃu:n,lʌk *adj.* like or resembling a balloon.
- balloon-maker** bə'ʃu:n,mee-kəz *n.* one who makes or manufactures balloons; a balloon-builder.
- balloon-making** bə'ʃu:n,mee-kɪŋ *n.* the art or practice of making balloons.
- balloon-man** bə'ʃu:n,mæn *n.* [plural *balloon-men*] a man who pilots a balloon; a balloonist; an aeronaut.
- balloon-material** bə'ʃu:n-mə,tɪ:zi-əl *n.* a material for use in making balloons or gasbags; balloon-fabric; envelope-stuff.
- balloon-net** bə'ʃu:n,net *n.* the net or meshwork enclosing the gasbag of a balloon, from which the basket or car is ordinarily suspended by ropes; the netting of a balloon.
- balloon-observation** bə'ʃu:n-əbzəz,vɛe-ʃən *n.* an observation made from a balloon, as of military operations, astronomical phenomena, etc.
- balloonomania** bə,ʃu:nə'mee-ni-ə *n.* a mania for balloons or ballooning; ballooning run mad.
- balloon-park** bə'ʃu:n,pɑ:zk *n.* a park or enclosure occupied by balloons and their accessories; also, a complete set or equipment of balloons, etc.; an aerostatic park.
- balloon-party** bə'ʃu:n,pɑ:zɪ *n.* a party or company of voyagers in a balloon.
- balloon-pilot** bə'ʃu:n,pai-lət *n.* the pilot of a balloon; a balloonist; an aeronaut.
- balloon-pit** bə'ʃu:n,pɪt *n.* a landing-pit for the reception of a balloon.
- balloon-race** bə'ʃu:n,rɛes *n.* a race of balloons; a balloon-race.
- balloon-rigging** bə'ʃu:n,rɪgɪŋ *n.* the rigging, or ropes and other tackle of a balloon.
- balloony** bə'ʃu:n-zɪ *n.* same meaning as *balloony*.
- balloon-sailing** bə'ʃu:n,see-lɪŋ *n.* the art or occupation of sailing balloons; aeronautics.
- balloon-school** bə'ʃu:n,sku:l *n.* a school where ballooning is taught; a ballooning-school; a school of aeronautics.
- balloon-section** bə'ʃu:n,sekʃən *n.* a section of an army having charge of balloon-work; a balloon-corps; a balloon-detachment.
- balloon-shed** bə'ʃu:n,ʃed *n.* a shed in which a balloon or dirigible is kept for shelter or repairs; a balloon-house; an airship-house; an aerodrome.
- balloon-shell** bə'ʃu:n,ʃel *n.* the shell or outer covering of a



composit balloon, containing and uniting the gas-compartments or sub-balloons.

**balloon-ship** bə'ʃu:n,ʃɪp *n.* a ship equipt with balloons or ballooning-apparatus, as for coast-defense.

**balloon-shooting** bə'ʃu:n,ʃu:tɪŋ *n.* the practis of shooting at balloons, as with a rifle.

**balloon-sound** bə'ʃu:n,saʊnd *tr.* sound or probe by means of balloons; investigate by the aid of a sounding-balloon: as, to \*balloon-sound a region of the atmosfere.

**balloon-tent** bə'ʃu:n,tent *n.* a tent or portable ledge of canvas used for sheltering or housing a balloon.

**balloon-trip** bə'ʃu:n,tɹɪp *n.* a tɹɪp or veyage in a balloon; a balloon-flight; a balloon-journey.

**balloon-valve** bə'ʃu:n,vælv *n.* [also spelt *balloon-valv*] a gas-valv for use in connection with a balloon.

**balloon-varnish** bə'ʃu:n,vɑ:z-nɪʃ *n.* a varnish prepared for the gas-vessels of balloons. see *varnish*.

**balloon-veyage** bə'ʃu:n,vei-ɪdʒ *n.* a veyage or journey in a balloon; a balloon-tɹɪp.

**balloon-wheel** bə'ʃu:n,wɦil *n.* (in fireworks; obsolete) a shell; a bem.

**balloon-work** bə'ʃu:n,wɜ:z:k *n.* work of any kind in connection with balloons or ballooning; also, the practis of ballooning itself.

**balloon-wrecking** bə'ʃu:n,zekɪŋ *n.* the act of wrecking a balloon; rupturing a balloon, as by rifle-shots, and causing a collapse, smashup, wreck, or downfall.

**bank** bæŋk *n.* a pile or mass.

*bank of clouds, a cloud-bank.*

**bank** bæŋk *tr.* incline or slant an aeroplane flying-machine laterally (with the inner side downward) in turning or going round a curv, so as to take advantage of the resistance of the bank or mass of air upon which the machine is thus forced to act.

**banking** 'bæŋkɪŋ *n.*

1. the action of driving an aeroplane flying-machine in a tilted or laterally inclined manner, with the inner side downward, while rounding a curv. see *bank* (verb).

2. a bank or upright resistant mass, as of air: as, the air fermd a natural \*banking as the aeroplane swept round.

**banner-cloud** 'bænəz,klu:nd *n.* banner-like cloud, streaming horizontally from a mountain-top.

**barb** bɑ:z *n.* one of the pointed processes, of the first order, on either side of the rachis of a bird's fether; one of the rami of the vane of a fether.

**barber** 'bɑ:z-bəz *n.* a stɹɛŋg cutting wind loaded with par-

ticles of frozen fog, occurring in the Gulf of Saint Lawrence in Canada.

**barbicel** 'bɑ:z-bɪ-səl *n.* a little barb or beard; one of the small pointed processes on the barbule of a bird's feather; a fringing process of the third order of a feather.

**barbule** 'bɑ:z,bju:l *n.* a little barb or beard; one of the little pointed processes on the barb of a bird's feather; a fringing process of the second order of a feather.

**baric** 'bæzɪk *adj.* of or pertaining to the weight or pressure of the air or atmosphere; barometric.

*baric law of the wind*, the law expressing the relation of wind-direction to the isobars.

*baric wind-rose*, see under *wind-rose*.

**barogram** 'bæzə,gzæm *n.* the record made by a barograf.

**barograph** 'bæzə,gzɑ:f *n.* [also spelt *barograf*] a barometer which automatically records the variations in atmospheric pressure in continuous correlation with time.

**barometer** bə'zəmɪ-təz *n.* an instrument for measuring the weight or pressure of the air or atmosphere, and hence used for forecasting weather-conditions, ascertaining height of ascent, etc.

*aneroid barometer*, see under *aneroid*.

*mercurial barometer*, a barometer in which a column of mercury is used.

**barometric** ,bæzə'metɪk *adj.* of, pertaining to, or indicated by, a barometer.

**barometrical** ,bæzə'metɪk-əl *adj.* same meaning as *barometric*.

**barometrically** ,bæzə'metɪk-əlɪ *adv.* in a barometric manner; with respect to the barometer.

**barometry** bə'zəmɪ-tɪ *n.* the art of making barometric measurements; the measuring of atmospheric pressure.

**barothermograph** ,bæzə'θɜ:z-mə,gzɑ:f *n.* [also spelt *barothermograf*] an apparatus for recording simultaneously the pressure and temperature of the atmosphere, often used on kites and sounding-balloons; a combination of a barograf and thermograf.

**barothermohygrograph** bæzə,θɜ:zmə'hɑɪ-gzə,gzɑ:f *n.* [also spelt *barothermohygrograf*] an apparatus for recording the pressure, temperature, and humidity of the atmosphere, often used on kites and sounding-balloons; a combination of a barothermograf with a hygrometer.

**barothermometer** ,bæzə-θɜ:z'məmɪ-təz *n.* an instrument for measuring the pressure and temperature of the air.

**barrel** 'bæzəl *n.* the hard, horny, hollow part of the stem or shaft of a bird's feather; the calamus proper; the quill.

- basket** 'bɑ:skɪt *n.* a vessel of plated=ozier wickerwork, or other material, suspended or fixed at the lower part of a balloon or airship and occupied by the aeronaut or voyagers.
- bat** bæt *n.* a mouse-like nocturnal mammal of the order chiroptera, having membranous wings and flying with a peculiar quivering motion; a flittermouse; a reremouse.
- bate** beet *intr.* [also spelt *bait*] (in *falconry*) beat the wings impatiently and flutter away from the perch; flutter.
- bat-like** 'bæt,lʌɪk *adj.* like a bat or flittermouse; resembling that of a bat.
- beak-stay** 'bi:k,steɪ *n.* a stay or strengthener forming a part of the beak or nose of an elongated balloon or airship, designed to prevent the beak collapsing or being crushed by the pressure of the air.
- beam** bi:m *n.* the side of an airship.  
*beam wind*, a wind coming from one side; a side-wind.
- bear** be:z *intr.* be directed in a certain way; tend.
- bearing** 'be:-zɪŋ *n.* the direction in which any point lies from the point of reference, especially as measured in degrees from one of the quarters of the compass: as, take one's \*bearings.
- bearing-surface** 'be:-zɪŋ,sɜ:zɪs *n.* one of the surfaces of a flying-machine which bears, rests, or acts upon the air; a supporting-surface; a sustaining-surface; a wing-surface; a spread of wing or sail.
- bearing-wheel** 'be:-zɪŋ,wɪl *n.* one of the wheels attached to the under part of a flying-machine, for bearing upon the ground as in starting.
- beat** bi:t *n.* a stroke; a recurrent stroke, as of a flapping wing or revolving propeller-blade.
- beat** bi:t *tr.* flap with force, as a wing.
- bee-line** 'bi:,laɪn *n.* a straight line thru the air; a direct route thru the atmosphere.
- bellows** 'beləʊz, 'beləs *n.* an appliance for producing a strong blast of air; a blower.  
*bellows propeller*, a propeller which works on the principle of a pair of bellows, proposed for driving airships.
- belly** 'belɪ *v.*
- tr.* cause to swell out; make bulge.
  - intr.* bulge or swell out.
- bend** bend *n.* the rounded angle, or curved or bent upper forepart of a bird's wing; the carpal angle; the flexure: also called *bend of the wing*.
- bicycle-carriage** 'baɪ-sɪkəl,kæzɪdʒ *n.* a carriage or frame with a set of bicycle-wheels built into the base of some flying-machines to aid in starting and alighting.

**bight** bait *n.* a loop of a line, in distinction from the ends of the line; a turn, bend, or loop in a kite-line.

**bight** bait *tr.* fold or double, as a kite-line, so as to form into one or more bights or loops.

**biplane** 'bai,plæn *n.* [also spelt *biplane*]

1. a flying or gliding-machine having two planes or aerofoils, usually about equal in size and one above the the other, but sometimes unequal in size, and staggered; an aerobiplane.

*staggered biplane*, a biplane air-craft having staggered sustaining-planes. see *stagger*.

*tandem biplane*, an aeroplane flying-machine having two pairs of supporting-planes, or biplanes, placed tandem, or one after the other, as that designed by W. H. Walden.

2. any aerial device consisting of two superposed plane aerofoils, usually about equal in size: as, the elevator consists of a pivoted \*biplane.

**biplane** 'bai,plæn *adj.* having two planes, usually about equal in size, and superposed; two-plane: as, a \*biplane kite: distinguished from *monoplane*, etc.

**bipolar** ,bai'poo-læz *adj.* having two flexible axes: said of a kite tried by Bazin in 1888, having not only the bow but also the central spine, flexible, so as to secure not only lateral but also longitudinal balance or equipoise.

**bird** bɜ:zd *n.* any feathered vertebrate animal; a member of the class Aves, allied to the reptils but distinguished by their warm blood, feathers, and adaptation of their fore-lims as wings, with which most species fly in the air.

*aerial bird*, see under *aerial*.

*aquatic bird*, a wading or a swimming bird, as a duck.

*bird of freedom*, the American bald eagle.

*bird of Jove*, the eagle.

*bird of Juno*, the peacock.

*bird of Minerva*, the owl.

*bird of night*, the owl.

*bird of passage*, a bird which regularly passes in the spring from a warmer to a colder climate, and back in the fall; a migratory bird; a migrant.

*bird of peace*, the dove.

*bird of prey*, a bird which seeks prey, as the hawk, eagle, owl; a bird of the order Raptores or Accipitres.

*bird of the year*, a bird less than a year old.

*bird of wonder*, the fenix.

*bird principle*, the principle or method according to which birds fly; the flapping-wing principle; the ornithopter idea.

*flying bird*, any bird which habitually flies, as distinguished from birds which do not habitually fly.

*homing bird*, a bird that goes home; a bird, such as the carrier-pigeon, which, when released from restraint, has the faculty or tendency to return, from great distances, to its home or place where it was reared.

*mechanical bird*, a bird-like flying-machine, or an artificial bird designed to fly.

*sailing bird*, a bird which sails, soars, or glides in the air; a bird which practises sailing flight.

**bird-catcher** 'bɜ:zd,kætʃəz *n.* one who or that which catches birds, as a person, a bird, or an insect.

**bird-craft** 'bɜ:zd,kɜ:ft *n.* the craft or art of flying as practised by birds; the art of flight.

**bird-fancier** 'bɜ:zd,fænsi-əz *n.* one who fancies, or takes pleasure in, rearing or collecting birds; also, a dealer in pet or captive birds.

**bird-flight** 'bɜ:zd,fli:t *n.* the mode of flight characteristic of birds; bird-like flight.

**bird-flock** 'bɜ:zd,flək *n.* a flock or company of birds.

*bird-flock flyer*, a flyer or flying-machine such as A. G. Bell's tetrahedral-cell flying-apparatus, whose structure makes it resemble a flock of birds in flight.

**bird-life** 'bɜ:zd,laɪf *n.* the life of birds; the mode of existence, habits, etc., of the feathered tribe.

**bird-kite** 'bɜ:zd,kait *n.* a Chinese kite which resembles a bird; a bird-like kite.

**bird-land** 'bɜ:zd,lænd *n.* the land or realm of birds; the airy reaches; airdom.

**bird-like** 'bɜ:zd,laɪk *adj.* like a bird; resembling that of a bird.

**birdman** 'bɜ:zd,mæn *n.* [also spelt *bird man*; plural *birdmen*]

1. a bird-catcher; a fowler; also, an ornithologist.

2. a man who flies, by artificial means, in a manner comparable to that of a bird; a man-bird; an aviator.

**bird's-eye** 'bɜ:zdz,ai *adj.* seen from above, as if by a flying bird: as, a \*bird's-eye landscape, a \*bird's-eye view.

*bird's-eye view*, a mode of perspective representation in which portions of country, towns, etc., appear as they would if viewed from a considerable elevation.

**bird-tail** 'bɜ:zd,tetl *n.* a tail like that of a bird.

**bird-travel** 'bɜ:zd,tɹævəl *n.* the travel of birds; the periodic journeying to and fro of migrating birds.

**bird-wave** 'bɜ:zd,wæv *n.* a wave or tide of bird immigration; an arrival of birds in considerable numbers, as in the spring or fall.

- bird-wing** 'bɜ:zd,wɪŋ *n.* the wing of a bird; a bird's wing.
- bise** brɪz *n.* a dry cold north and northeast wind similar to the mistral, in Provence and the Rhone valley.
- bird-woman** 'bɜ:zd,wʊmən *n.* a woman who flies, by artificial means, in a manner comparable to that of a bird; an aviatress. compare *birdman* (*sense 2*)
- blade** blɛd *n.* one of the floats, vanes, or sails of a propeller or wind-wheel; a slat or narrow sustaining-surface, as of a Phillips flyer.
- blade-angle** 'blɛd,æŋɡəl *n.* the angle or degree of inclination of a propeller-blade to the angle of blade-travel; the angle of blade-setting; the blade-inclination.
- blade-length** 'blɛd,lɛŋθ *n.* the length of a propeller-blade.
- blade-section** 'blɛd,sɛkʃən *n.* the section or cross-section of a propeller-blade.
- blade-setting** 'blɛd,setɪŋ *n.* the setting or mode of set or pose of a propeller-blade.
- blade-travel** 'blɛd,tɾævəl *n.* the travel or mode of movement of a propeller-blade, especially when the propeller has its normal translatory motion thru the air.
- blast** blɑ:st *n.* a forcible stream or jet of air, as from a blower, sometimes proposed as a source of propulsive power for airships.
- blizzard** 'blɪzəd *n.* a gale or hurricane with intense cold and dry, driving snow, especially common in Dakota and Manitoba.
- blocking-cord** 'blɔkɪŋ,kə:zd *n.* a kind of cord used in blocking hats, and, in late years, sometimes employed as kite-string or kite-line in meteorologic work.
- blood-rain** 'blʌd,zɛən *n.* rain which leaves red stains due to fungi containing red oxid of iron, which have been raised into the atmosphere by the wind and which the rain brings down.
- blower** 'blʊ-əz *n.* a machine for blowing or forcing air; an apparatus for producing blasts, as in certain schemes for airship-propulsion; a blowing-machine; an air-blower: as, a \*blower for ballonets.
- blowing-apparatus** 'blʊ-ɪŋ-əpə,zɛe-təs *n.* a blowing-machine; a bellows-like apparatus; a blower.
- blue** blʊ *n.* the blue sky or atmosphere; the heavens; the azure.
- bluff** blʌf *adj.* having or presenting a broad or expansive front or surface, as a sphere.
- boat** bʊt *n.* the boat-shaped or boat-like car of certain balloons or airships.
- boat-car** 'bʊt,kɑ:z *n.* a boat-like car: as, the forward \*boat-car of a Zeppelin airship. compare *gondola*.

**boat-shaped** 'bɔ:t,ʃeɪpt *adj.* shaped like a boat, as the car of an airship.

**body** 'bɔ:ɪ *n.* the main, central, or principle part of an aeroplane or airship, where the motor, fuel, or other load is contained; the fuselage or nacelle of a dirigible.

**body-cradle** 'bɔ:ɪ,kreɪ-dl̩ *n.* a cradle or framework in a flying-machine, upon which the operator's body rests in such a manner that, by swaying from side to side, he may impart to the cradle certain lateral movements for controlling the wing-tips. compare *shoulder=yoke* and *seats back*.

**body-frame** 'bɔ:ɪ,freɪm *n.* the frame or framework of the body of an airship or flying-machine; the body-framework.

**body-framework** 'bɔ:ɪ,freɪm-wɜ:zɪk *n.* the framework of the body of an airship or flying-machine, the body-frame.

**body-part** 'bɔ:ɪ,pɑ:zt̩ *n.* the part or portion of an airship which constitutes the body; the body, fuselage, or nacelle of a dirigible.

**body-plane** 'bɔ:ɪ,pleɪn *n.* the plane or aeroplane constituting the body or main part of a flying-machine, as distinguished from subordinate planes such as those constituting the wings or vanes.

**body-resistance** 'bɔ:ɪ-zɪ,zɪstəns *n.* the resistance offered by the air to the body of an aerofoil itself, independently of its surface; the head-resistance; the hull-resistance.

**bomb** bɒm *n.* [also spelt *bom*] an explosive projectile having the form of a spherical shell; a bombshell; also, a sandbag or other missile dropped or cast from an airship in a manner similar to that in which bombs are thrown.

**bomb-casting** 'bɒm,kɑ:stɪŋ *n.* [also spelt *bomb-casting*] the action of casting bombs, as from airships; bomb-throwing.

**boom** bu:m *n.* a long spar, pole, or rod, as one of those carrying the tail of an aircraft.

**boomerang** 'bɔ:ˌmɛ,zæŋ *n.* a curved missile used in war and the chase by the aborigines of Australia. It is thrown by hand and may be made to return to the thrower.

**bora** 'bɔ:zə *n.* a violent dry wind in the region of the Adriatic Sea which blows down off the plateau of Corinthia from the northeast or north.

**Boreas** 'bɔ:zɪəs *n.*

1. (in *Greek mythology*) the god of the north wind.

2. the north wind personified; a cold, northerly wind.

**boss** be:s *n.* the enlarged part of a shaft on which the wheel or propeller of an airship is keyed.

**bottom** 'bɒtəm *n.* the surface of the earth considered as the base of the atmosphere or floor of the ocean of air.

- boundary-circulation** 'baun-dri-səzksu,leɪ-ʃən *n.* the circulation of a fluid along or around a boundary.
- boundary-surface** 'baun-dri,səzfsɪs *n.* the surface forming the boundary between the live steam and the dead-water in the rear of an advancing aerofoil.
- bow** baʊ *n.* [often used in the plural] the front or forward end of an airship.
- bowsprit** 'bɔʊ,spɪt *n.* a large spar or boom which projects forward from the stem or front of an airship.
- bow-stick** 'bɔʊ,stɪk *n.* the elastic stick which forms the bow of a bow kite.
- bow-string** 'bɔʊ,stɪŋ *n.* one of the strings, cords, or lines which is attached to the bow of a bow kite.
- box-kite** 'bɒks,kɑɪt *n.* same meaning as *box kite*. see under *kite*.
- box-kite** 'bɒks,kɑɪt *adj.* of, or consisting of, a box kite. see under *kite*.
- box-plane** 'bɒks,plæn *n.* an aeroplane flying-machine having planes arranged in box-like form.
- brace** bræɪs *n.* a prop or support; a diagonal compression member in the frame of an aerial vehicle.
- brace-line** 'bræɪs,lɑɪn *n.* one of the lines or cords of the bridle of a kite; a brace.
- bracing-wire** 'bræɪ-sɪŋ,wɑɪz *n.* a wire used for bracing or preventing deformation, as in the structure of an aeroplane flying-machine.
- brake-rope** 'bræɪk,zəʊp *n.* a rope hanging from a balloon and used as a brake or to retard the motion of the craft thru the air.
- breeze** bri:z *n.* a moderately brisk wind; a movement of the air not so strong as a gale: as, a stiff \*breeze.
- fresh breeze*, a breeze (numbered 5 in Beaufort's wind-scale) having a velocity of about 8.8 meters per second.
- gentle breeze*, a breeze (numbered 3 in Beaufort's wind-scale) having a velocity of about 4.8 meters per second.
- light breeze*, a breeze (numbered 2 in Beaufort's wind-scale) having a velocity of about 3.1 meters per second.
- moderate breeze*, a breeze (numbered 4 in Beaufort's wind-scale) having a velocity of about 6.7 meters per second.
- mountain breeze*, same meaning as *mountain-breeze*.
- stiff breeze*, a breeze of considerable strength or velocity; a strong breeze.
- strong breeze*, a breeze (numbered 6 in Beaufort's wind-scale) having a velocity of about 10.7 meters per second.
- bridle** 'brɑɪ-dl̩ *n.* that portion of the gear of a kite by which



it is connected with the string or line by which the kite is controlled from the earth.

*elastic bridle*, a kite=bridle in which there is an elastic band which acts in such a manner that an increasing strain gradually alters the angle of flight: as, the Blue Hill automatic \*elastic bridle.

**brontograph** 'brɒntə,gzɑ:f *n.* [also spelt *brontograf*]

1. a brontometer.

2. a map or diagram which, by means of isobrents, etc., shows the movement of a thunder=storm.

**brontometer** ,brɒn'tɒmɪ-təz *n.* an instrument for recording the phenomena of thunder=storms; a brontograf.

**buckle** 'bʌkəl *intr.* bend, bow; curl; become wrinkled.

**buffer** 'bʌfəz *n.* any device or apparatus on the outside of a balloon=car for dedening the concussion or taking up or neutralizing the shock of the bumps of the car against the ground or other object; a shock=absorber.

**bump** bʌmp *intr.* come forcibly in contact with something; strike heavily, as a balloon=car against the ground when landing, on a windy day.

**buoy** 'buɪ-ɪ *n.* a float fixed at a certain place to show the position of objects beneath the water, as shoals or rocks, or to indicate ship=channels; also, a lifebuoy.

**buoy** 'buɪ-ɪ *tr.* support or sustain in a fluid, as the air; keep from sinking or falling; hold up.

**buoyancy** 'bei-ən-sɪ *n.* the quality of being buoyant; also, the power of supporting a body so that it floats: said of a fluid.

**buoyant** 'bei-ənt *adj.*

1. having the quality of rising or floating in a fluid; floating; relatively light; that will not sink; also, pertaining to buoyancy: as, \*buoyant equipoise.

2. having the power of keeping bodies suspended or afloat: said of the air or other fluid.

**buran** 'bʊ:-zən *n.* a snowstorm; especially a long=continued snowstorm accompanied by a cold northeast gale and clouds of drifting snow, occurring on the steppes and deserts of central Asia.

**burga** 'bʊ:z-gə *n.* [also spelt *boorga*] a storm of wind and sleet in Alaska, similar to the purga of Siberia and Russia.

**burning-gas** 'bɜ:niŋ,gæs *n.* illuminating gas; coal-gas.

**butterfly** 'bʌtəz,fɪaɪ *n.* any diurnal lepidopterous insect, especially one of the rhopalocerous lepidoptera.

**buttock** 'bʌtək *n.* the portion of an aerofoil or streamline body between the shoulder and the tail; the fore part of the run of a streamline body.

**buzzard** 'bʌzəd *n.* any hawk of the genus *Buteo*, etc.

**buzzing** 'bʌzɪŋ *n.* a low humming-sound like that of bees, or of the letter *z*, sometimes heard in the ears when traveling at a considerable elevation above the earth.

**caisson** 'kæ-sən *n.* [synonymous cognate *caisson*] a water-tight box or floating deck sometimes attached to an airship to keep it afloat in case it falls into the water.

**calamus** *n.* 'kælə-məs [plural *calami*] the quill or tubular part of the stem or scape of a feather; the barrel.

**callina** ,kæl'jri-nə *n.* a dry feg, occurring in Spain.

**calm** kɑ:m *n.* entire want of wind; absence of air-currents of any kind.

*Calms of Cancer*, the region of high barometric pressure and relative calm located under the tropic of Cancer, etc.; the horse latitudes.

*dead calm*, an absolute or complete calm.

*region of calms*, the region or tract in the Atlantic and Pacific oceans on the confines of the tradewinds where calms of long duration prevail; the calm latitudes.

**calm-belt** 'kɑ:m,belt *n.* a belt or zone of relative calm on the equatorial side of the tradewinds; a belt of calms.

**calm-zone** 'kɑ:m,zo:n *n.* a zone or atmospheric region, at a certain altitude, which is calm, or free from wind; a zone of discontinuity. see under *zone*.

**camber** 'kæmbəz *n.* a convexity or arch, as of an aerocurve; the curvature or bend of an aerofoil, measured upon a line perpendicular to the chord of the curve and passing thru the highest point of the surface.

**cambric** 'kæem-brɪk *n.* a kind of fine white linen cloth originally made at Cambray in Flanders; also, an imitation of this fabric, made of hard-spun cotton yarn. It is used in making aircraft.

**caoutchouc** 'kou,tʃuk *n.* india-rubber or gum elastic, derived from the milky resinous juice of certain trees in South America, Africa and the East Indies, often used in making balloon-envelops.

**capsize** ,kæp'saɪz *v.*

1. *tr.* upset, overturn.

2. *intr.* be upset or overturned.

**captain** 'kæptɪn *n.* the commanding officer of a balloon or airship; the head aeronaut.

**captive** 'kæptɪv *adj.* [also spelt *captiv*] kept in restraint; prevented from ascending freely or escaping; connected to

the earth by a rope or cable: as, a \*captiv balloon; a \*captiv flying-machine.

*captive balloon*, a balloon anchored or attached to the ground by means of a rope or cable, which may be either permanently fixed, or connected with an anchor which can be raised at pleasure: distinguished from *free balloon*.

**car** ka:z *n.*

1. the part of a balloon or airship in which the aeronauts sit or stand; the man-vessel; the basket, fuselage, or nacelle.

2. an airship; an aerocar.

**carburation** ,kəzbjəʊ'zεe-ʃən *n.* the process of impregnating with an atomized volatile hydrocarbon, as the air in an internal-combustion engine, under such conditions that the hydrocarbon vaporizes and forms with the air an explosive mixture.

**cardinal** 'kəzdɪ-ɪ *adj.* fundamental, chief, principle.

*cardinal point*, one of the four points of the horizon (or of the heavens), north, south, east, and west; one of the four chief points of the compass.

*cardinal wind*, one of the four winds blowing from the cardinal points, north, south, east, and west, respectively; one of the four winds of heaven.

**careen** kə'zi:ɪn *intr.* list, heel, or incline to one side.

**carpal** 'kəzpəl *adj.* of the carpus or wrist-joint of a bird's wing.

*carpal angle*, see under *angle*.

**carriage** 'kæzɪdʒ *n.* a wheeled vehicle; a conveyance; a moving support; the chassis of an aeroplane flying-machine.

*rolling carriage*, an instrument invented by S. P. Langley for studying the pressure on the normal plane and determining the value of the constant relating thereto.

**carrier-pigeon** 'kæzi-əz,pɪdʒən *n.* [also spelt *carrier pigeon*] a pigeon trained to carry or convey a message from a distance to a point near its home; a homing-pigeon.

**car-rigging** 'ka:z,zɪŋɪŋ *n.* the rigging of the car of an airship.

**carrying-kite** 'kæzi-ɪŋ,kart *n.* the lower of the two kites, as in Pouceck's or Wenham's kite-carriage, designed to furnish the carrying-capacity or tractive power: distinguished from the upper or pilot kite; a draft-kite.

**carrying-power** 'kæzi-ɪŋ,pau-əz *n.* the power of an airship to support weight.

**carrying-rope** 'kæzi-ɪŋ,zɒp *n.* the rope borne by a rope-bearing kite, as to a wrecked ship, by means of which a life-saving cable is then drawn on board.

**carrying-surface** 'kæzi-ɪŋ, sɜːfɪs *n.* a surface for carrying or supporting a flying-machine in the air; a supporting-surface.

**caster-wheel** 'kɑːstəz, wiil *n.* [also spelt *castor-wheel*] a chassis-wheel or skid-wheel mounted on a vertical pivot located considerably in front of the bearing-point of the tire of the wheel, so that the wheel turns automatically as the course of the vehicle changes.

**Castor** 'kɑːstəz *n.*

*Castor and Pollux*, Saint Elmo's fire; ceropsant.

**catamaran** 'kætəmə, zæn *n.* a raft-like airship or air-craft having two elongated gas-vessels longitudinally parallel to each other, with the car and propelling-apparatus between them.

*catamaran kite*, a double kite whose parts are arranged like those of a catamaran.

**catapult** 'kætə, pɔlt *n.* an apparatus in which a falling weight actuates a rope which pulls an aeroplane flying-machine along a starting-rail and thus enables it to launch itself into the air; a starting-derrick; a launching-derrick; a pylon.

**cat's-nose** 'kæts, nɔz *n.*

1. (in *England*) a strong, cool, dry northwest wind which pushes under and lifts up a warmer southwest wind.

2. (in *England*) the cloud in front of such a wind.

**cat's-tail** 'kæts, teɪl *n.* cirrus cloud; curl-cloud.

**cattail** 'kæt, teɪl *n.* cat's-tail cloud; a cirrus cloud; a curl-cloud.

**cauliflower** 'kɑː-lɪ, fləʊ-əz *n.* a volcanic or other cloud having the form of a cauliflower.

**cavitation** ,kævi'tee-ʃən *n.* the formation of cavities or holes within an agitated fluid; the action of a fluid, when streaming past a solid body such as a screw propeller, of ceasing to follow the surface of that body and becoming discontinuous with itself.

**cell** sel *n.* a box-like structure consisting of upper, lower, and side planes, as a box kite or in the tails or other aerofoils of some aeroplane flying-machines, used to afford lateral and longitudinal stability.

**cellular** 'seliʊ-ləz *adj.* cell-like; consisting of cells or small box-like compartments: as, Hargrave's \*cellular kites; a \*cellular tail.

**center** 'sentəz *n.* the middle point; the point or position of equilibrium of a body.

*center of balance*, the center or point at which an aerofoil must be supported in order to remain balanced, or in

equilibrium, when an air-current is blowing against it; the center of pressure.

*center of action*, the area of high or low barometric pressure, which appears to be the most active or conspicuous on a weather-map.

*center of aspiration*, the region in a cyclonic storm-area where air is rising, etc.

*center of bearing*, the center of the surface with which an aerofoil bears on the air, or presents itself to the resisting force of the air; the center of surface.

*center of effort*, the center or point at which the whole amount of the propulsive effort or thrust of one or more propellers may be applied with the same effect as when distributed; the center of thrust.

*center of gravity*, the center or point about which all the parts of a rigid body or rigidly connected system of bodies exactly balance each other, and which being supported, the body or system will remain at rest in any position; the center of attraction; the center of mass; the center of inertia; the center of weight.

*center of gyration*, the center or point at which, if the whole mass of a revolving body were collected, the rotatory motion would remain the same.

*center of mass*, the center or point in relation to a body or system of bodies, so situated that any plane which passes thru it divides the body or system into two parts of which the masses or weights are equal; the mass-center; the center of gravity.

*center of lift*, the center or point at which the whole amount of lift or vertical component of the upward air-pressure upon an aerofoil may be applied with the same effect as when distributed.

*center of motion*, the center or point in relation to a body, which remains at rest while all the other parts of the body move round it.

*center of power*, the region in a storm-area or cyclone characterized by the greatest condensation of water vapor.

*center of pressure*, the center or point at which the whole amount of pressure may be applied with the same effect as when distributed; the point at which an aerofoil must be supported in order to remain in equilibrium when an air-current is blowing against it; the center of air-pressure.

*center of pull*, the center or point at which the whole amount of pull may be applied with the same effect as when distributed.

*center of resistance*, the center or point at which the

whole amount of resistance to the translatory motion of an aerofoil may be concentrated with the same effect as when distributed; the point at which the center of thrust or of effort must be located, in order that a flying-machine be in equilibrium.

*center of thrust*, the center or point at which the whole amount of propulsive thrust or effort of one or more propellers may be applied with the same effect as when distributed; the point at which a flying-machine would have to be supported in order to remain in equilibrium when the propellers were in action; the center of effort.

**centric** 'sɛntrɪk *adj.* having the center of resistance coincident with the line of flight: opposed to *acentric*: as, a \*centric aerodone.

**channel-flying** 'tʃænəl,flaɪ-ɪŋ *n.* the action of flying across a channel of water, as the English Channel, in a machine.

**charliere** ʃɑ:zi'ɛ:z *n.* [also spelt *Charliere*, *charlière*] a hydrogen balloon.

**chart** tʃɑ:zt *n.* a map or draft, as of the currents of the atmosphere.

*meteorological chart*, a chart or map of meteorological phenomena; a weather-map.

*thermal chart*, a chart or map showing thermal conditions, or the temperature of the air, land, or water, as by isothermal lines.

**chassis** 'ʃæsis, 'ʃɑ:-sɪ, ʃæ'sii *n.* [plural *chassis*] the central or essential frame of an aeroplane or other flying-machine, to which the motor, rudders, propellers, seats, wheels, etc., are attached; the under-structure of an aeroplane.

**chassis-wheel** 'ʃæsis,wɪl *n.* one of the wheels attached to the under part of the chassis of a flying-machine, constituting a part of the running-gear or landing-apparatus. compare *skid-wheel*.

**chemise** ʃɪ'mi:z *n.* a covering of unvarnished silk enveloping a balloon in place of the ordinary net.

**chiroptera** ,kai'zɒptə-zə *n. pl.* the wing-handed creatures, or bats.

**chord** kɔ:zd *n.* the straight line joining the ends of the arc of a circle or other curve.

**chute** ʃʊt *n.* a slide or shoot; also, a rapid downward dash or rush of an airship: as, a disastrous \*chute.

**cigar-shaped** sɪ'gɑ:z,ʃæpt *adj.* having the elongated shape or form of a cigar, often somewhat pointed at one or both ends; spindle-shaped, fusiform.

**cilium** 'sɪli-əm *n.* [plural *cilia*] a hair-like process on the barbule of a bird's feather; a barbicle.

**circle** 'sɜ:kəl *intr.* ascend or mount in circles, or spirally, as a bird does; turn in a circle or arc of a circle, as an aeroplane does when rounding a curve.

**circling** 'sɜ:kliŋ *n.*

1. the action as of a bird when soaring in circles or in a spiral course, mounting during that part of each lap which is against the wind; gyrating.

2. an instance of this action; a gyration.

**circulation** ,sɜ:kçə'ʃe:ʃən *n.* the action of circulating, as the earth's atmosphere; movement in a circle or circuit.

*general circulation of the atmosphere*, the widespread circulatory movements of the atmosphere or air due to differences of its thermal condition between the polar and equatorial regions.

*planetary circulation*, the circulation of atmospheric air around the planet; the rotation of air around the earth; the planetary winds collectively.

*tropical circulation*, the general circulatory movements of the winds around areas of high and low barometric pressure in the tropics.

**circumnavigate** ,sɜ:kəm'nævi,geɪt *tr.* navigate, sail, or fly around: as, to \*circumnavigate a tower, \*circumnavigate Germany; \*circumnavigate the globe.

**cirriform** 'sɪrɪ,fə:zm *adj.* having the form of cirrus cloud, shaped like curl-cloud; curly.

**cirrocumular** ,sɪɔ'kçəmju-ləz *adj.* consisting of or resembling cirro-cumulus cloud; cirrocumulus.

**cirrocumulated** ,sɪɔ'kçəmju,letɪd *adj.* [also spelt *cirro-cumulated*] of the nature of cirro-cumulus cloud; cirrocumular.

**cirrocumulative** ,sɪɔ'kçəmju,letɪv *adj.* [also spelt *cirro-cumulativ*] of or pertaining to cirro-cumulus cloud.

**cirro-cumulo-stratus** sɪɔ,kçəmju-lə'stræ-təs *n.* a cloud of indefinite structure from which rain is falling.

**cirrocumulous** ,sɪɔ'kçəmju-ləs *adj.* [also spelt *cirro-cumulous*] of the nature of cirro-cumulus cloud; cirrocumular.

**cirro-cumulus** ,sɪɔ'kçəmju-ləs *n.* [also spelt *cirrocumulus*; plural *cirro-cumuli*] a form of composite cloud combining the shapes of the cirrus and the cumulus and consisting of a connected system of small white roundish and fleecy cloudlets in close proximity to one another, without shadows, but separated by intervals of sky; mackerel-back sky; mackerel sky.

**cirro-filum** ,sɪɔ'fai-ləm *n.* ice-cloud disposed in threads.

**cirro-nebula** ,sɪɔ'nebju-lə *n.* [plural *cirro-nebulæ*] a nebula or haze in the higher cloud-strata; a faintly reticulated

or striated mass of haze or ice-cloud high up in the sky; cirrus-haze.

**cirrose** 'sɪzəs *adj.* of the nature of cirrus or curl-cloud; filamentous; wispy; cirrous.

**cirrostrative** ,sɪzə'stri:ɛ-tɪv *adj.* [also spelt *cirrostrativ*] of cirro-stratus cloud.

**cirrostratus** ,sɪzə'stri:ɛ-təs *adj.* having the form or nature of a cirro-stratus cloud.

**cirro-stratus** ,sɪzə'stri:ɛ-təs *n.* [also spelt *cirrostratus*] a form of cloud combining the shapes of the cirrus and the stratus and often giving rise to halos around the sun or moon; cirrus haze.

**cirrous** 'sɪzəs *adj.* of the nature of cirrus or curl-cloud; filamentous; wispy; cirrose.

**cirro-velum** ,sɪzə'vɪ:l-əm *n.* [also spelt *cirrovelum*] a horizontal velum or thin veil-like sheet of cirro-stratus cloud.

**cirrus** 'sɪzəs *n.* [plural *cirri*] a form of cloud presenting the appearance of parallel or divergent filaments or wisps, or resembling a lock of hair or wool, generally at a great elevation and spreading indefinitely; cat's-tail, cat's-tails; mare's-tails; curl-cloud.

*cirrus haze*, see under *haze*.

*false cirrus*, a veil or screen of fibrous cloud sometimes surrounding the top of cumulo-nimbus or thunder-cloud; a delicate white cirrus-like cloud streaming away from the summit of a tall cumulus cloud.

*magnetic cirrus*, cirrus clouds arranged in parallel bands erroneously supposed to be formed by magnetic influence; a polar band; a Noah's ark.

*reticulated cirrus*, an interlaced mass or network of threads or striae in a dense cirrus cloud.

*tailed cirrus*, small cirro-cumulus or alto-cumulus clouds with tail-like streaks of snowflakes or fine rain-drops drifting or falling slowly behind them.

*undulate cirrus*, cirrus cloud disposed in waves or gentle curves; undulated cirrus.

**cirrus-flecked** 'sɪzəs,flɛkt *adj.* [also spelt *cirrus-flect*] flect or dotted over with cirrus cloud.

**cirrus-haze** 'sɪzəs,hæz *n.* a haze among or above alto-cirrus clouds; cirro-nebula.

**cirrus-like** 'sɪzəs,lʌɪk *adj.* like cirrus or curl-cloud.

**claw** kɹ:ɔ: *n.* a sharp hooked end of a limb of a bird or other animal; any claw-like hook: as, the \*claw of a grapnel.

**clearance** 'kɹɪ:-zəns *n.* clear space, room, or distance, as between the rear edges of the main planes of an aeroplane flying-machine and the propeller.



**climb** kləɪm *intr.* fly or soar upward thru the air; mount continuously; ascend, rise.

**clino-anemometer** ˌklɑɪ-nə-æniˈmɛmɪ-təz *n.* an anemometer for measuring inclined or non-horizontal air-currents.

**clinometer** ˌklɑɪˈnɛmɪ-təz *n.* an instrument for measuring angles of dip, angles of elevation, or other vertical angles such as of the roll, the heel, or the pitch of a ship at sea.

**close-to-the-ground** ˈkləʊs-təðəˌɡraʊnd *adj.* in which the craft keeps close to the ground; low: said of flight.

**cloud** klaʊd *n.* a visible mass of vapor or watery particles suspended in the air at a considerable height above the general surface of the ground; also, the substance of this mass; visible watery vapor floating high in air.

*altitude of a cloud*, the height of a cloud, measured in vertical line, above the land-level or the sea-level.

*alto clouds*, see *alto*.

*cloud of night*, stratus cloud, which often ascends from the ground after sunset, continues at night, but is dispersed at sunrise; night-cloud; fall-cloud.

*cotton-ball clouds*, small cumulus clouds, resembling balls of cotton.

*iridescent cloud*, a cloud which shows rainbow colors.

*mammiform cloud*, a cloud having pendent protuberances on its under side, resembling mammae or tits.

*metrolucent cloud*, a high cloud which shines after sunset; a night-shining cloud.

*nacreous cloud*, a delicate, high, white cloud shining late at night; a noctiluminous cloud.

*night-shining cloud*, a high cloud which shines by night (after sunset); a metrolucent cloud.

*noctiluminous cloud*, same meaning as *nacreous cloud*.

*phosphorescent cloud*, a pure white cloud sometimes seen in Europe at midnight near the horizon, some 10 or 20 miles above sea-level, possibly self-luminous but perhaps shining by reflecting the light from some distant twilight; an iridescent, opalescent, or luminous night-cloud.

*tornado cloud*, a form of cloud, distinctive of a tornado or whirlwind, which reaches down nearly to the surface of the earth or ocean from the main cloud-mass above and marks the central axis of a whirling mass of air; a waterspout cloud.

*turreted cloud*, a cloud whose cloudlets rise like turrets or towers; a thunder-cloud.

*waved cloud*, same meaning as *ripple-cloud*.

*woolpack clouds*, cumulus clouds.

*waterspout cloud*, same meaning as *tornado cloud*.

**cloud** k্লাও *v.*

1. *tr.* overspread with a cloud or clouds; overshadow; obscure; darken.

2. *intr.* become cloudy; become overcast or obscured with clouds.

**cloud** k্লাও *adj.* of a cloud or clouds; characteristic of the clouds: as, \*cloud motion; the \*cloud principle.

**cloudage** 'k্লাও-দিগ্জ *n.* a mass of clouds; cloudiness.

**cloud-area** 'k্লাও,এ:ডি-এ *n.* [also spelt *cloud area*] an area or tract of cloud.

**cloud-ascending** 'k্লাও-এ,সেন্দিং *adj.* ascending or mounting to the clouds; towering as high as the clouds.

**cloud-assembler** 'k্লাও-এ,সেম্লেং *n.* he who assembles or collects the clouds: epithet of Zeus in Homer.

**cloud-bank** 'k্লাও,ব্যাংক *n.* a bank or wall of cloud.

**cloud-barred** 'k্লাও,বা:ড *adj.* [also spelt *cloud=bard*] bard, banked up with, or obscured by clouds.

**cloud-belt** 'k্লাও,বেল্ট *n.*

1. a belt, zone, or circular region covered with clouds; the zone around the earth which has a maximum of cloudiness.

*equatorial cloud=belt*, the cloud=belt which girdles the earth in the equatorial region and contains in its midst the equatorial rain=belt.

2. the belt or ring of clouds itself, girdling the earth or other planet; a cloud=ring.

**cloudberg** 'k্লাও,ব্:গ্জ *n.* [also spelt *cloud=berg*] a large mass or mountain of cloud, resembling a distant iceberg.

**cloud-blanket** 'k্লাও,ব্ল্যাংকিট *n.* a blanket or covering of clouds.

**cloud-born** 'k্লাও,ব্:জ্জ *adj.* born in the clouds; originating in the clouds.

**cloud-borne** 'k্লাও,ব্:জ্জ *adj.* borne or transported by the clouds. compare *air=borne*.

**cloud-built** 'k্লাও,বিল্ট *adj.* [also spelt *cloud=bilt*] bilt or made of cloud or clouds; also, figuratively, bilt in the clouds; fanciful.

**cloudburst** 'k্লাও,ব্:জ্জ *n.* a violent downpour of rain in large quantity and over a limited area; a waterspout.

**cloud-camera** 'k্লাও,ক্যামে-জ্জ *n.* a camera, consisting of a lens in a dark chamber, used for observing the image of a cloud in determining its altitude, size, motion, etc.; a fotogrammeter.

**cloud-canopy** 'k্লাও,ক্যে-পি *n.* a canopy or suspended covering formed of clouds.

**cloud-cap** 'k্লাও,ক্যাপ *n.* a cap or hood of cloud formed round a mountain=top.

- cloud-capped** 'k্লাউ,kæpt *adj.* [also spelt *cloud=capt*] capt with clouds; having a cap or hood of clouds about its summit.
- cloud-castle** 'k্লাউ,kæ:-səl *n.* a castle in the clouds; an air-castle.
- cloud-chart** 'k্লাউ,tʃɑ:zɪ *n.* a chart or daily wether-map showing the kinds, quantities, and motions of the clouds over a given area; a cloud-map.
- cloud-chaser** *n.* 'k্লাউ,tʃeɪ-səz *n.* an airship which chases the clouds.
- cloud-checking** 'k্লাউ,tʃeɪkɪŋ *adj.* checking, halting or stopping the course of the clouds.
- cloud-cleaver** 'k্লাউ,kli:vəz *n.* one who cleaves or breaks thru the clouds.
- cloud-cliff** 'k্লাউ,kli:f *n.* a cliff or bank of clouds; a cloud-wall.
- cloud-cloak** 'k্লাউ,k্লোক *n.* a cloak or covering of clouds.
- cloud-compacted** 'k্লাউ-kəm'pæktɪd *adj.* compacted or crowded with clouds; clouded.
- cloud-compeller** 'k্লাউ-kəm,peləz *n.* one who compels, or deminates over, the clouds; one who collects or drives together the clouds; an epithet of Zeus in Homer.
- cloud-compelling** 'k্লাউ-kəm,pelɪŋ *adj.* collecting or driving together the clouds: applied to Zeus.
- cloud-control** 'k্লাউ-kən,t্রুəl *n.* control or mastery of the clouds.
- cloud-covered** 'k্লাউ,kavəzd *adj.* [also spelt *cloud=coverd*] coverd by clouds; cloud=wrapt.
- cloud-crammed** 'k্লাউ,kzæmd *adj.* [also spelt *cloud=cramd*] cramd or crowded with clouds; cloud=pact.
- cloud-curtain** 'k্লাউ,kবৃত্তন *n.* a curtain formd of cloud; a screen of cloud.
- cloud-dispelling** 'k্লাউ-dɪ,spelɪŋ *adj.* dispelling or driving away the clouds; cloud=dispersing.
- cloud-disperser** 'k্লাউ-dɪ'spɜ:zəz *n.* one who disperses the clouds; a cloud-scatterer.
- cloud-dividing** 'k্লাউ-dɪ,vai-dɪŋ *adj.* dividing or parting the clouds; cloud=separating.
- cloud-dodging** 'k্লাউ,dədʒɪŋ *n.* the action or practis of dodging or evading clouds.
- cloud-drift** 'k্লাউ,drɪft *n.*
1. irregular, drifting clouds; cloud=rack; a mass of drifting cloud.
  2. the drift or drifting motion of clouds.
- cloud-eclipsed** 'k্লাউ-ɪ,k্লিপst *adj.* [also spelt *cloud=eclipst*] eclipsed by a cloud; cloud=obscured.

- clouded** 'k্লাউ-dɪd *adj.* covered, surrounded, or obscured by clouds.
- cloud-embrace** 'k্লাউ-ɪm,bɹeɪs *n.* the embrace of the clouds.
- cloud-enveloped** 'k্লাউ-ɪn,vɛləpt *adj.* [also spelt *cloud=enveloped*] enveloped or wrapt in cloud; cloud=wrapt; cloud=covered.
- cloud-field** 'k্লাউ,fɪld *n.* an expanse of clouds.
- cloud-film** 'k্লাউ,fɪlm *n.* a filmy mass of cloud.
- cloud-firing** 'k্লাউ,fai-zɪŋ *n.* the firing of cannon in attempts at rain-making or warding off hail=storms, etc.
- cloud-fitting** 'k্লাউ,fɪtɪŋ *adj.* fitting the clouds.
- cloud-flake** 'k্লাউ,fleɪk *n.* a flake or fleck of cloud; a bit of cloud=rack.
- cloud-flecked** 'k্লাউ,flekt *adj.* [also spelt *cloud=flect*] showing flecks or small patches of cloud.
- cloud-floe** 'k্লাউ,floʊ *n.* a cloud=mass resembling or likend to an ice=floe.
- cloud-fold** 'k্লাউ,fɔld *n.* a fold of cloud.
- cloud-form** 'k্লাউ,fɔ:zm *n.* a form of cloud; cloud=shape.
- cloud-formation** 'k্লাউ-fɔz,mæe-ʃən *n.* the formation or genesis of cloud.
- cloudful** 'k্লাউ-fəl *adj.* full of clouds; cloudy; clouded; dark.
- cloud-gate** 'k্লাউ,geɪt *n.* a gate or pass between hills or promontories thru which clouds are moved by the day and night winds.
- cloud-girt** 'k্লাউ,ɡɹ:ɪt *adj.* girt or wrapt with cloud; cloud=covered.
- cloud-gloom** 'k্লাউ,ɡlʊm *n.* gloom or gloominess due to clouds.
- cloud-hung** 'k্লাউ,hʌŋ *adj.* hung or suspended in or on the the clouds: as, \*cloud=hung navies.
- cloudily** 'k্লাউ-dɪ-ɪ *adv.* in a cloudy manner; with clouds; darkly.
- cloud-image** 'k্লাউ,ɪmɪdʒ *n.* the image of a cloud, as in a nefoscope.
- cloudiness** 'k্লাউ-dɪ-nɪs *n.* the state of being cloudy or clouded.  
*scale of cloudiness*, the scale or gradation series by which the proportion of cloudiness to clear spaces, for a given area of the earth's surface, is exprest; a cloud=scale.
- clouding** 'k্লাউ-dɪŋ *n.* the appearance of cloudiness; clouded or cloudy aspect or condition.
- cloud-island** 'k্লাউ,ar-ɪlənd *n.* a mass of cloud which resembles an island; an isolated cloud=mass.

- cloud-kissing** 'k্লাও,কিসিং *adj.* touching the clouds as if kissing or caressing them; lofty.
- cloud-laden** 'k্লাও,লৈ-দেন *adj.* laden or loaded down with clouds.
- cloudland** 'k্লাও,লৈন্দ *n.* the land or region of the clouds; a realm far above the general surface of the earth; also, a 'landscape' of clouds; a cloudscape.
- cloud-lead** 'k্লাও,লৈদ *adj.* [also spelt *cloud-led*] led, attracted along, or preceded, by clouds.
- cloudless** 'k্লাও-দৈস *adj.* without a cloud; unclouded; clear, bright.
- cloudlessly** 'k্লাও-দৈস-লি *adv.* in a cloudless manner; without clouds.
- cloudlessness** 'k্লাও-দৈস-নিস *n.* the state or quality of being cloudless; clearness.
- cloudlet** 'k্লাও-দৈত *n.* a little cloud.
- cloud-level** 'k্লাও,লৈবল *n.* the level of the clouds; the elevation at which clouds occur.
- cloud-light** 'k্লাও,লৈলিট *n.* clouded light, dim light.
- cloud-like** 'k্লাও,লৈলিক *adj.* [also spelt *cloudlike*] like a cloud; resembling a cloud.
- cloud-like** 'k্লাও,লৈলিক *adv.* like a cloud; in the manner of a cloud.
- cloud-map** 'k্লাও,ম্যাপ *n.* a map or chart showing the distribution of clouds over a given area of the earth's surface; a cloud-chart.
- cloud-mass** 'k্লাও,মাস *n.* a mass of clouds; a cloud-aggregate.
- cloud-monster** 'k্লাও,মেন্‌স্টা *n.* a monster-like cloud-ferm.
- cloud-motion** 'k্লাও,মৌ-শন *n.* the motion of a cloud; cloud-movement. compare *cloud motion*, under *cloud*.
- cloud-nymph** 'k্লাও,নিম্‌ফ *n.* [also spelt *cloud-nymf*] a nymph of the clouds.
- cloud-particle** 'k্লাও,পাৰ্টি-কেল *n.* one of the minute particles of water of which cloud is made up.
- cloud-peak** 'k্লাও,পিক *n.* a cloud-top which resembles a mountain-peak; the pointed top of a cloud.
- cloud-piercing** 'k্লাও,পি:সিং *adj.* piercing or extending thru the clouds; overtopping the clouds.
- cloud-projector** 'k্লাও,প্ৰ'জেক্টা *n.* a fotografic apparatus by which the dimensions, altitudes, and distances of clouds are determined.
- cloud-rack** 'k্লাও,জ্যাক *n.* [also spelt *cloud-wrack*] an assemblage of irregular or broken clouds drifting across the sky; floating cloudy vapor; cloud-drift.

- cloud-region** 'kɫaʊd,ʒii-dʒən *n.* the region or place where clouds occur.
- cloud-rift** 'kɫaʊd,ʒɪft *n.* a rift or opening in the clouds, or in a cloud; a cloud-gap.
- cloud-ring** 'kɫaʊd,ʒɪŋ *n.* a ring of clouds; specifically, one of the cloudy zones, belts, or regions north or south of the equator of the earth.
- cloud-rocked** 'kɫaʊd,ʒɔkt *adj.* [also spelt *cloud-rockt*] rockt by the clouds.
- cloud-scale** 'kɫaʊd,skæɪl *n.* same meaning as *scale of cloudiness*. see under *cloudiness*.
- cloud-scaling** 'kɫaʊd,skæɪ-lɪŋ *adj.* scaling the clouds; towering to the clouds; cloud-ascending.
- cloudscape** 'kɫaʊd,skæɪp *n.* a scene composed of clouds; expanse of cloud open to view; a 'landscape' of clouds; a cloudland.
- cloud-shadow** 'kɫaʊd,ʃædɔ *n.* the shadow of clouds, especially as seen in the sky, when the air is hazy, in the form of dark lines pointing toward the sun ('the sun drawing water'), or, just before sunrise and after sunset, giving rise to radiant beams diverging from the sun.
- cloud-shape** 'kɫaʊd,ʃæp *n.* the shape of a cloud; a cloud-form.
- cloud-shutter** 'kɫaʊd,ʃʌtəz *n.* a fotografic shutter used in securing images of clouds.
- cloud-stratum** 'kɫaʊd,stɹæe-təm *n.* [plural *cloud-strata*] a stratum of cloud; a cloud-layer.
- cloud-study** 'kɫaʊd,stʌdɪ *n.* the study of the clouds; that branch of meteorology which is concerned with the phenomena of clouds; nefology.
- cloud-surface** 'kɫaʊd,səʒfɪs *n.* the surface or superficies of a cloud.
- cloud-surmounting** 'kɫaʊd-səz,mʌʊn-tɪŋ *adj.* surmounting or overtopping the clouds; rising above the clouds; cloud-piercing.
- cloud-surpassing** 'kɫaʊd-səz,pæ:-sɪŋ *adj.* surpassing or outstripping the clouds.
- cloud-tempest** 'kɫaʊd,tempɪst *n.* a tempestuous or stormy gathering of clouds; a cloud-storm.
- cloud-theodolite** 'kɫaʊd-θi,ɔdə-lait *n.* a theodolite used in observing clouds.
- cloud-top** 'kɫaʊd,tɔp *n.* the top of a cloud; the summit of a cloud-mass.
- cloud-topped** 'kɫaʊd,tɔpt *adj.* [also spelt *cloud-toppt*] having the top covered with clouds; cloud-capt.

**cloud-touching** 'kɫaʊd,tatʃɪŋ *adj.* touching or reaching up to the clouds.

**cloud-tree** 'kɫaʊd,tɹi *n.* a cloud which resembles a tree in form; a tree-shaped cloud.

**cloud-triangulation** 'kɫaʊd-tɹai-æŋɡjʊ,leɪ-ʃən *n.* the measurement of the sizes and altitudes of clouds by triangulation.

**cloud-type** 'kɫaʊd,tʌɪp *n.* a type or typical form or kind of cloud.

**cloud-wall** 'kɫaʊd,wɔ:l *n.* a wall or bank of cloud.

**cloudward** 'kɫaʊd-wɔ:d *adv.* toward the clouds; cloudwards.

**cloudwards** 'kɫaʊd-wɔ:dz *adv.* towards the clouds.

**cloud-wave** 'kɫaʊd,wɛv *n.* a wave-like mass of cloud; a cloud-billow.

**cloud-way** 'kɫaʊd,wɛ *n.* the way or road thru or upon the clouds; the sky-road.

**cloud-work** 'kɫaʊd,wɔ:zɪk *n.* work or research in observation of the clouds.

**cloud-world** 'kɫaʊd,wɔ:zɪld *n.* the world, region, or realm of the clouds; cloudland.

**cloud-woven** 'kɫaʊd,wɔ:vən *adj.* woven out of cloud or clouds; like a fabric or network of clouds.

**cloud-wrack** 'kɫaʊd,zæk *n.* see *cloud-rack*.

**cloud-wrapt** 'kɫaʊd,zæpt *adj.* wrapt or enveloped in cloud; cloud-covered.

**cloudy** 'kɫaʊ-dɪ *adj.*

1. of cloud; of the nature of cloud: as, \*cloudy vapor, a \*cloudy particle, \*cloudy condensation.

2. of or pertaining to the clouds.

3. characterized by the presence of clouds; abounding in or full of clouds; also, not transparent, not clear.

*cloudy day*, a day in which clouds prevail; specifically, a day in which the average cloudiness between sunrise and sunset equals 8 on a cloud-scale of 10.

**cloudy-topped** 'kɫaʊ-dɪ,tɔpt *adj.* [also spelt *cloudy-toppt*] having a cloudy top or summit; cloud-topped.

**coal-gas** 'kɔʊl,gæs *n.* a mixture of gases produced by the destructive distillation of coal, consisting mainly of carburated hydrogen, and, when somewhat purified, constituting the common gas used for lighting and heating, and for inflating balloons; illuminating-gas; burning-gas; inflating-gas.

**co-altitude** ,kɔ'æltɪ,tʃud *n.* the complement of the altitude of an object in the sky or heavens; the zenith-distance.

**coast** kɔ:st *n.* the edge or margin of the land next the sea; the seashore; the seacoast; the seaside.

**coast** kooſt *intr.* descend, glide, or slide down thru the air, as if on an inclined plane; velplane downward.

**coast-defense** 'kooſt-dɪfens *n.* a defense or fortification on the coast, designed to prevent foren men-of-war from entering harbors, destroying cities, etc.

**coast-wind** 'kooſt,wɪnd *n.* a wind which blows along or over a coast, or is due to the presence of a coast; any wind which is characteristic of, or which persists in, the coastal region of a continent; a coastal wind.

**coating-material** 'koo-tɪŋ-mə,tɪ:zi-əl *n.* a varnish or other material for coating or gas-proofing balloon=envelops.

**co-aviator** ,kə'ee-vi,etəz *n.* [also spelt *coaviator*] an aviator who acts jointly with another or others.

**coefficient** ,kə-rɪ'fɪʃənt *n.* a numerical quantity, constant for a given substance or structure, used to measure some one of its properties.

*coefficient of efficiency*, the coefficient of carrying= or sustaining=power possess by an aeroplane or other aerofeil in flight under given conditions.

*coefficient of slip*, the coefficient or numerical constant used as a measure of propeller=slip. see *slip*.

**coleopter** ,kəli'əptəz *n.* any one of the coleoptera; a sheath-wingd insect; a coleopteron; a beetle.

**coleoptera** ,kəli'əptə-zə *n. pl.* [singular *coleopteron*] the sheath-wingd insects; the beetles.

**coleopterous** ,kəli'əptə-zəs *adj.* of the coleoptera or beetles; having elytra.

**collapse** kə'læps *v.*

1. *intr.* fall together or into a flattened form or irregular mass, as an inflated balloon by escape of gas; cave in; fall in; go to pieces; break down or go to smash.

2. *tr.* cause to fall together or flatten out, as a balloon, by deflation.

**collapsible** kə'læpsə-bəl *adj.* [also spelt *collapsable*] capable of collapsing or being collapsed or folded; also, that can be knocked down and packed in small space, as for shipment: as, a \*collapsible flying=machine; a \*collapsible propeller.

**collision** kə'lɪʒən *n.* the action of colliding or forcibly striking or dashing together; a violent encounter of a moving body with another.

**coma** 'koo-mə *n.* a state of heavy, deep, prolonged sleep with slow, stertorous, irregular breathing, often experienced by persons in balloons at great altitudes; stupor; lethargy.

**comatose** 'koo-mə,tos *adj.* affected with coma; in a state of coma; also, of, pertaining to, or of the nature of coma.

**comet** 'kəmt *n.* a celestial body moving about the sun in



an elongated elliptic or parabolic orbit, resembling a bright star surrounded by a misty light and having a train of light, or tail, sometimes of enormous length, and directed away from the sun.

**compass** 'kæmpəs *n.* an instrument consisting of a magnetized needle turning freely, horizontally, on a pivot, used for determining the magnetic meridian or one's direction or position with respect thereto; a mariner's compass; a seaman's compass.

**compensating-rope** 'kæmpən-sæe-tɪŋ,ʒɔp *n.* one of the ropes inside the gasbag of a dirigible balloon, such as the Parseval, which serve as compensators between the ballonets and the gas-valve.

**compensator** 'kæmpən,seɪtəz *n.* a relatively small balloon or gasbag placed below the main gasbag to compensate or prevent loss of gas during the voyage.

**compression** kəm'prɛʃən *n.* the action of compressing; condensation by pressure.

*compression side*, the side or surface of a wing, aeroplane, propeller-blade, or other aerofoil, which effects the compression of, or acts against, the air: the opposite of *rarefaction side*.

**concave** ,kən'keɪv, (*assumptively*) 'kən,keɪv *adj.* having the outline or surface curved like the interior of a circle or sphere: the reverse of convex; hollow; presenting a hollow surface to view; incurvated.

**concave** 'kən,keɪv *n.* the arch or vault of heaven; the heavens; as, the blue \*concave.

**concaved** 'kən,keɪvd *adj.* made or fashioned in a concave form; concave.

**concavo-concave** kən,keɪv-ɔ-kən'keɪv, (*assumptively*) kən,keɪv-ɔ'kən-keɪv *adj.* concave on both sides.

**concavo-convex** kən,keɪv-ɔ-kən'veks, (*assumptively*) kən,keɪv-ɔ'kən-veks *adj.* concave on one side and convex on the other, and thinnest in the center.

**concentrating-hoop** 'kənsən-treɪtɪŋ,hu:p *n.* the hoop or ring of a balloon, upon which the guy-ropes or cordage are concentrated or brought together, and to which they are attached; the concentrating-ring.

**concentrating-ring** 'kənsən-treɪtɪŋ,zɪŋ *n.* the ring of a balloon upon which the guy-ropes are concentrated and to which they are attached; the concentrating-hoop.

**condenser** kən'densər *n.* [also spelt *condensor*] any device or apparatus for condensing or compressing air or other gases or vapors, or for reducing gases to a liquid or solid form; a pneumatic force-pump; a gas-condenser; a cham-

ber in a steam or other engine in which the steam or other gas is condensed to liquid form, to be re-used.

**coniscope** 'kɒnɪ,skɒp *n.* [also spelt *koniscope*] an instrument for showing the amount of dust in the air or atmosphere. compare *dust-counter*.

**connect** kə'nekt *tr.* join, fasten, or link together, as hypothetically, the particles of air or other fluid in a region of space.

*doubly connected*, connected by two, and only two, irreconcilable paths: said of a region of space occupied by air or other fluid and containing an obstacle.

*multiply connected*, connected by two or more paths: said of a region of space occupied by air or other fluid and containing one or more obstacles.

*simply connected*, connected in such a manner that all paths joining any two points are reconcilable, or such that all circuits drawn within it are reducible: said of a region of space occupied by air or other fluid and containing no obstacles.

*triply connected*, connected by three, and only three, irreconcilable paths: said of a region of space occupied by air or other fluid and containing one or more obstacles.

**connecting-rope** kə'nektɪŋ,rɔp *n.* a rope which connects a balloon with the ground.

**connectivity** ,kɒnek'tɪvɪ-tɪ *n.* the order of connection of a region of space.

**contour** 'kɒn,tu:z *n.* an outline: as, the \*contour of a coast; the \*contour of a bird; the \*contour of a wing; the \*contour of a propeller-blade; specifically, the vertical outline of a portion of the earth's surface such as a rolling country or mountainous region; the topographic layout of a tract of land; also, a contour-line.

**contour-feather** 'kɒn-tu:z,fedəz *n.* [also spelt *contour-fether*] one of the feathers which determine the detail of the contour or outline of a bird; a surface feather.

**contour-line** 'kɒn-tu:z,lɪn *n.* a line representing the horizontal contour of the earth's surface at a given elevation; a line representing the intersection of the ground-surface with a horizontal plane at a certain height above sea-level; one of a series of lines on a topographic map showing the elevations and depressions of the surface; a line on a map all points of which have equal elevations from the datum-plane.

**contour-map** 'kɒn-tu:z,mæp *n.* a map or chart showing the contours of a section of the earth's surface; a topographic map with contour-lines.

**control** kən'trɔʊl *n.*

1. a device for controlling, managing, or governing an airship or flyer in any respect.

*front control*, a control located in the front or fore part of an aircraft; a box-like front controlling-device or forward elevator, as at the end of the front outrigger of a biplane.

*lateral control*, a control for regulating lateral or side effects, as air-currents; a control for securing sidewise or transverse equilibrium or balance; a side control.

2. the act or power of direction or guidance, as of an airship; regulation, as of equilibrium: as, a system of three-rudder control.

*compound control*, control or regulation which is made up of, or involves, several elements or processes; a system of aeroplane control in which, by two-directional movement of a single lever or wheel, the aviator operates two regulating-devices such as a vertical and a horizontal rudder.

*three-rudder control*, control of an aeroplane flying-machine by means of three rudders.

3. a locality, as a town, which is used as a regulating-center or point of reference or basis of operations, as along the route of an aeroplane-race.

**control-frame** kən'trɔʊl,freɪm *n.* a frame, such as a body-cradle or shoulder-yoke, by which the control of an aircraft is effected; a frame by means of which the movements of the operator's body are utilized in controlling or balancing a flying-machine.

**control-lever** kən'trɔʊl,lɪ-vɛz *n.* a hand-lever for operating a front or other control, as in a biplane.

**controlling-lever** kən'trɔʊl-ɪŋ,lɪ-vɛz *n.* a lever used in controlling or regulating an airship; one of the levers in an aeroplane by the manipulation of which the operator works the controls.

**controlling-means** kən'trɔʊl-ɪŋ,mɪnz *n.* a means or medium by which the control of an airship is maintained; a control-arrangement.

**control-wire** kən'trɔʊ,wɪz *n.* a wire by means of which a control is operated: as, a \*control-wire shield.

**convection** kən'vekʃən *n.* the action of conveying or carrying; specifically, the transportation of energy, as heat, by molar motion of bodies pervaded therewith, as in the ascension of heated air or water.

*compound atmospheric convection*, the total transfer of heat from one part of the atmosphere to another by currents or by condensation of water vapor into cloud.

**convictional** kən'vekʃə-nl *adj.* of or due to convection.

*convictional circulation*, a general circulation of the atmosphere due to its thermal differences between the polar and equatorial regions of the globe.

*convictional current*, a convectional movement of the air due to thermal differences in the atmosphere at different altitudes; a convection-current.

**convection-current** kən'vekʃən,kvzənt *n.* a convectional current. see under *convictional*.

**convective** kən'vektiv *adj.* [also spelt *convectiv*] of the nature of or relating to, convection.

*convective resistance*, resistance in a fluid, as air, due to changes in the motion of the fluid and to the formation of surfaces of discontinuity; convective friction.

**convexed** 'kən,vekst *adj.* [also spelt *convext*] made or fashioned in a convex form.

**cooler** 'kou-ləz *n.* the apparatus used for cooling or lowering the temperature of the circulating water of an internal-combustion engine.

**cooling** 'kou-lɪŋ *n.* the process by which the circulating water of an internal-combustion engine is cooled: as, water \*cooling, air \*cooling.

**cordage** 'kə:z-dɪdʒ *n.* cords or ropes collectively, as in the rigging of a balloon.

**corner-stay** 'kə:z-nəz,steɪ *n.* a stay which is located in or serves to stiffen one of the corners or angles of an aeroplane, as in a monoplane flying-machine.

**corona** kə'zɔ:nə *n.* [plural *coronas*, *coronae*]

1. a series of small colored rings or circles of blue, white, golden and red, 3 to 10 degrees in diameter seen around the moon and sometimes the sun, due to the diffraction of the light in passing between the particles of cloud or haze covering the moon or sun; also, a similar appearance opposite the sun; an anthelion; and, more widely, a similar phenomenon in optical instruments, etc.

2. (in *astronomy*) the halo of radiating white light seen round the sun or disk of the moon in a total eclipse of the sun.

*diffraction corona*, a corona due to diffraction of light, as distinguished from a similar phenomenon which may be due to other optical processes.

**corposant** 'kə:z-pə-zənt *n.* a ball of electric light sometimes seen about the masts, yard-arms, or other parts of a ship, during a storm; Saint Elmo's fire; Castor and Pollux.

**costal** 'kə:stəl *adj.*

1. of the costae or ribs of a bird: as, \*costal processes.

2. of or near the costa or anterior edge or margin of an insect's wing: as, the \*costal vein, \*costal cells.

*costal angle*, the angle of the costa; the tip of an insect's wing.

*costal area*, the area, bordering the costa of an insect's wing or tegmen, and extending to the subcostal vein.

**countercurrent** 'kaun-təz,kəzənt *n.* a current of air flowing or blowing counter to, or against, another current; a counter=draft.

**counterdraft** 'kaun-təz,dra:ft *n.* a draft or current of air which runs counter to another; an opposite or opposed atmospheric current; a counter=current.

**counter-glow** 'kaun-təz,gləʊ *n.*

1. the glow or light in the eastern sky after sunset, due to atmospheric dust, and limited below by the twilight=arch.

2. same meaning as *gegenschein*.

**countershaft** 'kaun-təz,ʃɑ:ft *n.* an intermediate shaft driven from a main shaft for giving motion to a particular machine.

**countertrade** 'kaun-təz,tʀeɪd *n.* a wind which is above the tradewind, and blows counter (or in the opposite direction) to it, or away from the equator; an antitrade; a return=trade.

**counterwake** 'kaun-təz,wɛk *n.* a wake or current which opposes or runs counter to one already existing; a counter=current surrounding the dead=water of wake current of a streamline body and flowing in the opposite direction from that of the wake; a counterwake current.

**counterwind** 'kaun-təz,wɪnd *n.* a wind blowing counter to, or in a direction opposite to, one already existing.

**course** kɔ:z *n.*

1. the action of running or moving onward; forward movement, as of an airship; a run.

2. the path, line, or direction of a run; the path of a body moving thru the air; the direction of the flight of an aerofoil; the flight=path.

3. a race=course for flying=machines; an aviation=course.

**course-finder** 'kɔ:z,z,fɑɪn-dəz *n.* a device for finding or determining the course or flight=path of an airship.

**covering** 'kʌvə-zɪŋ *n.* the fabric, paper, or other material, which covers or is spread over the framework of a kite and forms the main sustaining=surface.

**covert** 'kʌvəz *n.* one of the feathers covering the bases and adjacent parts of the larger wing=feathers and tail=feathers of a bird; a tectrix; especially, a covert=feather of the wing; a wing=covert.

*antebrachial covert*, one of the covert=feathers or tectrices

located on a bird's antebrachium or forearm; a cubital covert; a secondary covert.

*cubital covert*, one of the covert-fethers or tectrices located on the cubit, forearm, or antebrachium of a bird; an antebrachial covert; a secondary covert.

*greater covert*, one of a set or subdivision of the secondary upper wing-coverts constituting a single row which projects furthest upon the secondary remiges or flight-fethers; one of the major tectrices of the wing; a greater upper secondary covert; a greater secondary covert.

*inferior covert*, a lower covert; an under covert.

*least covert*, a lesser covert.

*lesser covert*, one of a set or subdivision of the secondary upper wing-coverts, including all those clast as either greater coverts or median coverts; one of the minor tectrices of the wing; a lesser secondary covert.

*lower covert*, one of the covert-fethers or tectrices on the lower or under side of a bird's wing; one of the inferior tectrices of the wing; an under covert; an inferior covert.

*manual covert*, one of the covert-fethers or tectrices located on a bird's manus or hand; a primary covert.

*median covert*, one of a set or subdivision of the secondary upper wing-coverts constituting a single row located midway between the greater coverts and the lesser coverts; one of the median tectrices of the wing; a median secondary covert; a middle secondary covert; a middle covert.

*middle covert*, a middle secondary covert; a median covert.

*primary covert*, one of the wing-coverts which overlie the bases of the primary remiges or flight-fethers; a manual covert.

*secondary covert*, one of the wing-coverts which overlie the bases of the secondary remiges or flight-fethers; an antebrachial or cubital covert.

*superior covert*, an upper covert.

*under covert*, one of the covert-fethers or tectrices located on the under or lower side of a bird's wing; one of the inferior tectrices of the wing; a lower covert; an inferior covert.

*upper covert*, one of the covert-fethers or tectrices located on the upper side of a bird's wing; one of the superior tectrices of the wing; a superior covert.

*upper primary covert*, one of the upper or superior coverts which overlie the bases of the primary remiges or flight-fethers of a bird's wing; one of the set of rather long and and stiffish covert-fethers or tectrices located on the upper

side of a bird's wing and covering the bases of the primaries; one of the (superior) coverts of the primaries.

**craft** kʁɑ:ft *n.* [plural *craft*] any sailing or floating vessel or outfit, as an airship; also, such objects, collectively.

**crank-shaft** 'kʁæŋk,ʃɑ:ft *n.* [also spelt *crankshaft*] a shaft turned or driven by a crank.

**crepuscular** kʁɪ'paskʁu-ləz *adj.* of or pertaining to twilight; resembling twilight, especially the morning twilight, as preceding the full light of day.

*crepuscular rays*, the divergent rays sometimes seen after sunset and before sunrise dividing the sky into segments; in Japan, called the ropes of Maui.

**crest-height** 'kʁɛst,haɪt *n.* the height of the crest of a wave of water, as at sea.

**crew** kʁəu *n.* the company of airmen who man an airship; the air-sailors belonging to an aerial vessel.

**crissal** 'kʁɪsəl *adj.* of the crissum or anal region of a bird, under the tail; also, characterized by the color of the crissal feathers: as, a \*crissal thrush.

**cropper** 'kʁəpəz *n.* a sudden descent or fall with the crop, craw, or chest foremost, as of a bird; a fall on the crop. compare *header*.

**cross** kʁə:s *n.* a structure consisting essentially of two intersecting pieces, an upright and a transverse bar.

*luminous cross*, a cross of light formed by the intersection, at the sun when near the horizon, of a part of a parhelic circle with vertical columns of light extending above and below the sun due to the reflection of sunlight from the upper and lower facets of ice-crystals in the air.

**cross-brace** 'kʁə:s,bʁeɪs *n.* a transverse brace or stick, as in a cellular kite.

**cross-channel** 'kʁə:s,tʃænl *adj.* able to fly across the English Channel; capable of channel-flying.

**cross-city** 'kʁə:s,sɪtɪ *adj.* extending across or over a city: said of flight.

**cross-country** 'kʁə:s,kʁantʁɪ *adj.* [also spelt \**cross-country*] extending across or over the open country, and not determined merely by roads or other fixed paths: said of flight; also, related to flight of this sort: as, a \*cross-country prize.

**cross-country** 'kʁə:s,kʁantʁɪ *adv.* across or over the open country: as, to fly \*cross-country.

**cross-current** 'kʁə:s,kʁəzənt *n.* a current of air or wind flowing or blowing across or at an angle with another current; a crosswise current.

**cross-sprit** 'kʁə:s,sprɪt *n.* a transverse sprit, spar, or pole.

- cross-stick** 'kʁə:s,stri:k *n.* the stick of a kite=frame which extends crosswise or, across the main stick; the horizontal stick of a kite=frame.
- cross-tree** 'kʁə:s,tʁi:i *n.* a transverse horizontal timber or supporting=rod, as in a Parseval airship.
- cross-truss** 'kʁə:s,tʁas *tr.* furnish with a diagonal truss: as, to \*cross=truss a skid to the fuselage.
- cross-wind** 'kʁə:s,wɪnd *n.* [also spelt *crosswind*] a wind blowing crosswise or across, as in relation to the course of an airship; a transverse wind.
- cross-wire** 'kʁə:s,wɪəz *n.* [also spelt *crosswire*] a wire extending crosswise, as in the framework of an aeroplane; a transverse wire.
- crow** kʁəʊ *n.* any bird of the genus *Cervus*, etc; one of the *Cervinae*.
- cruise** kʁəʊz *n.* a flight of considerable extent, to and fro, not directed toward any particular landing=place, but for purposes of experiment, observation, or the like.
- cruising-radius** 'kʁəʊ-zɪŋ,rædi-əs *n.* the radius of the circle or area over which the cruising=operations of an airship extend; the action=radius; an aeroradius.
- cumular** 'kʁəmju-ləz *adj.* having the form of a heap; heapt, piled up; cumulous.
- cumular cloud*, same meaning as *cumulus cloud*.
- cumulescent** ,kʁəmju'lesənt *adj.* forming into cumulus cloud; becoming cumular; piling up; growing larger.
- cumuliform** 'kʁəmju:lɪ,fə:zm *adj.* having the form of cumulus cloud.
- cumulo-cirro-stratus** ,kʁəmju-lə-sɪzə'stʁee-təs *n.* (*rare*) nimbus; rain=cloud.
- cumulo-cirrus** ,kʁəmju-lə'sɪzəs *n.* [also spelt *cumulocirrus*; plural *cumulo=cirri*] a cloud of cumulus structure but cirrus position; an alto=cumulus cloud.
- cumulo-nimbus** ,kʁəmju-lə'nɪmbəs *n.* [plural *cumulo=nimbi*] thunder=cloud, shower=cloud.
- cumulo-stratus** ,kʁəmju-lə'stʁee-təs *n.* [plural *cumulo=strati*] a form of cloud in which the structure of the cumulus is mixt with that of the cirro=stretatus or cirro=cumulus, the cumulus being at the top and overhanging a flattish stratum or base.
- cumulous** 'kʁəmju-ləs *adj.* heap=like; of the nature of cumulus cloud; cumuliform.
- cumulus** 'kʁəmju-ləs *n.* [plural *cumuli*] a form of cloud consisting of white convex or conical masses heapt upon each other and having a nearly horizontal base; day=cloud; summer=cloud; wool=pack clouds.



*turreted cumulus*, a large cumulus cloud having turret-like covers the sky in the regions of the tradewinds.

*trade cumulus*, a kind of small detach cloud which often masses rising from its top; a thunder-cloud.

*ocean current*, a current or stream in the water of the air.

**cumulus-like** 'kʌmjʊləs,laɪk *adj.* like cumulus cloud; resembling cumulus.

**curl-cloud** 'kɜ:zɪ,kɹɑʊd *n.* cirrus; cat's-tail.

**current** 'kɜ:zənt *n.* that which flows; a stream; a portion of a body of air moving in a definite direction; an air-current.

*ascending current*, a current of air which is ascending or rising; a rising current.

*convictional current*, see under *convictional*.

*downthrow current*, an air-current which has a downward throw or trend; a falling or descending current of ocean, such as the Gulf Stream.

*upper currents*, the currents or motions high up in the air.

**curtain** 'kɜ:ztn *n.* an aerofoil placed vertically, as between the main supporting-surfaces of some biplanes; a vertical surface in a cellular or box-kite structure; a panel; a partition.

**curve** 'kɜ:zv *n.* [also spelt *curv*]

*curve of torque*, a plotted curv, or curvd line, showing the relation between the torque or twisting-force acting on a propeller and the thrust or the speed of revolution of the propeller.

*inflected curve*, a fugeid curv of the inflected type.

*tumbler curve*, a fugeid curv of the type characteristic of the tumbler pigeon.

**cusps** kasp *n.* a point or apex; a point at which two branches of a curv meet and stop, with a common tangent; a point at which the moving point describing a curv has its motion exactly reverst; also, an analogous point on a curvd surface; a spinode; a stationary point.

**custom** 'kʌstəm *n.* a tribute, toll, impost, or duty, levied by a national or local authority upon the entry of commodities or goods into his dominion; a duty levied on imports; an import-tax.

**cut-air** 'kʌt,ɛ:z *n.* a rigid shield at the front of an airship, or a rigid edge on an aeroplane or wing, so shaped as to cut or plow thru the air and thus reduce the atmospheric resistance to motion.

**cyclonal** ,sai'klɔɔ-nɪ, 'sai-klɛ-nɪ *adj.* of, pertaining to, or of the nature of a cyclone; cyclonic.

*cyclonal gradient*, see under *gradient*.

**cyclone** 'sai,klɔn *n.*

1. any storm or atmospheric disturbance in which the wind has a circular, whirling, or rotatory motion, as a hurricane or tornado of limited diameter and destructive violence; a tornado.

2. a system of winds or atmospheric currents, often extending over an area having a diameter of several hundred miles and rotating round a center of minimum barometric pressure and relative calm which itself usually has a translatory motion.

*land cyclone*, a cyclone or cyclonic system of winds which is located over a land surface.

*ocean cyclone*, a cyclone or cyclonic system of winds which is located over the ocean.

*polar cyclone*, the hypothetical cyclone in the north or the south polar region of the earth; the supposed system of rotatory atmospheric currents, with cold a center, from which the lower air flows outward and the upper air flows inward.

**cyclone-center** 'sai-klɔn,sɛntɛz *n.* the center of a cyclone or area of low barometric pressure.

**cyclone-flood** 'sai-klɔn,flɔd *n.* the flood accompanying a cyclone, due to the wave of water formed by the storm; a storm-wave.

**cyclone-path** 'sai-klɔn,pɑ:θ *n.* the path or route along which a cyclone moves.

**cyclone-pit** 'sai-klɔn,pɪt *n.* a pit or underground room made for refuge from a tornado or cyclone.

**cyclone-wave** 'sai-klɔn,wɛv *n.* the wave of water produced by a cyclone.

**cyclonic** ,sai'klɛnɪk *adj.* of or pertaining to a cyclone or cyclones; of the nature of a cyclone.

**damp** dæmp *v.*

1. *tr.* depress, diminish, lower, deden: as, to \*damp out the amplitude of fugeoid waves.

2. *intr.* become depressed or lowerd; diminish, decrease.

**danger-zone** 'deɛn-dʒɛz,zɔn *n.* a zone or region of danger, as about the cusp of a plotted fugeoid or flight-curve.

**dart** dɑ:zt *n.* a pointed missile thrown by the hand; a light spear or javelin; also, an arrow.

**dart** da:zt *intr.* move thru the air like a dart, as a Malay kite; spring or start with a sudden rapid motion; shoot.

**date-line** 'dæet,lain *n.* the boundary-line between contiguous regions of the globe where the calendar is different; the (practically somewhat devious) north-and-south line thru the Pacific ocean (theoretically) identical with the meridian of 12 hours or 180 degrees from Greenwich, England) east of which the nominal date is one day earlier than on the west of it.

**dawn** dc:n *n.* the first appearance of daylight in the morning; daybreak.

*false dawn*, a transient light, resembling dawn, but appearing about an hour before actual daybreak.

**day** dee *n.*

1. the time of sunlight; the interval between the rising and setting of the sun.

*break of day*, the bursting forth or first appearance of light in the morning; the dawn; daybreak.

*clear day*, a day in which the sky is clear. see *clear sky*, under *sky*.

*dark day*, any day in which the sunlight is dim or absent, or the atmosphere foggy or smoky, due to prairie or forest fires, volcanic eruptions, etc.

*high day*, the time when the sun is in the meridian; high noon.

2. the time occupied by the earth in making one complete turn on its axis; the space of twenty-four consecutive hours.

*apparent solar day*, the day or interval of time between two successive meridian transits of the sun.

*change of day*, a change of one's reckoning in circumnavigating the globe, when, by the calendar, a day is lost or gained.

*gained day*, the calendar day which is gained or reckoned twice at the date-line in circumnavigating the globe from west to east.

*lost day*, the calendar day which is lost or dropped out at the date-line, in circumnavigating the globe from east to west.

*sidereal day*, the interval between two successive transits of a given star.

**daybreak** 'dee,bzæek *n.* the break of day; the first appearance of light in the morning; the dawn.

**day-breeze** 'dee,bziiz *n.* a periodical breeze or light wind occurring in flat inland regions.

**day-cloud** 'dee,klaud *n.* cumulus cloud; summer-cloud.

**day-dawn** 'dee,dɔ:n *n.* the dawn of day; daybreak.

**dead** ded *adv.* [also spelt *ded*] directly, exactly, straight: as, facing \*ded into the wind; \*ded ahead.

**dead-reckoning** 'ded,zekə-nɪŋ *n.* [also spelt *ded=reckoning*] the reckoning or calculation of an airship's position independently of observations of the heavenly bodies, merely by distance and direction, run, etc.

**dead-water** 'ded,wɔ:təz *n.* [also spelt *ded=water*] air or other fluid without current; still air; the eddy=air or eddy=fluid just behind the stern of an aerofoil or airship: distinguished from *live stream*. see under *stream*.

**deadweight** 'ded,wet *n.* [also spelt *dedweight*] the relatively dead or inert weight or load other than the living passengers, carried by a balloon; the weight of the balloon itself, as distinct from its live (or paying) weight or load.

**death-blast** 'deθ,bɪɑ:st *n.* a deadly blast, as of hot gas near a volcano; a death=dealing wind or storm.

**deck** dek *n.* one of the platform=like horizontal planes of a biplane or multiplane; a main surface in an aeroplane flyer.

**deflate** di'fleɪt *tr.* release the air or gas from anything inflated, as a balloon; remove the gas from: the opposite of *inflate*.

**deflation** di'fleɪ-ʃən *n.* the act or process of deflating; an emptying or letting out the gas from the gasbag of a balloon: the opposite of *inflation*.

**deflect** di'flekt *tr.* bend or turn to one side or from a straight line; change the direction of; cause to deviate from its course.

**deflecting-plane** di'flektɪŋ,pleɪn *n.* a plane or aerofoil in a flying=machine, used for deflecting or changing the course of the craft; a horizontal rudder; a deflector.

**deflector** di'flektəz *n.*

1. a metal plate used to deflect or to direct the flow of air or other gas, as in aerodynamic experiments; a baffle=plate.

2. a plane or aerofoil in a flying=machine, used for deflecting or changing the course of the craft; a deflecting=plane.

**demountability** di,məʊn-tə'biɪ-tɪ *n.* the quality of being demountable.

**demountable** ,di'məʊn-tə-bəl *adj.* that may readily be taken apart or knocked down, for shipment, and easily reassembled: as, modern \*demountable aeroplanes. compare *collapsible*.

**density-gradient** 'densɪtɪ,gzeɪ-di-ənt *n.* the gradient of the

density of the air; the rate of variation of atmospheric density.

**departure** dr'pɑrtʃəz *n.* (*sea-term*) the distance (in nautical miles) by which a ship in sailing departs or moves east or west from a given meridian; change of longitude; also, the bearing of an object on the coast, taken at the commencement of a voyage, from which the dead-reckoning begins.

**depression** dr'pɹɛʃən *n.* condition or action of being depressed or lowered, as a balloon in the air; a low place; a condition or region of depressed or lowered barometric pressure, as indicated by an isobar; a low-pressure line or area; a low.

*barometric depression*, a depression or lowness of the barometric readings, due to diminution of atmospheric pressure.

*depression of the dew-point*, see under *dew-point*.

*secondary depression*, a depression in a barometric pressure adjacent to a larger depression; a kink or loop in one or more of the isobars of a low, often indicative of rain, and in summer, especially of thunderstorms.

*V-shaped depression*, an area of depression of barometric pressure whose isobars intersect like the lines of the letter V, as on the side of the trough of a cyclone.

**derecho** dr'zɛɛ-tʃɔ *n.* a strong wind or squall blowing in a straight course, with no apparent rotatory movement.

**derrick** 'dɛzɪk *n.* a hoisting-apparatus for operating the falling weight which is sometimes used in starting an aeroplane flying-machine; a launching-derrick; a starting-derrick; a catapult; a pylon.

**descend** dr'sɛnd *intr.* go or come down; move downward toward the land or water underneath; fall gradually and easily to or toward the surface of the earth.

**descending-position** dr'sɛndɪŋ-pə,zɪʃən *n.* the position of the rudder of a flying-machine appropriate to descending or sinking toward the ground.

**descensional** dr'sɛnʃən-nɪ *adj.* of descension or descent: as, ascensional and \*descensional movements of the atmosphere.

**descent** dr'sɛnt *n.* the action of descending to or toward the surface of the earth; a going or coming down to the ground; downward motion towards the land or water underneath.

*gliding descent*, a descent, as of a flying-machine to the earth's surface, made by means of gliding; a downward glide or velplane. \*see *glide*.

**deviation** ,divi'ɛɛ-ʃən *n.* the deflection of the needle of a

ship's compass, owing to the magnetism of the iron in the ship, or other local cause.

**deviator** 'dri-vi,etəz *n.* an apparatus attached to a balloon by a rope and intended to trail along behind in the sea and thus deviate or turn the balloon from its normal course.

**dew** djou *n.* the moisture occurring in minute drops on the grass or any cool surface, due to the condensation of the water-vapor in the air towards or during the night after a hot day, and especially plentiful in the early morning.

**dew-bow** 'djou,bəʊ *n.* an iridescent bow or halo, seen on a surface covered with dew; a rainbow-like effect caused by dew-drops.

**dew-fall** 'djou,fc:l *n.* the fall, formation, or deposition of dew; a fall or deposit of dew; also, the time when this begins, in the evening.

**dew-point** 'djou,pɔɪnt *n.* that point or degree of the temperature of the air at which dew begins to form.

*complement of the dew-point*, the number of degrees by which the temperature of the dew-point is below the temperature of the air; the depression of the dew-point.

*depression of the dew-point*, the extent to which the dew-point is depressed below the temperature of the air; the complement of the dew-point.

*dew-point apparatus*, an apparatus for determining the dew-point.

*dew-point hygrometer*, see under *hygrometer*.

**diagonal** ,dai'ægə-nl̩ *n.* a diagonal brace or stay in the framework of a flying-machine; a cross-stay.

**diaphragm** 'dai-ə,fsæm *n.* [also spelt *diafram*] a septum, membrane, sheet, or any thin partition, as that dividing one compartment of the gasbag of a balloon from another.

**diedral** ,dai'ri-drəl̩ *adj.* same meaning as *dihedral*.

**dietherscope** ,dai-r'θezə,skop *n.* an instrument for showing the refraction of the air in mirage.

**dihedral** ,dar'hii-drəl̩ *adj.* [synonymous cognate *diedral*] furnished with, or contained by, two planes or plane faces: said of a pair of wings or aerofoils inclined upward and away from each other.

*dihedral angle*, the solid angle formed by two planes; the inclination of two planes, as aeroplanes or wing-surfaces, which meet or approach each other usually at their lower edges.

**dilatation** ,dar-lə'tæɪ-ʃən *n.* the action or process of dilating; the state of being dilated; expansion, as of a balloon.

**dimensional** dr'menʃən-nl̩ *adj.* relating to dimension or magnitude: as, \*dimensional theory.

**dip** *dɪp* *n.*

1. an act of dipping; a brief downward plunge thru the air, as of an aeroplane.

2. the downward inclination of the magnetic needle at any particular place; the angle which the needle makes with the horizon.

3. the angular distance of the visible horizon below the horizontal plane thru the observer's eye; the depression of the horizon due to the observer's elevation, which has to be allowed for in taking the altitude of a heavenly body.

4. the angular depression or inclination of one or the other end of an airship; the downward slope of the craft, fore or aft.

**dip** *dɪp* *intr.* incline downward; slope: as, to \*dip and swoop.

*dipping front edge*, a form of front or fore aerofoil edge which dips, slopes, or inclines downwards; the drooping front edge of a wing or other aerofoil; the arch form of wing-section.

**dip-the-dip** *ˈdɪp-ðə,dɪp* *adj.* characterized by the making of a sudden dip or downward dart in the air comparable to a shooting of the chutes or toboggan-slide on the ground.

**dipper** *ˈdɪpəz* *n.* any swimming bird which dips into or dives in the water with great ease and rapidity, as the grebe.

**dipping** *ˈdɪpɪŋ* *n.* the action of the verb *dip*; the process of sloping downward for a brief space of time.

**dipping-needle** *ˈdɪpɪŋ,ni-dl* *n.* a magnetic needle mounted so as to be free to rotate in a vertical plane about its center of gravity, used for determining by its dip the direction of the earth's magnetism or magnetic pole; the needle of a dipping-compass.

**dipter** *ˈdɪptəz* *n.* one of the diptera; a two-winged fly.

**diptera** *ˈdɪptə-zə* *n. pl.* the two-winged flies, a large order of insects having one pair of membranous wings, with a pair of halteres or peters representing a posterior pair.

**direction-maintenance** *dɪˈzɛkʃən,mæntn-əns* *n.* the maintenance of the general direction of the course of an aeroplane or aircraft; the keeping up, or persistence in, a given flight-path thru capacity to resist diverting forces, as by means of an abutment-fin; directional maintenance.

**direction-rudder** *dɪˈzɛkʃən,zʌdəz* *n.* a rudder used for controlling the horizontal direction of a flying-machine; a side-to-side rudder; a horizontal rudder for lateral steering.

**dirigibility** *ˌdɪrɪdʒəˈbɪlɪ-tɪ* *n.* the quality of being dirigible or steerable.

**dirigible** 'dɪzɪdʒə-bəl, (*improperly*) dɪ'zɪdʒə-bəl *adj.*

1. capable of being directed or guided; steerable.

2. of or concerned with dirigible balloons.

**dirigible** 'dɪzɪdʒə-bəl *n.* a dirigible balloon; a lighter-than-air airship: as, a war \*dirigible.

**discontinuity** ,dɪs-kontɪ'nju-ɪ-tɪ *n.* the quality or state of being discontinuous; want or failure of continuity; interrupted condition.

*kinetic discontinuity*, a discontinuity in the kind or in the course of motion.

*physical discontinuity*, discontinuity in the kind of matter.

*surface of discontinuity*, the surface which separates the live stream from the dead-water in the rear of a body of imperfect streamline form in its course thru the air or other fluid.

**disembark** ,dɪsəm'bɑ:zk *n.* land from an airship; get out upon the ground, as at the end of a voyage.

**disk** dɪsk *n.* [also spelt *disc*] the highest portion of the thorax or elytra of an insect, seen from above; the central part of the wing.

**dispatch-bag** dɪ'spætʃ,bæg *n.* a bag used in sending dispatches or messages from a balloon to the earth.

**dispatch-craft** dɪ'spætʃ,ksɑ:ft *n. pl.* air-craft used for sending dispatches or messages.

**displacement** ,dɪs'plæes-mənt *n.* the quantity or weight of fluid which is displaced by a solid body (as an airship) placed in it.

**distance-piece** 'dɪstns,pɪs *n.* a spar or other piece, as of wood, which is inserted between two objects to separate them or keep them a certain distance apart.

**diurnal** ,dai'ɒznəl *adj.*

1. performed in or occupying one day; daily.

2. of or belonging to the day as distinguished from the night: the opposite of *nocturnal*.

**dive** daɪv *n.* a sudden dart downward, as of an air-craft; a descent or plunge head first; a header: as, a spiral \*dive, a winding \*dive, a sweeping \*dive.

*high dive*, a dive or steep quick descent made in a flying-machine from high up in the air.

*low dive*, a dive or steep quick descent made in a flying-machine from a low altitude above the earth.

*spiral dive*, see under *spiral*.

**dive** daɪv *intr.* [past participle *dived*; preterit *dived* and, sometimes, *dove*] dart suddenly downward; descend head first precipitately.



**diver** 'dai-vəz *n.* a bird which habitually dives, as a grebe, loon, or penguin; a diving bird.

**dizzy** 'dizi *adj.* having or causing a whirling feeling or vertigo; giddy: as, a \*dizzy height, a \*dizzy flight, a \*dizzy poise, a \*dizzy mist.

**doldrum** 'dɔldrəm *n.* (*sea-term*) a region in which ships are specially liable to be becalmed.

*equatorial doldrums*, the region of calms and light baffling winds near the equator, where the tradewinds meet and neutralize each other.

**double** 'dʌbəl *intr.* go or fly back; return: as, to \*double on one's course.

**double-decked** ,dʌbəl'dekt, (*assumptively*) 'dʌbəl,dekt *adj.* [also spelt *double=deckt*] furnished with, or consisting essentially of, two decks or planes, one above the other, as a biplane flyer or horizontal rudder; having two parallel superposed aeroplanes or aeroföils.

**double-decker** ,dʌbəl'dekəz *n.* an airship which has two decks or planes, one above the other, as a biplane; an aeroplane flying-machine having two parallel superposed aeroföils.

**double-sailing** 'dʌbəl,see-lɪŋ *adj.* sailing in a double or twofold way, because of having two aeroplane sustaining-surfaces instead of one.

**double-surface** 'dʌbəl,sʌbzɪs *adj.* having two sustaining-surfaces, as a biplane; double=deckt; double=surfaced.

**double-surfaced** ,dʌbəl'sʌbzɪst, (*assumptively*) 'dʌbəl,sʌbzɪst *adj.* furnished with two sustaining-surfaces, as a biplane; double=surface; double=deckt: distinguished from *single=surfaced*.

**double-vaned** 'dʌbəl,vænd *adj.* having two vanes or blades, as a screw propeller.

**double-winged** 'dʌbəl,wɪŋd *adj.* [also spelt *double=wingd*] having two wings or aeroplanes, one above the other: said of flying-machines; double=deckt.

**down-draft** 'daʊn,dra:ft *n.* [also spelt *down=draught*] a downward draft of air; a descending air-current.

**downfall** 'daʊn,fc:l *n.* the action of falling; a sudden descent, accidental or intentional; a swooping down.

**down-feather** 'daʊn,fedəz *n.* [also spelt *down=fether*] one of the fuzzy fethers, usually small, constituting the down or fine soft under plumage of swans, ducks, etc.; a plumule.

**downpour** 'daʊn,pɔ:z *n.* [also spelt *down=pour*] a pouring down of rain; a heavy continuous fall of rain.

**downshoot** 'daʊn,ʃaʊt *n.* a downward or sharp quick descent thru the air; a swoop.

**down-stroke** 'daʊn,stri:k n. the downward stroke or sweep of a reciprocating part such as a flapping wing: the opposite of *up-stroke*.

**downways** 'daʊn,weɪz adv. in a downward way; downwards.

**draft-kite** 'dra:ft,kɑɪt n. the lower of the two kites used in Wenham's kite-carriage, designed to furnish the drafting, drawing, or tractive power, and distinguished from the upper or draft kite; a carrying-kite. compare *pilot-kite*.

**drag** dræg intr. be drawn, pulled, or hauled along as the drag-rope of a balloon on the ground, or an airship on the ground or on the surface of water; also, move with undue friction, as a flying-machine in its passage thru the air.

**drag** dræg n. the action or fact of dragging; the impediment placed in the way of free motion; specifically, the difference between the speed of a ship and that of its screw propeller when the speed of the ship is greater than that of the screw; the slip.

*viscous drag*, the drag occasioned by a viscous fluid upon a solid body moving thru it; entrainment.

**drag-line** 'dræg,lɑɪn n. a line of definite length one end of which is attached to a kite while the other end drags on the ground, its purpose being to keep the kite in the air, or to regulate its motion or position, by means of the friction of the line on the ground.

**dragon-fly** 'dræɡən,flɑɪ n. any neuropterous insect of the group Libellulina, characterized by a long slender body, large eyes, and two pairs of large reticulated wings, and by their strong, swift flight: as, a mechanical \*dragon-fly.

**dragon-kite** 'dræɡən,kɑɪt n. a Chinese kite consisting of a series of light elliptic bamboo disks and India-paper, decorated and garnished and undulating in the air so as to resemble a dragon or crawling serpent.

**g-rope** 'dræg,zəʊp n. a rope of definite length attached to the car of a balloon or dirigible and allowed to hang down so that when the ship approaches too near to the earth, the rope drags along on the surface of the land or water and thus, by lightening the load; causes the ship to rise, or at least prevents it from descending any further; a guide-rope; a balancer.

**drift** drift n.

1. the fact or state of being driven; slow course or current: as, the \*drift of the air or of the clouds.

*planetary drift*, the drift of the air in the planetary circulation of the earth's atmosphere; the drift of the planetary winds.

2. lateral deviation, as of a projectile from its path; tendency to move sidewise.

3. the force with which a fluid, as the air, presses horizontally upon an aeroföil, either backward or forward, as the case may be; the horizontal component of the air-pressure on a kite, aeroplane, or airship; the backward push or thrust (or, sometimes, the forward pull) of the atmosphere or wind upon an aeroplane or aerocurv: distinguished from *lift*. compare *head-resistance*.

**drift** *drift intr.*

1. float or be driven along, as an airship, by a current of air; be carried at random by the force of the wind.

2. tend, move, or be pushed or thrust horizontally backward (or, less usually, forward) somewhat, relatively, by the pressure of the air.

**drifter** 'drifter *n.* any aerial craft of the type which tends to drift or float along with the air, rather than actually fly or move under the complete control of the operator; a lighter-than-air machine.

**drifting-force** 'driftɪŋ, fɔ:z *n.* the force or strength of the tendency of an aeroföil to drift. see *drift* (verb, sense 2).

**drive** draɪv *n.* a driving or propelling mechanism; also, the mode of being driven: as, a flexible \*drive; the direct \*drive of a helicopter.

*chain drive*, transmission of power from the motor of an airship to the driving-apparatus or propeller by means of a chain.

**driver** 'draɪ-vəz *n.* one who drives or operates a flying-machine; an aviator.

**driving-power** 'draɪ-vɪŋ, paʊ-əz *n.* the motory power employed or kept in reserve for driving or propelling an airship; power or capacity to drive; propulsive power.

**drome** drom *n.* an aerodrome; a flyer; an aero.

**droop** drʊp *n.* a downward bend; the curvature, concave downward, of the margin of a wing; the hanging curve of the arch form of a wing-section; the dipping edge of a sustaining-surface; the arch of an aeroföil. compare *dip* (verb) and *arch*.

**drop** drɒp *intr.* fall, sink, or descend, as thru the air to or toward the ground.

**drop** drɒp *n.* the action of dropping, sinking or falling thru the air; a descent: as, a long \*drop, a corkscrew \*drop.

**droplet** 'drɒplət *n.* a little drop, as one of the water-particles of a water-cloud.

**drosometer** drə'sɒmɪ-təz *n.* a weighing-instrument for measuring dew.

- duration-contest** dju'zæ-ʃən,kən-test *n.* a contest as to duration of flight; a competitive trial of flyers as to capacity to stay up in the air in continuous flight without alighting.
- duration-prize** dju'zæ-ʃən,pʒaɪz *n.* a prize or premium offered or won for flight of long duration; a trophy for longest continuous flight without alighting.
- dusk** dask *n.* gloom, shade; the darker stage of twilight just before night; also, the stage of partial darkness just before dawn or daybreak.
- dusky** 'daskɪ *adj.* somewhat dusk or dark; darkish, gloomy, shadowy.
- dust** dast *n.* earth or other solid matter in the form of fine dry particles, floating in the air; powdery or granular matter in the atmosphere: as, a cloud of \*dust.
- dust-counter** 'dast,kəʊn-təz *n.* an instrument for measuring the amount of dust or particles of solid matter in the air or atmosphere. compare *coniscope*.
- dust-fog** 'dast,fɒg *n.* a whitish fog formed of the finest mist or vapor-dust; dust-vapor fog.
- dust-haze** 'dast,heɪz *n.* a haze, or misty appearance of the atmosphere, usually of reddish or yellowish hue, consisting of or due to dust.
- dustiness** 'dasti-nɪs *n.* the state of being dusty or containing dust; dusty condition of the air or atmosphere.
- dust-shower** 'dast,ʃəʊ-əz *n.* a shower or light downpour of dust (with or without rain or snow) due to a cloud of dust having been carried into the upper atmosphere and precipitated. compare *sea-dust*.
- dust-vapor** 'dast,væe-pəz *n.* same meaning as *vapor-dust*.
- dust-wind** 'dast,wɪnd *n.* a wind that brings dust-storms, such as the northwesterly gales on the eastern coast of Australia.
- dust-wisp** 'dast,wɪsp *n.* a wisp or delicate spray or streak of dust or ice-particles, usually of grayish-white color, floating high in the sky at sunset or sunrise.
- dynamic** dr'næmɪk *adj.*
1. of or relating to force or energy: contrasted with *kinematic*, and often, loosely, with *static*.  
*dynamic cooling*, the cooling or lowering of temperature of a portion of the atmosphere due to the expenditure of some of its internal heat energy in expansion occasioned by inferior atmospheric pressure from without.  
*dynamic heating*, the heating, warming, or rise of temperature of a portion of the atmosphere due to compression occasioned by superior atmospheric pressure from without.

*dynamic stability*, see under *stability*.

2. mechanically propelled or lifted; motor-driven: said of gasless or heavier-than-air power flying machines.

**eagle** 'i-gəl *n.* any one of various large diurnal birds of prey, especially one of the genus *Aquila* or *Haliaeetus*, well-known for their strength, keen vision, and graceful and powerful flight; the 'king of birds.'

**earth-contact** 'ɜ:θ,kən-tækt *n.* the action or fact of coming into contact with the earth; a contact with, or a touching of, the earth, on the part of an airship.

**earth-force** 'ɜ:θ,fɔ:zɪs *n.* the force of attraction of the earth; gravity.

**earth-harbor** 'a:zθ,hɑ:z-bəz *n.* [also spelt *earth harbor*] an airship-harbor in the earth; an underground harbor or refuge for aircraft.

**earthman** 'ɜ:θ-mən *n.* [plural *earthmen*] a man who habitually stays upon the earth or ground: distinguished from *airman*.

**earthward** 'ɜ:θ-wəzd *adv.* toward the earth or ground; downward.

**eclipse** ɪ'klɪps *n.* an interseption or obscuration of the light of the sun, moon, or other heavenly body, by the intervention of another heavenly body either between it and the eye or between it and the source of its illumination.

**eddy** 'edɪ *n.* a portion of a body of air or other fluid which has a rotary motion; a small whirl or vortex in a fluid.

**edge** ɛdʒ *n.* the narrow outer portion or margin of the fore part of a bird's wing, aeroplane, or other aerofoil.

*advancing edge*, an edge which advances or precedes another; the front edge of a sustaining-plane or other aerofoil; the leading edge: the opposite of *following edge*.

*following edge*, an edge which follows or comes after another; the rear edge of a sustaining-plane or other aerofoil; the rearward edge; the trailing edge: the opposite of *advancing edge*.

*front edge*, the edge of a wing, aeroplane, or other aerofoil which is located in front; the advancing edge.

*leading edge*, the edge (of a wing or other aerofoil) which leads or comes first, in flight; the advancing edge; the front edge: the opposite of *following edge*.

*trailing edge*, the rear edge or margin (of a wing or other aerofoil), considered as trailing thru the air; the posterior margin of an advancing aerocurve; the following

edge; the rearward edge: distinguished from *advancing edge, front edge*.

**edge-effect** 'edʒ-ɪ,fekt *n.* an effect produced by the edge of a wing, aeroplane, or other aerofœil.

**edge-resistance** 'edʒ-zɪ,zɪstns *n.* the resistance to the air offered by the edge of an aerofœil.

**efflux** 'ɛ,flaks *n.* a flowing outward of air or other fluid; outflow.

**eggoon** ,ɛ'goun *n.* an egg-shaped airship or balloon.

**egg-shaped** 'ɛg,ʃeɪpt *adj.* having the shape or form of a hen's egg; ovoid.

**elbow** 'ɛl-bə *n.* the definite bend where the main body of the sustaining-vessel or hull of some dirigible balloons begins to curve toward its pointed bow or stern.

**electrohygroscope** ɪ,lektɹə'hɑɪ-gzə,skop *n.* [also spelt *electrohygroscope*] an instrument for showing the amount of electricity and humidity in the atmosphere.

**electrolytic** ɪ,lektɹə'li:tɪk *adj.* pertaining to electrolysis or decomposition by an electric current, as of water into oxygen and hydrogen: as, an \*electrolytic plant for generating hydrogen.

**electrometer** ɪlek'tɹɔmɪ-təz *n.* an instrument for measuring the difference of electrostatic potential between two conductors, used for investigating atmospheric electricity.

**electroscope** ɪ'lektɹə,skop *n.* an instrument for showing the presence of free electricity, as in the air, and for determining its kind.

**elevating-engine** 'ɛlɪ-vetɪŋ,ɛndʒɪn *n.* the engine, in an airship, which is used for elevating or forcing the craft upward thru the air.

**elevating-lever** 'ɛlɪ-vetɪŋ,li-vəz *n.* a lever, in an aeroplane flying-machine, by the manipulation of which the craft is elevated or caused to rise.

**elevating-plane** 'ɛlɪ-vetɪŋ,pleɪn *n.* a plane or aerofœil forming part of a flying-machine and used in elevating the craft or inclining it upward; the front horizontal rudder of an aeroplane flyer.

**elevation** ,ɛlɪ'vee-ʃən *n.*

1. the altitude or angular height of the pole or any heavenly body above the horizon; the angle of any line of direction above the horizon.

2. a particular altitude or height above the surface of the earth, or above any given level, as that of the sea; also, height, loftiness.

**elevator** 'ɛlɪ,vetəz *n.* an elevating-plane: as, a duplex \*elevator, a flexible \*elevator.

- elevator-outrigger** 'eɪ-vetəz, ɔt-zɪgəz *n.* the outrigger, in a flying-machine, which supports the elevator or elevating-plane.
- elevator-surface** 'eɪ-vetəz, sɜːfɪs *n.* the aerofoil surface of an elevator or horizontal rudder.
- ellipse** ɪ'ɪps *n.* a plane curve such that the sums of the distances of each point in its periphery from two fixed points or foci, within the periphery, are equal.
- Elmo** 'el,mo *n.*: *Elmo's fire, Saint Elmo's fire, Saint Elmo's light.* same meaning as *corposant*.
- elytra** 'eɪ-trə *n. pl.* see *elytron*.
- elytron** 'eɪ-trən *n.* [plural *elytra*] the hard outer wing-case, or modified fore-wing, of a coleopterous insect or beetle; a shard, wing-cover, or wing-sheath.
- elytrum** 'eɪ-trəm *n.* same meaning as *elytron*.
- emargination** ɪ,mɑːdʒɪ'neɪ-ʃən *n.* the process or state of having the margin taken away; a somewhat abrupt narrowing or incision of the web of a bird's feather toward its end or extremity; a slight forking, as of a bird's tail.
- emergency-wing** ɪ'mɛʒɪdʒənsɪ,wɪŋ *n.* a supplementary wing or aerofoil in a flying-machine, designed for use in case of an emergency to prevent a sudden or disastrous fall; a parachute-plane.
- empyrean** ,em-paɪ'zi-ən, ,emprɪ'zi-ən, ,em'pɪzi-ən *n.* the highest heaven.
- encircle** ,en'sɜːkəl *tr.* make a circling movement about; circle round; circumnavigate.
- end-surface** 'end,sɜːfɪs *n.* the surface at the (front) end or extremity of the float-vessel of a dirigible balloon.
- endurance-flight** ɪn'dʒuː-zəns,flaɪt *n.* a flight in which the power of endurance or staying power of a flying-machine is tested; a long continuous flight made with a view to proving how long an airship can hold out in flight or stay up in the air; an aerial endurance-trip.
- energy** 'enəz-dʒɪ *n.* the power of doing work; actual or potential capacity for causing motion in matter.  
*energy of translation, the capacity of a body for doing work in virtue of its motion of translation; the energy of translatory motion.*
- engine-failure** 'endʒɪn,fæ-liəz *n.* failure of the engine or power-plant of a flying-machine to work, during flight; a giving out of the motor of an aeroplane.
- entomology** ,entə'mələ-dʒɪ *n.* the science of insects.
- entrainment** ,en'treɪn-mənt *n.* the drag occasioned by a viscous fluid upon a solid body moving thru it; viscous drag.
- entrance** 'entɾəns *n.* the head and shoulder (taken together)

of an aerofœil or streamline body; the bow or forebody of an airship of streamline form: distingursht from *run*.

**entrant** 'entɹənt *n.* one who enters, as in an airship-race.

**entry** 'entɹi *n.* a going in; the action of entering; an entrance.

*angle of entry*, see under *angle*.

**envelop** 'envə,lop *n.* [also spelt *envelope*] the integument or cover forming the chief part of the gasbag of a balloon; also, the outer flexible cover or rigid shell enclosing the gas-receptacles of a dirigible.

**envelop-construction** 'envə-lop-kən,strʌkʃən *n.* [also spelt *envelope-construction*] the process of constructing balloon-envelops; the making of envelops.

**envelop-material** 'envə-lop-mə,tri:-zi-əl *n.* [also spelt *envelope-material*] the material or stuff used in making balloon-envelops; envelop-cloth; balloon-fabric.

**envelop-stuff** 'envə-lop,stʌf *n.* [also spelt *envelope-stuff*] the stuff or fabric of which the envelop of a balloon is made; balloon-fabric.

**equalizer** 'ikwə,leɪ-zəz *n.* [also spelt *equaliser*] a leveler, an evener, or an adjuster; that which equalizes or makes equal, even, or level, as the front rudder of a biplane.

**equator** i'kwɛe-təz *n.*

1. (in *astronomy*) an imaginary great circle of the celestial sphere, whose plane is perpendicular to the axis of the earth; the celestial equator; the equinoctial.

2. (in *geography*) an imaginary great circle of the earth, in the plane of the celestial equator, and equidistant from the poles; the geographic equator.

*hydrometeoric equator*, the equator of rainfall, or line girdling the earth and dividing the regions having the rainfall characteristic of the northern winter half-year from regions having the rainfall characteristic of the southern summer half-year and vice versa; the pluviometric equator: as, Supan's \*hydrometeoric equator.

*magnetic equator*, a line girdling the earth in the neighborhood of the geographic equator, at every point of which the vertical component of the earth's magnetic attraction is zero; the aclinic line.

*meteorological equator*, the line or narrow tract girdling the earth, near the geographic equator, situated midway between opposing winds and corresponding to the belt of calms.

*pluviometric equator*. same meaning as *hydrometeoric equator*.

*thermal equator*, the line girdling the earth, in various



positions at different seasons of the year, etc., and passing thru the points of maximum temperature; the line along which the greatest heat occurs at the earth's surface.

3. an imaginary great circle of the gasbag of an inflated spherical balloon, whose plane is perpendicular to the vertical axis of the balloon.

**equatorial** ,ikwə'tɔ:-zi-əl *adj.* pertaining to the equator of the gasbag of a balloon.

**equilibrate** ,ikwɪ'laɪ,bzet *tr.* bring into or keep in a state of equilibrium or equipoise; equilibrate; balance.

**equilibration** ,ikwɪlɪ'bʒeɪ-ʃən *n.* the action or process of bringing into or keeping in equilibrium or equipoise; the state or condition of being balanced.

**equilibrator** ,ikwɪ'laɪ,bzetəz *n.* a long rope-like device attached to a dirigible balloon and capable of being lowered and raised in order to equilibrate or steady the craft or keep it at a certain constant height, as from the surface of the sea below; a balancer; a guide-rope.

**equilibrium** ,ikwɪ'libzi-əm *n.* [plural *equilibria*] the state or condition of equipoise; the state of a material system in which the forces acting on the system are evenly balanced, or such that their resultant is zero; the state of an airship when the resultant of all the air-pressures upon it is vertical and passes thru the center of gravity of the craft; balance.

*atmospheric equilibrium*, the state of equilibrium or balance among the various parts of the atmosphere, as related to horizontal or vertical movements of the air, etc.

*automatic equilibrium*, same meaning as *automatic balance*. see under *balance* (noun).

*equilibrium of direction*, equilibrium or steadiness in the general direction of the course or flight-path of an aerodone, such as is provided by a directive fin or wind-vane, and identical in kind to that which is afforded an arrow by its fether; directional equilibrium, balance, or stability. compare *direction-maintenance*.

*lateral equilibrium*, same meaning as *lateral stability*. see under *stability*.

*longitudinal equilibrium*, same meaning as *longitudinal stability*. see under *stability*.

*moving equilibrium*, equilibrium in which the body concerned is in motion; the condition of having equilibrated or balanced movement.

*neutral equilibrium*, equilibrium in which the body concerned is neutral or indifferent as to its exact position, or,

whenever moved slightly from its position, will remain in its new position; the equilibrium of a directionally balanced aerodone; indifferent equilibrium.

*stable equilibrium*, equilibrium in which the body concerned, whenever slightly moved out of its position, tends to return to its position.

*unstable equilibrium*, equilibrium in which the body concerned, whenever slightly moved out of its position, tends to depart from it still further.

*vertical equilibrium*, the state of equilibrium or balance of an airship whose flight is being maintained at the equilibrium-level, there being no advantage in changing its altitude or vertical distance from the earth.

**equilibrium-level** ,ikwɪ'ɪbzɪ-əm'levəl *n.* the level or horizontal plane of equilibrium or balance, for any given airship, so far as concerns its speed or economies of travel; the level of optimum altitude for an aeroplane or other airship, at which it is in vertical equilibrium, or cannot easily rise higher or advantageously sink lower.

**equilibrize** ɪ'kwɪlɪ,bəɪz *tr.* [also spelt *equilibrise*] equilibrate; balance.

**equinoctial** ,ikwɪ'nɒkʃəl *adj.* pertaining to a state of equal day and night; also, pertaining to the period or point of the equinox: as, an \*equinoctial storm.

**escape-valve** ,ɛ'skeɪp,vælv *n.* [also spelt *escape-valv*] the valve in the envelop of a balloon by which gas is allowed to escape from the bag, thus causing the craft to descend; a balloon-valve; a safety-valve.

**ether** 'i-θəz *n.* [also spelt *aether*]

1. the upper air; the blue heavens.

2. a hypothetical medium possessing great elasticity together with other qualities of a somewhat paradoxical nature, supposed to be diffused thruout space, to pervade all material bodies, and to serve to transmit light, heat, and other forms of radiant motion.

**ethereal** ɪ'θɪ:zi-əl *adj.* [also spelt *etherial* and, formerly, *aethereal*]

1. formed of, containing, or filled with the ether or air of the upper regions; of or pertaining to the heavens; heavenly; celestial: as, \*ethereal space, \*ethereal regions.

2. of or pertaining to the ether of space: as, the \*ethereal medium.

**euplexoptera** ,juplɛk'sɒptə-zə *n. pl.* a suborder of orthopterous insects identical with the order Dermaptera, having the under wings folded crosswise and lengthwise; the earwigs or Forficulidae; the Euplecoptera.

**evaporometer** ɪ,væpə'zɒmɪ-təz *n.* an instrument for measuring the quantity of liquid, as water, evaporated in a given time; an autometer.

**exhaust-muffler** ,ɛg'zɔ:st,mʌfləz *n.* the muffler on the exhaust of an internal-combustion engine; a muffler; a silencer.

**expanding-power** ,ɛk'spændɪŋ,pau-əz *n.* power to cause expansion.

**expanse** ,ɛk'spæns *n.* the expanse, extent, or stretch of the outspread wings of an insect or bird; the distance or measurement from tip to tip of the outstretched wings; stretch of wing; expanse of wing; extent of wing; alar extent; alar expanse; wing-spread (*sense 1*).

**exploring-balloon** ,ɛk'splɔ:-zɪŋ-bə,lʊn *n.* a small balloon to which recording-instruments are attached, used for exploring the atmosphere; a registration-balloon.

**exploring-gun** ,ɛk'splɔ:-zɪŋ,gʌn *n.* a proposed gun or small cannon, as at the nose of an airship, to be used for exploring the atmosphere by means of explosive shells, etc.

**extensor** ,ɛk'stensəz *n.* a muscle which serves to extend, straighten out, or unfold any part or member, as a wing: the opposite of *flexor*.

**extent** ,ɛk'stɛnt *n.* the extent, expanse, or stretch of the outspread wings of a bird or insect; the tip-to-tip measurement of the wings; extent of wing; expanse of wing; stretch of wing; alar extent; alar expanse; wing-spread (*sense 1*).

**eye** aɪ *n.*

1. opposed aspect or course; confronting presentation or direction: as, to sail in or into the wind's \*eye; to steer a ship in the sun's \*eye.

2. something suggesting an animal or human eye in shape, position, or the like.

*eye of a storm*, see under *storm*.

*eye of the wind*, see under *wind*.

**eye-spot** 'aɪ,spɒt *n.* an eye-like spot, as in the wing of a butterfly, in the wing of an argus-pheasant, or in the tail of a peacock; an ocellus.

**eyrie** 'e:-zi, 'i:-zi, 'aɪ-zi *n.* same meaning as *aery*.

**eyry** 'e:-zi, 'i:-zi, 'aɪ-zi *n.* same meaning as *aery*.

**face** feɪs *n.* that side of a kite which is usually seen from the ground when the kite is aloft, and which is toward the direction from which the wind is blowing; the front.

- falcate** 'fɔ:l,ket *adj.* bent or curvd like a sickle; hookt: as, a wing \*falcate at the tip.
- falcated** 'fɔ:l,ketɪd *adj.* curvd like a sickle; sickle-shaped; hookt; falcate.'
- fall** fɔ:l *n.* descent from a higher to a lower position, due either to the force of gravity or to artificial impulse or power; a drøpping or tumbling down; a downfall; a drøp.
- fall** fɔ:l *intr.* [past participle *fallen*; preterit *fell*] descend from a higher to a lower position or level; drøp thru the working of gravity or the application of artificial impulse or power; come down; settle; sink.  
*fall calm*, become calm; cease to blow, as the wind.
- fall-cloud** 'fɔ:l,klaʊd *n.* stratus cloud; cloud of night.
- falling-star** 'fɔ:l-ɪŋ,sta:z *n.* a shooting-star; a meteor.
- fall-mantle** 'fɔ:l,mæntl̩ *n.* same meaning as *parachute-cloak*.
- fan-blade** 'fæn,bleɪd *n.* one of the blades or vanes of a fan or fan-wheel.
- fan-blast** 'fæn,blɑ:st *n.* a fanning-apparatus, fan-wheel, blower, or bellows proposed for use in airships as a means of creating a blast or strøng current of air for propulsion; a fan-blower; a fan-propeller.
- fan-blower** 'fæn,bləʊ-əz *n.* an air-blower workt by fans or blades; a fan-blast; a fan-propeller.
- fanner** 'fænəz *n.* a device, such as a blade, vane, or paddle, for fanning or blowing air.
- fanning-distance** 'fænɪŋ,dɪstns *n.* the distance at which a flying-machine begins to fan, or throw out perceptible air-currents against, a neighboring øbject, as the ground.
- fan-propeller** 'fæn-prəʊ,peləz *n.* a propeller which works by means of fans, fanners, or vanes, which, by their rotary or other motion create a blast or strøng current of air used for propulsion or experimental purposes; a fan-blast.
- fan-wheel** 'fæn,wɪl̩ *n.* a wheel-like or rotary blowing-apparatus having fans or vanes; a fan-propeller; a sail-wheel.
- fast-falling** 'fɑ:st,fɔ:l-ɪŋ *adj.* falling or descending fast or rapidly, as an aeroplane; swiftly-falling.
- fast-flying** 'fɑ:st,fɪaɪ-ɪŋ *adj.* flying fast or rapidly; swiftly-flying: as, a \*fast-flying aeroplane.
- fata Morgana** ,fɑ:tə-məʊ'gɑ:-nə *n.* a kind of mirage, most frequently seen in the Straits of Messina.
- feather** 'fedəz *n.* [also spelt *fether*] one of the epidermal appendages which together constitute the plumage, the peculiar covering of birds, consisting typically of a main stem or shaft fringed on either side with a vane or web; (*in the plural, collectively*) the plumage.  
*axillary feathers*, the innermost of the under coverts

fethers of a bird's wing, lying in the axilla or arm-pit, close to the body.

**feather** 'fɛðəz *v.* [also spelt *fether*]

1. *tr.* furnish with fethers.

2. *intr.* move, wave, or float like fethers.

3. turn (an oar or blade), at a certain point in the stroke, so that it may pass thru the fluid edgeways.

**feather-border** 'fɛðəz,bɔ:z-dəz *n.* [also spelt *fether=border*] that part of the border or margin of a bird's wing which is beset or fringed with, or made up of, fethers; the border or outline of the fethers (collectively) of a bird's wing.

**featherdom** 'fɛðəz-dəm *n.* [also spelt *fetherdom*] the realm of fetherd creatures; the fethery kingdom.

**feathered** 'fɛðəd *adj.* [also spelt *fetherd*] provided with or having fethers: as, the \*fetherd tribe; \*fetherd Mercury.

**feather-follicle** 'fɛðəz,fəlɪ-kəl *n.* [also spelt *fether=follicle*] one of the follicles or little pits in a bird's skin which supports the base of the fether=papilla upon which the future fether is molded or generated.

**feather-germ** 'fɛðəz,dʒɜ:m *n.* [also spelt *fether=germ*] the germ from which a bird's fether develops; the papilla.

**feathering** 'fɛðə-zɪŋ *n.* [also spelt *fethering*] the action of the verb *feather*; also, the fether, as of an arrow; the fethers collectively; the plumage; fether=like structure.

**feathering** 'fɛðə-zɪŋ *adj.* [also spelt *fethering*]

*feathering movement*, see *feathering=movement*.

**feathering-movement** 'fɛðəzɪŋ,mouv-mənt *n.* [also spelt *fethering=movement*] a mode of wing=movement resembling the movement of an oar which is being 'fetherd' or turned at the end of the stroke and brought back thru the air edgewise; a movement characterized by an alternately flatwise and edgewise turning of the vanes, wings, or blades.

**feathering-paddle** 'fɛðəzɪŋ,pædɪ *n.* [also spelt *fethering=paddle*] one of the paddles or vanes, in a rotary or other apparatus, which have a fethering or alternately flatwise and edgewise motion, proposed for propelling or lifting flying=machines; a fethering=vane.

**feathering-vane** 'fɛðəzɪŋ,væn *n.* [also spelt *fethering=vane*] one of the vanes or blades in a propelling=wheel proposed for airships, designed to move in a manner somewhat akin to the fethering=movement of oars; a fethering=paddle.

**featherless** 'fɛðəz-ləs *adj.* [also spelt *fetherless*] having no fethers; destitute of fethers; without plumage.

**feather-like** 'fɛðəz,lʌɪk *adj.* [also spelt *fether=like*] like or resembling a fether.

**feather-papilla** 'fɛðəz-pə,pɪlə *n.* [also spelt *fether-papilla*; plural *feather-papillae*] one of the little papillae or conical elevations, whose bases rest one on each of the fether-follicles of a bird's skin, and from each of which a fether is molded or generated; a fether-germ.

**feather-tract** 'fɛðəz,tɹækt *n.* [also spelt *fether-tract*] one of the definit tracts or areas of the skin of a bird where fethers grow; pteryala.

**feathery** 'fɛðə-zɪ *adj.* [also spelt *fethery*]

1. clothed with fethers; fetherd; of fetherd creatures or birds: as, \*fethery society.

*feathery kingdom*, the kingdom of fetherd creatures; the bird kingdom; fetherdom; birdland.

2. resembling fethers or plumes in appearance or lightness; fether-like; plume-like; also, fringed, tipt, or fleckt with something fether-like.

**fill** fɪl *tr.* inflate (a gasbag or envelop) with gas.

**filoplume** 'fai-lə,ploʊm *n.* a thred-like or hair-like fether; a thredfether.

**fin** fɪn *n.*

1. an organ attacht to any one of various parts of the body of a fish or whale, which servs for steering or propelling in the water; also, a similar organ in other animals, as the flipper of a seal, the modifid wing of a pigeon, etc.

2. any relativly small aerofoil or plane which resembles the fin of a fish or other animal, such as a vertical tail-piece; a vertical stabilizing-rudder.

*directive fin*, a fin whose function is purely directiv, as the fether of an arrow: distinguisht from *abutment-fin*.

*following fin*, a fin which fellows, or trails along at the after end of an advancing air-craft; a rear fin: distinguisht from *leading fin*.

*leading fin*, a fin which leads or occupies a position in the forward part of an advancing air-craft; a front fin: distinguisht from *following fin*.

**fin-area** 'fɪn,ɛ:-zi-ə *n.* the area of a fin or fin-like aerofoil or part, in aerodynamic apparatus.

**fin-center** 'fɪn,sɛntəz *n.* the center of a fin or fin-like part.

**finishing-line** fɪnɪʃɪŋ,ləɪn *n.* the line or limit set for finishing or completing an airship-race.

**finishing-point** 'fɪnɪʃɪŋ,pɔɪnt *n.* the point or spot set for finishing or completing an airship-race; the point at which the finishing-mark of a race is located: the opposit of *starting-point*.

**finish-mark** 'fɪnɪʃ,mɑ:zk *n.* the mark or sign placed at the

spot or line at which an airship=race is to be brought to a finish or ended; a stop=signal at the end of a race=course.

**fin-kite** 'fɪn,kɑɪt *n.* a kite consisting of a plane, to the lower part of which is affixed at right angles a 'fin' or keel.

**fin-like** 'fɪn,lʌɪk *adj.* resembling a fish's fin in shape or function; flipper=like: as, a \*fin=like wing.

**fin-plan** 'fɪn,pʌn *n.* the plan or plan=form of a fin.

**fin-tail** 'fɪn,tɛɪl *n.* a tail, in an air=craft, consisting of a combination of fin=like parts.

**fireball** 'faɪz,bɔ:l *n.*

1. a large shooting=star or meteor having the form and appearance of a ball or globe of fire; a large globe=shaped luminous aerolite.

2. globe=lightning; an electrical phenomenon sometimes seen in thunder=storms, resembling a luminous or red-hot fiery ball or globe falling from the clouds and often bursting with a loud report; ball lightning.

**fire-balloon** 'faɪz-bə,lʊn *n.*

1. a balloon beneath and attached to which is a fire by which the air contained in the balloon is heated and rarefied, thus causing the balloon to ascend or rise; a hot=air balloon.

2. a balloon sent up at night with fireworks, which ignite at a regulated height.

**fish-kite** 'fɪʃ,kɑɪt *n.* a fish-shaped Chinese kite thru which the wind blows from head to tail keeping it afloat at a low angle, often attached to a pole on house=roofs.

**fish-shaped** 'fɪʃ,ʃeɪpt *adj.* having the shape or form of a fish: as, a \*fish-shaped air=craft.

**flaccid** 'flæksɪd *adj.* slack, partly empty, or limp, as the envelop of a partly deflated balloon.

**flag-signal** 'flæg,sɪgnl *n.* a signal or sign made by means of a flag or flags, as to a parachute=jumper.

**flame-proof** 'fleɪm,pʊʊf *adj.* proof against flame or fire, as the envelop=cloth of some fire=balloons.

**flap** flæp *n.*

1. the motion of something broad and flat, on or as if on a hinge; a reciprocating motion, as of a bird's wing.

2. a broad, flat, and often somewhat loose part designed to hang or work on, or as on, a hinge; a wing=like vane or aerofoil, as on a kite.

**flap** flæp *v.*

1. *tr.* move up and down, as a wing; beat; sway.

2. *intr.* beat the wings; make movements like wing=beats; move up and down; beat; also, progress, as a bird does, by flapping the wings: as, to \*flap along on the water.

**flapper** 'flæpəz *n.* a sustaining-structure or other broad flat part which flaps after the manner of a wing; a flap.

**flapping** 'flæpɪŋ *n.* the action of swaying or working to and fro or up and down the wings, etc.

**flaw** flɔ: *n.*

1. a sudden burst or squall of wind; a sudden blast or gust, usually of short duration.

2. a fall of rain or snow accompanied by gusty winds; a short spell of rough weather.

**flaw** flɔ: *tr.* blow in gusts: used of the wind.

**fledge** flɛdʒ *v.*

1. *intr.* acquire feathers large enough for flight.

2. *tr.* bring up (a young bird) until its feathers are grown and it is able to fly.

3. *tr.* furnish with plumage; wing for flight; feather.

**fledgling** 'flɛdʒlɪŋ *n.* [also spelt *fledgeling*] a young bird just fledged; a novice in aviation;; a raw or inexperienced aviator; a tenderwing.

**flew** fləu *v.* see *fly*.

**flex** flɛks *tr.* bend.

**flexion** 'flɛkʃən *n.* [also spelt *flection*] the action of bending or flexing; flexure; curvature; also, bent condition, or an instance of this.

**flexor** 'flɛksəz *n.* a muscle whose function is to produce flexion or bending; a flexor: the opposite of *extensor*.

**flexure** 'flɛksəz *n.* the action of bending; flexion; curvature; also, flexed or bent condition, as of a wing or aerofoil; the form or direction in which anything is bent; curvature, bend: as, parabolic *\*flexure*.

*flexure of wing*, the bend of the wing (of a bird); the carpal angle.

**flier** 'flaɪ-əz *n.* see *flyer*.

**flight** flart *n.*

1. the action, fact, or mode of flying or moving thru the air with or as with wings; velitation, volation; also, the power to fly; the art of flying artificially; aviation.

*active flight*, that type of flight in which the aerofoil is itself active or mobile; flapping flight.

*aerial flight*, flight in or thru the air or atmosphere; especially, artificial flight; manflight; aviation.

*aeroplane flight*, flight which is characteristic of the type of flying-machine known as an aeroplane; the mode of flight exhibited by aeroplane flying-machines: as, a demonstration of *\*aeroplane flight*. compare *aeroplane-flight*.

*angle of flight*, the angle or inclination of the sustaining-surfaces or the longitudinal axis of an airship or flyer in



flight, to the line of the direction of its course or to the horizontal.

*artificial flight*, flight by artificial means, or by machines or apparatus artificially designed or constructed; mechanical flight; manflight; aviation: distinguished from *natural flight*.

*axis of flight*, the axis, line, or course along which flight proceeds; the line passing thru the center of gravity of a flyer and extending in the direction of its motion thru the air.

*bounding flight*, same meaning as *leaping flight*.

*dynamic flight*, flight by means of power-driven flying-machines; power flight; mechanical flight.

*flapping flight*, flight in which the wings or other aerofoils are flapt or moved up and down. compare *soaring flight*, *rowing flight*.

*free flight*, flight or flying which is unhindered by artificial or outside restraint of any kind, unaided by support, and unattacht to the earth; flight in which the bird or flying-machine is aloft and completely at liberty to pursue its course; unimpeded flight.

*hovering flight*, a mode of soaring flight in which the bird or flyer hovers or remains suspended over or about a particular place or spot; stationary flight; hovering.

*leaping flight*, flight characterized by movements resembling leaps or bounds; bounding flight.

*line of flight*, the line or direction in which flight takes place; the course or route along which a flyer moves thru the air; the flight-path. compare *axis of flight*.

*mechanical flight*, artificial flight accomplished by mechanical means; flight of man in power-driven machines.

*natural flight*, flight, such as that of birds, insects, etc., by natural means; the power of flying by means of wings or other organic structures: distinguished from *artificial flight*.

*of the same flight*, having the same power, mode, or capacity of flight: said of arrows of equal size and weight.

*orthogonal flight*, see under *orthogonal*.

*power flight*, flight by means of artificial motor power; human flight in power-driven machines; dynamic flight.

*rowing flight*, flight characterized by a rowing-movement or regular or rhythmic flapping-motion of the wings; a mode of flapping flight.

*sailing flight*, flight in which the bird or flyer sails on the wind, or soars or floats on air-currents; soaring flight.

*skimming flight*, flight characterized by skimming, soaring, or gliding.

*soaring flight*, flight in which the bird or flyer soars, floats, or sails on the air-currents or wind, support and propulsion sometimes being furnished by the air alone without any expenditure of power by the soarer; sailing flight. compare *flapping flight*.

*stationary flight*, flight, or suspension in air, in which the bird or flyer remains stationary, or hangs suspended over or about a particular spot or place; flight in which the flyer is stationary or has no translatory motion; hovering.

*subaqueous flight*, flight in the water, beneath the surface, as of certain birds.

*sustained flight*, flight which is sustained, maintained, or kept up continuously for a long time, or for a considerable time, without alighting or falling to the earth.

*take flight*, begin flight; start off flying or in flight; take wing: as, \*take flight for home.

*time of flight*, the length of time occupied by a flight; duration of actual flight, during an experiment with a flyer.

*whistling flight*, flight accompanied by a whistling sound, as that of a duck or pigeon.

2. an instance of such action or mode of action; an act of flying; a balloon-flight; an airship-flight; an aeroplane-flight; a monoplane-flight.

*top of a flight*, the top, or highest point or part, of a flight; the topmost point, or place of greatest elevation, reached in the course of a single flight.

3. the distance a bird can or does fly without alighting: as, a dovecot distant a \*flight or two from water.

4. a collection or flock of birds, insects, or things flying or passing thru the air together: as, large \*flights of white clouds.

**flight-datum** 'flaɪt,dæ-təm *n.* [plural *flight-data*] a datum, or given or granted fact, regarding flight.

**flight-feather** 'flaɪt,fedəz *n.* [also spelt *flight-fether*] one of the wing-fethers on which a bird depends for its power of flight; a flying-fether.

**flightless** 'flaɪt-ləs *adj.* incapable of flight.

**flight-muscle** 'flaɪt,məsəl *n.* one of the muscles used in flight; a wing-muscle.

**flight-path** 'flaɪt,pæ:θ *n.* the path of flight of a bird or flyer; the course of flight: as, the equation of the \*flight-path.

**flight-record** 'flaɪt,zekərd *n.* a record of a flight, as at an aviation-meet; the best recorded achievement as to speed, distance, endurance, height, etc., of a flying-machine or of an aviator; a flying-record.

**flight-resistance** 'flaɪt-zi,zɪstns *n.* the resistance which the

air offers to the flight of a bird or air-craft; resistance to flight.

**flight-signal** 'flaɪt,saɪnəl *n.* a signal, such as a flag of special design, indicating that a flight is to take place.

**flight-velocity** 'flaɪt-vɪ,ləsi-ti *n.* the velocity or speed of flight.

**flipper** 'flɪpəz *n.* a flattish limb used to swim with, as any of the limbs of a turtle, the forelimb of a seal, walrus, or whale; the fin of a fish; the wing of a penguin; also, a flipper-like or fin-like part of a flying-machine; an aileron.

**float** fləʊt *n.* any device, such as an inflated air-bag, caisson, or pontoon, which is attached to or built into an aeroplane or other air-machine to keep it afloat upon water-surfaces.

**float** fləʊt *intr.* rest on or in the air or other fluid; be buoyed up; move gently along on air-currents; soar; sail.

**floatage** 'fləʊ-tɪdʒ *n.* [also spelt *flotage*] the action or state of floating; also, the power or capacity to float; floating-power; buoyancy.

**floater** 'fləʊ-təz *n.* one who or that which floats.

**floating-appliance** 'fləʊ-tɪŋ-ə,pɹæi-əns *n.* an appliance or device for enabling an air-machine to float upon water-surfaces; a float; a water-foot.

**floating-power** 'fləʊ-tɪŋ,pəʊ-əz *n.* power to float; capacity to remain suspended or afloat in the air; floatage.

**float-reservoir** 'fləʊt,rɛzəz-vɔz *n.* a reservoir or receptacle on which the floating-power of a balloon or airship depends; the float-vessel; the gas-vessel.

**float-vessel** 'fləʊt,vɛsəl *n.* the vessel or receptacle upon the buoyancy of which depends the power of a balloon or airship to float in the air; the float-reservoir; the gas-vessel; the gasbag.

**flock** flɒk *n.* a band or assemblage of birds or the like: as, a \*flock of aeroplanes.

**floe** fləʊ *n.* a sheet of ice floating upon the surface of the sea; a detached portion of a field of floating ice; an ice-floe.

**floeberg** 'fləʊ,bɜ:zɡ *n.* [also spelt *floe=berg*] a berg composed of floe-ice.

**floe-ice** 'fləʊ,aɪs *n.* the ice of a floe; the frozen substance of an ice-floe.

**flow** fləʊ *n.* the action or fact of flowing; movement in a current or stream; also, an instance or mode of this.

*discontinuous flow*, flow which is not continuous.

*line of flow*, an imaginary line or curve drawn within a fluid at any instant such that at each point of the curve the instantaneous velocity of the liquid is along the tangent.

*streamline flow*, the flow of fluids in or along streamlines or paths of continuous motion of particles.

*tube of flow*, an imaginary tube bounded by surfaces across which there is no flow or streaming of the particles of a fluid.

**flow-line** 'flɔʊ,laɪn *n.* a line of flow. see under *flow*.

**flown** flɔʊn *v.* see *fly*.

**flow-system** 'flɔʊ,sɪstɪm *n.* a system of flow, such as streamline flow.

**fluke** flɔʊk *n.* an unexpected stroke.

a *fluke of wind*, a chance breeze.

**fluky** 'flɔʊ-ki *adj.* [also spelt *flukey*] of the nature of a fluke or chance; uncertain: as, a \*fluky wind.

**flurry** 'flɜːri *n.* [plural *flurries*]

1. a gust or squall; also, a sudden shower: as, a \*flurry of snow or rain.

2. a sudden rush (of birds).

**flush** flɔːʃ *n.* a flight of birds suddenly started up.

**flutter** 'flʌtəz *intr.* move or flap the wings rapidly without flying much, as a bird; hang upon wing in the air; also, move with a light quivering motion thru the air, as a leaf.

**fly** flai *v.* [past participle *flown*; indicativ present *flies*; preterit *flew*]

1. *intr.* move thru the air with or as with wings.

2. *intr.* pass or rise quickly in or thru the air.

3. *tr.* cause to rise and maintain its position or move in the air: as, to \*fly a kite, \*fly a balloon, \*fly a machine.

4. *tr.* fly in or thru: as, to \*fly the airs; a device for \*flying the air.

**fly** flai *n.* [plural *flies*]

1. (*obsolete*) the action or fact of flying; flight (*sense 1*).

2. an instance of such action: as, it was an easy \*fly.

**flyabout** 'flai-ə,baut *n.* a vehicle for flying about; an aerial runabout.

**flyaway** 'flai-ə,wɛɪ *n.* [also spelt *fly-away*] one who flies away.

**flyaway** 'flai-ə,wɛɪ *n.* an easy or overwhelming victory, in a flying-contest; an aerial walkover.

**flier** 'flai-əz *n.* [also spelt *flier*]

1. a person or an animal that flies; a flying-man or a flying animal.

2. a device such as a vane or wing, forming part of a flying-machine or airship and designed to aid in flight: as, a rotary \*flier for moving a gas-vessel; wheels, pullies, and different \*fliers.

3. an apparatus or machine which is designed to fly;

a machine for navigating the air; an airship; a flying-machine; an aeroplane; a kite.

4. one skild in flying kites; a kite-flyer: as, expert \*flyers.

**flying** 'flai-ɪŋ *adj.*

1. that moves thru the air with wings, or as with wings; that flies or is flying: as, the highest \*flying bird or machine; \*flying game; crawling, creeping, and \*flying things.

2. capable of flying or of simulating flight; characterized by habitually flying, or by making flying leaps thru the air: as, a \*flying quadruped, a \*flying animal, a \*flying reptil, a \*flying bird.

3. like or simulating flight: as, a marsupial capable of making a \*flying leap.

4. characterized by human flight; of artificial or mechanical flight; of manflight: as, the \*flying age.

**flying** 'flai-ɪŋ *n.* the action of moving thru the air with or as with wings; the art, occupation, or sport of aerial flight; aviation.

*flying principle*, the principle which underlies flying, in the stricter sense; the heavier-than-air idea; the bird principle: distinguished from *balloon principle*.

**flying-apparatus** 'flai-ɪŋ-æpə,zeɪ-təs *n.*

1. the apparatus or organs which enable an animal to fly, or to simulate flight.

2. an apparatus or machine designed to fly in the air; a flying-machine; a flyer.

**flying-attitude** 'flai-ɪŋ,æti-tʃud *n.* the attitude, posture, or angle of incidence of an aerofœil of a flying-machine while in flight: distinguished from *ground attitude*. see under *attitude*.

**flying-car** 'flai-ɪŋ,kɑ:z *n.* a car or vessel designed to fly in the air; an aerial vehicle; an aerocar; an airship.

**flying-cat** 'flai-ɪŋ,kæt *n.*

1. a flying-lemur.

2. the taguan or a species of the rodent genus *Pteromys*; a flying-marmot; a flying-squirrel.

**flying-course** 'flai-ɪŋ,kɔ:rs *n.* a course, track, or ground where flyers are tested or flown; an aviation-course.

**flying-device** 'flai-ɪŋ-dɪ'vaɪs *n.* a device or apparatus for accomplishing artificial flight; a flying-apparatus; a flying-machine.

**flying-dog** 'flai-ɪŋ,də:g *n.* a kind of vampire-bat.

**flying-dragon** 'flai-ɪŋ'drægən *n.* a lizard of the genus *Draco*, having a large frill on each side of the body consisting of skin stretched over six elongated hinder ribs, which

like a parachute sustain the creature in the air for a few moments; the dragon; a flying-lizard.

**flying-engine** 'flai-ɪŋ,ɛndʒɪn *n.* [also spelt *flying=engin*]

1. an engine or dynamic apparatus designed for artificial flight; a flying=apparatus; a flying=machine.

2. an engine or motory apparatus designed for use in flying=machines; an aerial engine or motor; the power=plant of a flyer.

**flying-event** 'flai-ɪŋ-ɪ,vɛnt *n.* one of the events, contests, or single proceedings in a flying=meet; a flying=contest.

**flying-exercise** 'flai-ɪŋ,ɛksəz-saɪz *n.* an exercise in flying or gliding; a flying=experiment.

**flying-experiment** 'flai-ɪŋ-ɪk,speɪz-mənt *n.* an experiment in flying; a flying=exercise.

**flying-feat** 'flai-ɪŋ,fi:t *n.* a feat or exploit in flying; a skilful or extraordinary performance in the art of flight.

**flying-feather** 'flai-ɪŋ,fɛðəz *n.* [also spelt *flying=fether*] same meaning as *flight=feather*.

**flying-fever** 'flai-ɪŋ,fi:vəz *n.* a fever or ardor for flying or air=sailing; an intense desire to fly.

**flying-fish** 'flai-ɪŋ,fiʃ *n.* any fish which can sustain itself or fly thru the air (by means of large wing=like pectoral fins), especially a fish of the family Exocoetus; a volator.

**flying-fox** 'flai-ɪŋ,fɒks *n.* a large frogiverous bat whose hed resembles that of a fox; any bat of the family Pteropidae; a fox=bat; a fruit=bat; a kalong.

**flying-frog** 'flai-ɪŋ,fɹɔg *n.* a batrachian of Borneo, of the genus Rhacoforus, family Ranidae, whose long webd toes enable it to take flying leaps thru the air.

**flying-gecko** 'flai-ɪŋ,ɡɛkɔ *n.* a kind of gecko lizard, Ptychozoon hemalocephalum, which has large wing=like expansions of skin on the hed, trunk, tail, and lms acting as a parachute to sustain the animal during flying leaps.

**flying-ground** 'flai-ɪŋ,ɡraʊnd *n.* [commonly used in the plural] a ground, field, or course where airships or flyers are tested or flown; an aviation=ground; an aviation=field.

**flying-gurnard** 'flai-ɪŋ,ɡɜ:nərd *n.* a flying=fish of the family Cefalacanthidae or Dactylopteridae; a flying=robɪn; a bat=fish.

**flying-homer** 'flai-ɪŋ,hoo-məz *n.* a homing=pigeon raised for flying.

**flying-instructor** 'flai-ɪŋ-ɪn,striktəz *n.* an instructor in the art of flying; a teacher of manflight.

**flying-lemur** 'flai-ɪŋ,li:məz *n.* an insectivorous mammal of the family Galeopithecidae, resembling a lemur, provided with a parachute=like extension of the skin by which it is

enabled to make flying leaps from tree to tree; a flying-cat, colugo, kaguan, or kubong.

**flying-limb** 'flai-ɪŋ,lɪm *n.* [also spelt *flying-lim*] a limb or member of an animal's body, used in flying.

**flying-line** 'flai-ɪŋ,lɪn *n.* a line attacht to a kite and used to fly it with; a kite-line; a kite-string.

**flying-lizard** 'flai-ɪŋ,lɪzəd *n.* any lizard of the genus *Draco*, as *Draco volans*, capable of a short parachute-like leap; a flying-dragon.

**flying-machine** 'flai-ɪŋ,məʃɪn *n.* a machine or apparatus designed to fly thru the air, or to enable its user to do so; an aerodrome; a heavier-than-air airship; a flyer.

**flying-man** 'flai-ɪŋ,mæn *n.* [plural *flying-men*] a man who, by the aid of artificial devices, flies or sails in the air; a man-bird; an aviator.

**flying-marmot** 'flai-ɪŋ,mɑːz-mət *n.* a taguan or large flying-squirrel of the genus *Pteromys*.

**flying-meet** 'flai-ɪŋ,mɪt *n.* a meet or meeting at which flying is carried on, or flyers tested or flown; a flying-meeting; an aviation-meet; an aero-meet.

**flying-meeting** 'flai-ɪŋ,mɪ-tɪŋ *n.* a meeting or meet at which flying is carried on, or flyers tested or flown; a flying-meet; an aviation-meeting.

**flying-membrane** 'flai-ɪŋ,mem-bzen *n.* a membrane or fold of skin used by some animals in flying or in simulating flight; a patagium.

**flying-model** 'flai-ɪŋ,mɒdɪ *n.* a model flyer for experimenting purposes; a miniature flying-machine.

**flying-opossum** 'flai-ɪŋ-ɔ,pəsəm *n.* a kind of opossum capable of simulating flight.

**flying-phalanger** 'flai-ɪŋ-fə,lændʒəz *n.* [also spelt *flying-falanger*] any one of the petaurists or flying marsupials of the family *Falangistidae*, having a parachute-like fold of skin along the sides, by which they are enabled to take flying leaps thru the air; a flying-squirrel; the acrobat.

**flying-plane** 'flai-ɪŋ,pleɪn *n.*

1. an aeroplane or aerofoil designed to fly or glide thru the air.

2. an aeroplane flying-machine; a aerodrome; an aerodome; an aerodyne; a flyer.

**flying-ram** 'flai-ɪŋ,zæm *n.* a fancied aerial war-craft recalling or named after the ram; an aerial battering-ram.

**flying-record** 'flai-ɪŋ,zekərd *n.* same meaning as *flight-record*.

**flying-robin** 'flai-ɪŋ,zəbɪn *n.* the flying-gurnard; the bat-fish.

**flying-sail** 'flai-ɪn,seɪl *n.* a flying=apparatus or glider with sail-like wings; an air=sailing machine; a glider.

**flying-school** 'flai-ɪn,skʊl *n.* a school where flying is taught or studied; an aviation=school.

**flying-screw** 'flai-ɪn,skru *n.* a model flying=machine designed by Pénaud in 1870, using two superposed screw propellers rotating in opposite directions; a helicopter.

**flying-ship** 'flai-ɪn,ʃɪp *n.* a ship or vessel designed to fly thru the air; a flying=machine; an airship; a flyer.

**flying-space** 'flai-ɪn,speɪs *n.* a space or area of ground where airships or flyers are tested or flown; a flying=field; an aviation=ground.

**flying-squid** 'flai-ɪn,skwɪd *n.* a sagittated calamary or sea=arrow; a cephalopod or squid of the genus *Ommastrephes*, having two large lateral fins by which it is enabled to leap high out of the water.

**flying-squirrel** 'flai-ɪn,skwɪzəl *n.* a squirrel-like animal having a parachute-like fold of the skin on each side of the body by which it is enabled to make flying leaps thru the air.

*American flying=squirrel, sciuropterus velucella.*

**flying-string** 'flai-ɪn,striŋ *n.* the string attached to a kite, by which it is flown; a flying=line; a kite=string; a kite=line.

**flying-surface** 'flai-ɪn,sɜːfɪs *n.* the surface of the aerofoils used in a flying=machine for the purpose of flying; sustaining=surface; supporting=surface.

**flying-time** 'flai-ɪn,tɑɪm *n.*

1. the time when a hawk or falcon is in condition to be flown.

2. the time consumed in flying over a definite course or the like; the period of time occupied by a flight: as, the total \*flying=time was fifteen minutes.

**flying-twine** 'flai-ɪn,twaɪn *n.* the twine or cord attached to a kite, by which it is flown; a flying=string; a kite=string.

**flying-weather** 'flai-ɪn,wedəz *n.* [also spelt *flying=wether*] whether or atmospheric conditions considered in relation to suitability for artificial flying; wether as adapted to making flights.

**fly-line** 'flaɪ,lɑɪn *n.* the line or route of flight followed or taken by a bird in its regular migrations.

**fly-off** 'flaɪ,ɔːf *n.* that part of the rainfall or precipitation upon a land surface which is evaporated or flies off again into the atmosphere: distinguished from *run=off*.

**fog** fɒg *n.* thick mist or visible watery vapor suspended in the atmosphere at or near the earth's surface, usually due to



the cooling of the air below the dew-point and consequent condensation of its water-vapor; an obscured condition of the atmosphere due to the presence of condensed water-vapor: as, an arctic \*fog.

*barometric fog*, a fog due to a lowering of barometric pressure and the consequent expansion and cooling of the air and condensation of water-vapor.

*drifting fog*, fog-like cloud which, when in the form of a horizontal stratum, is called stratus.

*dry fog*

1. a light fog (consisting of very fine particles of water) which does not wet objects with which it comes in contact. compare *wetting fog*.

2. a haze due to the presence of dust, soot, or ashes, as from a prairie fire.

*electric fog*, a fog accompanied by electrical phenomena such as Saint Elmo's fire or ball-lightning.

*radiation fog*, a fog due to the cooling of the air consequent upon the radiation of its heat toward the colder earth below or sky above.

*red fog*, a fog or fog-like cloud of reddish hue, made up of dust-particles, often seen off the northern part of the west coast of Africa.

*wetting fog*, a fog (composed of water-particles) which wets objects with which it comes in contact. compare *dry fog*.

*wooly fog*, a fog of wool-like appearance which moves slowly over the lower slopes of mountains in the night-time.

**fog-alarm** 'fɒg-ə,lɑ:zɪn *n.* an alarm, or signal by sound from a bell, gun, horn, or whistle, used in foggy weather, to indicate the presence of rocks, lighthouses, or ships.

**fog-bank** 'fɒg,bæŋk *n.* a bank or wall-like mass or stratum of fog as seen from a distance; also, specifically, a foggy or hazy appearance at sea, often taken for land, but vanishing as it is approached; Cape Fly-away; No-man's Land; Dutchman's Land.

**fog-bell** 'fɒg,bel *n.* a bell rung as a fog-signal.

**fog-billow** 'fɒg,bɪlɔ *n.* a billow or great surging wave of fog, observed by looking downward, as from a balloon, upon fog which is being acted upon by a gentle wind; a big fog-wave.

**fog-bound** 'fɒg,bauŋd *adj.* bound, impeded, detained, embarrassed, or confined by fog, as a ship at sea.

**fog-bow** 'fɒg,bəʊ *n.* a bow or arch of light five degrees wide, slightly rosy on the outside, seen in a fog, and faintly re-

sembling a rainbow and due to similar causes, the globules of water of the fog playing the same part as the rain-drops.

**fog-buoy** 'fɒg,buɪ n. a buoy kept floating on a water-surface over which fog is apt to occur, as near a shoal.

**fog-dog** 'fɒg,dɔ:g n. a break or clearing spot in a fog-bank, presaging the lifting of the fog.

**fog-drip** 'fɒg,dri:p n. the drip or dropping water from solid bodies upon which fog-particles have collected and run together.

**fog-eater** 'fɒg,i-təz n. a break in a fog-bank or mist, presaging clearing weather; a fog-dog; also, a fog-bow.

**fogged** fɒgd adj. covered with fog; misty.

**fogginess** 'fɒgɪ-nɪs n. the state of being foggy.

**fog-gun** 'fɒg,gʌn n. a gun fired in foggy weather as a warning or fog-signal.

**foggy** 'fɒgɪ adj. abounding with fog; damp with fog; misty.

**fog-horn** 'fɒg,hɔ:zn n. a horn sounded as a warning or a signal in foggy weather: as, the siren \*fog-horn.

**fogless** 'fɒgləs adj. without fog; clear.

**fog-ring** 'fɒg,rɪŋ n. a ring or circular bank or mass of fog, not unusual off the Newfoundland coast.

**fog-scale** 'fɒg,skeɪl n. a scale of fog-intensities; a graded system by which degrees of fogginess may be expressed; a system of grades for describing how thick the fog is.

**fog-signal** 'fɒg,sɪgnəl n. a signal such as the sound of a horn, whistle, or torpedo, made in foggy weather as a warning of danger; a fog-alarm.

*Edem fog-signal*, a signal for use in foggy or thick weather to determine the direction of approaching sound-waves.

**fog-wave** 'fɒg,wæv n. a wave of fog; a fog-billow.

**föhn** fɔ:n n. a warm dry south or southwest wind which descends from the upper Alps into the valleys on the north side of the chain of Alps; also, a similar wind elsewhere, as on the west coast of Greenland and in New Zealand; a föhn-wind.

**föhn-wind** 'fɔ:n,wɪnd n. same meaning as föhn.

**fold** fɔʊld tr. double over on itself; lay or bring one part (of a balloon, etc.) over onto another by bending.

**foot-pound** 'fʊt,pʌʊnd n. the amount of energy required, at any given place or altitude, to raise a weight of one pound, against gravity, a height of one foot: a unit of energy, or work.

**foot-rest** 'fʊt,zɛst n. a rod, bar, or the like, as in a biplane, on which the aviator rests his feet during flight.

- fore** fɔ:z *adj.* situated at the fore or forward part; front; forward.
- fore** fɔ:z *adv.* (of place) before; in or toward the front part; toward the bow; forward: opposed to *aft*.
- fore-and-aft** ,fɔ:z-ən'a:ft *adj.* of or related to the fore and after part of an airship considered together; longitudinal.  
*fore-and-aft stability*, see under *stability*.
- forecast** 'fɔ:z,kæ:st *n.* a forecasting or anticipatory estimate of the wether; an estimate of the expected wether; a publisht statement of wether=probabilities; wether=profecy; a wether=forecast.  
*forecast district*, a district or definit region for which a wether=forecast is made.  
*long=range forecast*, a wether=forecast made at long range; an estimate of wether=conditions to be lookt fer at some distant date, as a week, a month, or a year ahead.  
*seasonal forecast*, a wether=forecast for a coming season; a statement of probabilities as to average rainfall, temperature, and wind for an approaching season: as, a \*seasonal forecast of monsoon rains.
- forecast** ,fɔ:z'kæ:st *tr.* consider or calculate beforehand; foretell: as, \*forecast the wether.
- forecast-division** 'fɔ:z-kæ:st-dɪ,vɪʒən *n.* a governmental division or section connected with the Wether=Bureau, whose duty is to forecast the wether.
- forecaster** ,fɔ:z'kæ:stəz *n.* one skild in forecasting or foretelling the wether; a wether=forecaster.
- fore-end** 'fɔ:z,ɛnd *n.* the end, as of an airship, which is foreward, or toward the bow; the front end.
- foreglow** 'fɔ:z,glɔʊ *n.* a glow seen in the east before sunrise. compare *afterglow*.
- forepart** 'fɔ:z,pɑ:zt *n.* the fore, front, or forward part, as of an airship.
- foretell** ,fɔ:z'tel *tr.* tell or estimate beforehand; forecast: as, to \*fortell the wether.
- fore-wing** 'fɔ:z,wɪŋ *n.* [also spelt *fore wing*] one of the front upper wings of an insect which has two pairs of wings; an anterior wing; a mesothoracic wing; a superior wing: as, the \*fore=wing of a butterfly: dɪŋgwɪsht from *hind=wing*.
- founder** 'faʊn-dəz *intr.* fall helplessly to the ground; break down; be wreckt; collapse: as, when an airship \*founders.
- fracto-cumulus** ,fsæktɔ'kʌmju-ləs *n.* [plural *fracto=cumuli*] ragged cumulus; irregular fragments or patches of low cloud torn from, or floating below, the flat base of ordinary cumulus cloud.
- fracto-nimbus** ,fsæktɔ'nɪmbəs *n.* [plural *fracto=nimbi*] rag-

- ged nimbus; irregular fragments or patches of cloud torn from, or floating below, a nimbus or rain-cloud; scud.
- fracto-stratus** 'fʌktə'strætəs *n.* [plural *fracto-strati*] irregular fragments or edges of stratus cloud.
- frame** 'frem *n.* a structure which serves as a support or skeleton; the rigid main part of an airship or flyer, to which other parts, such as the motor and passenger=accommodations, are attached; the framework.
- frame-member** 'frem,membəz *n.* one of the members or parts of the frame of a kite; a frame=stick.
- frame-stick** 'frem,stɪk *n.* one of the sticks or rods forming the frame of a kite; a frame=member.
- framework** 'frem,wɜ:zɪk *n.* a structure which constitutes a frame or rigid portion in an airship, flyer, or kite; the frame.
- freedom** 'fri:dəm *n.* the property of being free to move in a transitory or rotary manner in one or more directions or about one or more axes; capacity for unrestrained flight or aerial movement: as, the degrees of \*freedom of an aerodone.
- free-flight** 'fri:flaɪt *adj.* characterized by free flight; related to unrestrained or unhindered flight: as, \*free=flight models; the \*free=flight method of experiment. see under *flight*.
- freshen** 'frefʃən *intr.* become fresher or stronger; increase in velocity: as, the breeze \*freshens.
- friction** 'frɪkʃən *n.* the resistance which any body meets with in moving over the surface of another.  
*internal friction of a fluid*, the friction inside of a mass of fluid due to the relative motions of the particles; viscosity.  
*skin friction*, see *skin=friction*.
- friction-plane** 'frɪkʃən,pleɪn *n.* an aeroplane or plane aerofoil used in determining the skin=friction generated by the motion of an aerofoil thru the air.
- frontage** 'frʌntɪdʒ *n.* the spread, or tip-to-tip width (of an aeroplane or flyer).
- frost** 'fɒ:st *n.*
1. the act or state of freezing or becoming frozen; the temperature of the atmosphere when below the freezing-point of water.  
*black frost*, frost not accompanied by hoar or rime: distinguished from *white frost*.
  2. frozen dew or vapor; hoar; rime; hoarfrost; white frost.
- frost-bite** 'fɒ:st,bɑɪt *n.* the inflamed or gangrenous con-

dition of a portion of the skin or flesh produced by exposure to frøst or severe cold.

**frost-bow** 'fzø:st,bəʊ *n.* a bow or halo of white light around the sun in frøsty or cold wether, due in some cases to minute water=particles and in other cases to ice=particles.

**frost-cloud** 'fzø:st,kləʊd *n.* a cloud whose particles adhere to solid objects as frøstwork; a rime=cloud; an ice=cloud (*sense 2*).

**frost-signal** 'fzø:st,sɪgnl̩ *n.* a signal, consisting of a white flag with a black center, for indicating the approach of a frøst or of cold wether; a cold=wave signal.

**fuel-pump** 'fiu:əl,pʌmp *n.* a pump for injecting gasoline or other liquid fuel into the engin of an airship; a fuel=injecting device.

**fugoid** 'fiu:geɪd *adj.* see *phugoid*.

**fuselage** 'fiu:si:lɪdʒ *n.* the body or frame of an airship; the body=framework of a flying=machine; the body=frame; the underbody.

**gale** geəl *n.* a wind of considerable strength; a strong wind; a blast.

*fresh gale*, a gale (numberd 8 in Beaufort's wind=scale) having a velocity of about 15.4 meters per second.

*moderate gale*, a gale (numberd 7 in Beaufort's wind=scale) having a velocity of about 12.9 meters per second.

*straight-line gale*, a long=continued gale which blows in a straight line or course, rather than around a region.

*strong gale*, a gale (numberd 9 in Beaufort's wind=scale) having a velocity of about 18 meters per second.

*whole gale*, a gale (numberd 10 in Beaufort's wind=scale) having a velocity of about 21 meters per second.

**gallery** 'gælə-zɪ *n.* a balcony or balcony=like car forming a part of a balloon such as the large fire=balloon at Lyons, France, in 1784.

**gap** gæp *n.* the opening or vacant space between two adjacent aeroføils of an aeroplane flying=machine; the distance between the adjacent planes or supporting=surfaces of a biplane or multiplane.

**garage** gə'zɑ:dʒ, gə'zɑ:ʒ, 'gæzɪdʒ, 'gɑ:-zɪdʒ *n.* a house or storage=place for airships or flying=machines; an airship=house; an aeroplane=shed.

**garua** gə'zou-ə *n.* a heavy føg which prevails from May to October in the rainless area along the coast of Peru up to an altitude of about one hundred feet.

- gasbag** 'gæs,bæg *n.* [also spelt *gas=bag*] a bag for holding gas; specifically, the bag or receptacle made of silk or other material, and its immediate connections and appurtenances, forming the most conspicuous part of most balloons and dirigibles.
- gas-balloon** 'gæs-bə,loun *n.* a balloon or gasbag which is inflated with gas; a coal-gas balloon; a hydrogen-balloon: as, the separate \*gas-balloons of a Zeppelin airship.
- gas-capacity** 'gæs-kə,pæsi-ti *n.* the capacity of a balloon or airship for receiving or containing gas; holding-power; cubic content.
- gas-chamber** 'gæs,tʃeem-bəz *n.* a chamber or receptacle for holding gas; one of the gas-compartments of a sectional airship.
- gas-charge** 'gæs,tʃɑ:ʒdʒ *n.* the charge or quantity of gas in the gasbag of a balloon or airship.
- gas-compartment** 'gæs-kəm,pɑ:tmənt *n.* one of the compartments of the composite gas-receptacles of certain airships; one of the subdivisions of the gas-reservoir of an airship, filled with inflating-gas; a gas-chamber.
- gas-condenser** 'gæs-kən,densəz *n.* an apparatus used for condensing gas; a gas-compressor.
- gas-container** 'gæs-kən,tet-nəz *n.* a vessel, receptacle, or bag forming a part of an airship and designed to contain gas; a gas-chamber; a gas-receptacle; a gas-holder.
- gas-craft** 'gæs,kɜ:ft *n. pl.* craft or aerial vessels depending upon or using gas for sustaining-power; lighter-than-air craft.
- gas-cylinder** 'gæs,silɪn-dəz *n.* a strong metal cylinder or cylindrical gas-holder used for containing and transporting inflating-gas in a compressed state; a gas-tube.
- gas-engine** 'gæs,ɛndʒɪn *n.* [also spelt *gas=engin*] an engine or motor in which the motion is obtained by the alternate admission and condensation (by explosion) of a gas-mixture in a closed cylinder containing a piston; a gas-motor; also, sometimes, a gasoline or petrol engine.
- gas-envelop** 'gæs,ɛnvə-lɒp *n.* [also spelt *gas=envelope*] the envelop or covering of the gasbag or gas-receptacle of a balloon or airship.
- gaseous** 'gæsi-əs *adj.* having the nature of gas; in the condition of gas.
- gas-filled** 'gæs,fild *adj.* [also spelt *gas=fild*] filled or inflated with gas; gas-inflated.
- gas-float** 'gæs,fli:t *n.* the gas-inflated float or bag of a balloon or airship; the inflated gas-bag of a balloon con-

- sidered as the float or buoy which sustains the craft in the air.
- gas-generator** 'gæs,dʒenə-zetəz *n.* an apparatus for generating or producing hydrogen gas, as in an airship; a gas-producer.
- gas-globe** 'gæs,glɒb *n.* a globe-shaped receptacle or balloon-envelop filled with gas; a globular or spherical gas-vessel or gasbag; the sphere of a balloon.
- gas-holder** 'gæs,həʊl-dəz *n.* a vessel for holding or storing gas; also, the gasbag of a balloon.
- gas-hose** 'gæs,həʊz *n.* a hose or flexible tube for conducting gas.
- gas-inflated** 'gæs-in,flæ-tɪd *adj.* inflated or filled with gas; filled with inflating-gas; gas-filled.
- gasless** 'gæs-ləs *adj.* using no gas; not depending on gas for sustaining-power.
- gas-meter** 'gæs,mɪ-təz *n.* [also spelt *gas-metre*] a meter or apparatus for measuring the amount of gas consumed or used.
- gas-motor** 'gæs,məʊ-təz *n.* a gas-engine.
- gasolene** 'gæsə,lɪn *n.* see *gasoline*.
- gasoline** 'gæsə,lɪn *n.* [also spelt *gasolene*] a volatile inflammable liquid, one of the first products in the distillation of crude petroleum, used in the motors of automobiles and flyers; petroleum spirit; petrol.  
*gasoline engine*, an internal-combustion engine or motor in which a mixture of gasoline vapor and air furnishes the power; a gasoline motor; a petrol engine.
- gasoline-supply** 'gæsə,lɪn-sə,plɑɪ *n.* supply of gasoline; the quantity of gasoline carried on board an airship or flyer.
- gasometer** 'gæs'ə-mɪ-təz *n.* a device for measuring gas; also, a holder or storehouse for illuminating-gas or inflating-gas; a gas-holder.
- gas-pipe** 'gæs,pɑɪp *n.* a pipe for conveying or conducting gas.
- gas-plant** 'gæs,plɑ:nt *n.* a plant or apparatus for generating or making hydrogen or other gas, as for inflating balloons.
- gasproofing** 'gæs,pʁʊ-fɪŋ *n.* the process of rendering gas-proof or air-tight; the action of coating or otherwise treating a balloon-envelop so as to prevent the escape of its inflating-gas.
- gas-pump** 'gæs,pʌmp *n.* a pump for compressing gas.
- gas-purifier** 'gæs,pʊrɪ-fai-əz *n.* an apparatus used in gas-

works for purifying gas or freeing it from sulfur compounds, as it comes from the gas-washer or scrubber.

**gas-reserve** 'gæs-zɪ,zɛ:zv *n.* [also spelt *gas-reserv*] gas kept in reserv, as in a Zeppelin airship.

**gas-reservoir** 'gæs,zɛzə-vɔz *n.* a reservoir or receptacle containing gas; the gas-vessel of an airship; a gas-container; a gas-holder.

**gas-tight** ,gæs'taɪt, (*assumptively*) 'gæs,tɪt *adj.* so tight as to be impermeable to gas.

**gas-tube** 'gæs,tʃu:b *n.* a steel tube or hollow cylindrical receptacle in which inflating- or other gas is compressed and transported; a strong, portable, cylindrical gas-holder; a gas-cylinder.

**gas-valve** 'gæs,vælv *n.* [also spelt *gas-valv*] a valv or controlling device for regulating the escape or flow of gas.

**gas-vessel** 'gæs,vesəl *n.* a vessel or receptacle containing gas or intended for that purpose; a gas-container; specifically, the gasbag or gas-reservoir of a balloon.

**gas-washer** 'gæs,wəʃəz *n.* an apparatus used in gas-works for washing gas or freeing it from ammonia before it goes to the gas-purifier; a scrubber.

**gas-works** 'gæs,wɔ:zks *n.* an establishment in which illuminating-gas is made and whence it is distributed thru pipes to consumers.

**gegenschein** 'gæe-gən,ʃaɪn *n.* the luminous patch on the ecliptic opposite to the sun: also sometimes called *counter-glow*.

**geosphere** 'dʒi-i-ə,sfɪ:z *n.* [also spelt *geosphere*] the atmosphere of the earth as distinguished from that of other planets.

**get-away** 'getə,wæe *n.* the act of getting away from or leaving the starting-point in an airship; the departure or leaving of an airship from a given location or resting-place; a get-off; a start.

**get-off** 'get,ə:f *n.* the action of an aeroplane flying-machine or other airship in getting off, starting, or leaving the ground; a get-away; a start: as, a quick \*get-off.

**giddiness** 'gɪdɪ-nɪs *n.* the condition of being giddy or dizzy, as at a height; swimming in the head; vertigo; dizziness.

**giddy** 'gɪdɪ *adj.*

1. having a confused sensation of swimming or whirling in the head with proneness to fall; affected with vertigo; dizzy.

2. causing or apt to produce dizziness or swimming in the head; rendering giddy or dizzy.

3. whirling or circling round with bewildering rapidity.



**glide** gláid *v.* [preterit *glided*, *glode*; past participle *glided*, *glid*]

1. *intr.* pass from one place to another by a smooth, continuous, and easy movement; sail or sweep evenly along, as a balloon often does; skim smoothly onward, as in an aeroplane; plane at an easy angle; coast or slide earthward: as, sailing and \*gliding birds.

2. *tr.* cause to glide: as, a breeze \*glides the craft quietly onward.

**glide** gláid *n.* the action of gliding; a gliding, skimming, or sliding movement, as of an aeroplane when descending at an easy angle; also, a flight in or of a gliding-machine or glider; a gliding-experiment: as, a trial \*glide.

**glider** 'gláir-dəz *n.*

1. one who or that which glides thru the air.

2. an appendage or structure which enables an insect to glide thru the air: as, elytra used as sustainers and \*gliders in flight.

3. an apparatus designed to glide, sail, or soar thru the air or to enable its user to do so; a gliding-machine; a sailing-machine.

*biplane glider*, a glider of the biplane type; a gliding-machine having two superposed parallel sustaining-planes or aerofoils.

*double-monoplane glider*, a glider of the double-monoplane type. see under *monoplane*.

*free glider*, a glider which is free from, or unattached to, the earth; a free-sailing or untowed gliding-machine. compare *towed glider*.

*towed glider*, a glider which is towed, dragged, or governed by means of a cord or line. compare *free glider*.

**gliding** 'gláir-dín *adj.* characterized by smooth, continuous, easy movement or motion; skimming; sailing; soaring: as, \*gliding birds, \*gliding flight.

**gliding** 'gláir-dín *n.*

1. the action of the verb glide; a gliding or skimming movement.

2. the art, occupation, or sport of those who glide, skim, or sail thru the air or use gliding-machines or gliders.

**gliding-angle** 'gláir-dín,æŋgəl *n.* the angle at which gliding is done; the inclination of a gliding aeroplane, glider, or aerofoil to the direction of flight or to the horizontal: compare *rising-angle*.

*natural gliding-angle*, the angle at which an aeroplane or plane aerofoil naturally continues to glide indefinitely. compare *natural velocity*, under *velocity*.

- gliding-apparatus** 'glai-dɪŋ-æpə, zæ-təs *n.* an apparatus for gliding thru the air; a glider.
- gliding-datum** 'glai-dɪŋ, dæe-təm *n.* [plural *gliding-data*] a datum, or given or granted fact, concerning the action of gliding planes or aeroføils.
- gliding-effect** 'glai-dɪŋ-ɪ, fɛkt *n.* an effect produced by gliding; a gliding or skimming movement.
- gliding-experiment** 'glai-dɪŋ-ɪk, spɛzɪ-mənt *n.* an experiment with a gliding-machine or glider; a test made with a gliding plane or aeroføil.
- glidingly** 'glai-dɪŋ-ɪ *adv.* in a gliding manner.
- gliding-machine** 'glai-dɪŋ-mə, ʃɪn *n.* a machine or apparatus designed for gliding thru the air; an aeroplane, usually without a motor, by means of which, or in which, glides may be made in the air, as from a higher to a lower level; a glider.
- gliding-path** 'glai-dɪŋ, pɑ:θ *n.* the path or course of a glide; the path or line of motion of a gliding plane, propeller-blade, or other aeroføil.
- gliding-plane** 'glai-dɪŋ, plæn *n.* one of the planes or aeroplane surfaces forming part of the gliding or steering apparatus of a dirigible balloon; a governing-plane.
- gliding-speed** 'glai-dɪŋ, spɪd *n.* the speed at which an aerial vehicle glides or is capable of gliding; the speed at which an aeroplane makes a gliding descent.
- gloaming** 'glɔo-mɪŋ *n.* twilight, especially the evening twilight; glooming; dusky light; shade, dusk.
- globe** glɔob *n.* a ball; the sære or særeal gasbag of a balloon.
- globo-cirrus** ,glɔo-bɔ'sɪzəs *n.* [plural *globo-cirri*] a globular or ball-like cirrus cloud from which fibers or filaments stream downward.
- globo-cumulus** 'glɔo-bɔ, kʃumjʊ-ləs *n.* cloud consisting of slightly elongated, hemispherical, grayish masses, appearing in nimbus or rain-cloud.
- gloom** glɔum *n.* an indefinite degree of darkness; shadowy obscurity.
- glooming** 'glɔu-mɪŋ *n.* (in poetry) gloaming.
- glory** 'glɔ:-ɪ *n.* one of the colored circles seen around the shadow of a person's hed on a fog.  
*diffraction glory*, a glory due to diffraction of light, rather than to refraction, etc.
- goldbeater** 'gɔʊd, bɪ-tɔz *n.*  
*goldbeater's skin*, a light, skin-like animal membrane used in beating out gold-leaf, and also, sometimes, for making balloon-envelops.

- gondola** 'gɒndə-lə *n.* a boat-like car of a dirigible balloon.
- gore** ɡɔːz *n.* one of the many triangular or lune-shaped pieces of silk or other material which together form the envelop of the gasbag of a balloon.
- gossamer** 'gɒsə-məz *n.* a web-like or gauzy fabric or structure: as, the \*gossamer wings of an insect.
- gossamer-like** 'gɒsəməz,lʌk *adj.* like gossamer; web-like, gauzy: as, \*gossamer-like construction.
- gourd-whistle** 'ɡuːzd,wɪsəl *n.* a light wind-blown whistle made of tubes fastend to a gourd body or wind-chest, attached by the Chinese to the tails of flying pigeons.
- governing-plane** 'ɡʌvənɪŋ,pleɪn *n.* one of the aeroplanes forming part of a dirigible balloon or airship and used to govern or control the direction or equilibrium of the craft.
- gradient** 'ɡreɪ-di-ənt *n.* a series or system of steps, grades, or degrees; specifically, the rate at which a variable quantity changes; rate of variation; rate of change.

*adiabatic gradient*, the vertical gradient of the temperature of any portion of the atmosphere under adiabatic conditions; the rate of change in the temperature of the air (with change of altitude) caused by change of volume and concomitant transformation of internal energy of the air concerned, but not the result of any transference of heat to or from the surrounding air; the rate at which the temperature of the atmosphere varies (as measured at different heights above the earth) when the variation of its temperature is due solely to expansion or compression of the air resulting from a decrease or an increase in the external air-pressure and the accompanying absorption or evolution of internal heat.

*barometric gradient*, the gradient of barometric pressure with distance; the rate of change of atmospheric pressure along the surface of the earth, usually measured (on the weather-map) along a line perpendicular to the isobars at any point.

*critical barometric gradient*, the barometric gradient which would be maintained under steady wind-conditions; the rate at which atmospheric pressure along the surface of the earth would vary under the influence of a steady wind or steady system of winds.

*cyclonal gradient*, the barometric gradient directed toward the center of a cyclone; the rate at which the atmospheric pressure along the earth's surface would vary if measured (on the weather-map) along a line extending from any given point toward the central point of minimum pressure in a rotary system of winds.

*electric gradient*, the gradient of the electric potential of the atmosphere; the vertical or the horizontal rate of change in the potential function of the electricity in the air.

*gradient of refraction*, the vertical temperature-gradient at considerable altitudes as affected by phenomena of refraction.

*initial gradient*, the small gradient of pressure of the air at about sea-level where the slight variations of pressure due to differences of density of the air, the tides, etc., initiate or give rise to the winds which cause the larger (observed) barometric gradients.

*neutral gradient of pressure*, a vertical pressure-gradient whose maintenance keeps the atmosphere neutral or in dynamic equilibrium.

*vertical gradient*, the gradient according to vertical height above the earth; the rate at which any atmospheric condition, as temperature or pressure, etc., varies with the altitude.

**gradient-formula** 'gzee-di-ənt,fə:z-mju-lə n.

*Ferrel's gradient-formula*, a formula expressing the relation between barometric gradient and the accompanying winds.

**grading** 'gzee-dɪŋ n. the mode in which a propeller-blade or other aerofoil is graded or graduated in outline, contour, or curvature of surface for a definite purpose; the form of curvature or contour which results from this process: as, segmental \*grading.

*linear grading*, the grading of a propeller-blade along the line of its radius. This grading, for any given radius, is the quotient obtained by dividing the load-value by the thrust-value.

*load grading*, the grading of a propeller-blade in correlation with the distribution of its load.

*thrust grading*, the grading of the propeller-blade in correlation with the distribution of its thrust.

**grapnel** 'gzæpnəl n. a small anchor with three or more flukes, carried in a balloon and used for securing the balloon to earth on its descent; a grappling-iron; a grapple-iron; an anchor.

**grapple-hook** 'gzæpəl,hok n. a grapnel; a grappling-iron.

**grapple-iron** 'gzæpəl,ai-əzn n. a grapple-hook; a grappling-iron; a grapnel.

**grapple-rope** 'gzæpəl,zɔop n. the rope to which a grapple is attached to a balloon; an anchor-rope.

**grappling** 'gzæplɪŋ n. a grappling-iron; a grapnel.

**grappling-iron** 'gzæplɪŋ,ai-əzn n. a device made of iron

carried in a balloon and used for grappling the earth in landing; a grapnel; an anchor.

**graveyard** 'gzæv,jɑ:zd *n.* a portion of an aviation-ground or flying-course which has gained the reputation for being a sort of cemetery or place where, on account of treacherous air-currents, rough ground, etc., the machines are apt to fall and go to smash and their occupants be killed or come to grief.

**gravitation** 'gzævi,tæ-ʃən *n.* the action or process of gravitating; the tendency which material bodies have of attracting one another, of which gravity, or the fall of bodies to the earth, is an instance.

**gravity** 'gzævi-tɪ *n.* the quality of having weight or of tending downward or toward the earth; the earth-force; also, weight, heaviness; also, gravitation.

*center of gravity*, see under *center*.

*specific gravity*, the degree of gravity which specifically characterizes a given material substance or body; the relative heaviness or weight of any particular portion of matter, usually expressed by the ratio of its weight to the weight of an equal volume of water (in the case of solids and liquids) or of hydrogen (in the case of gases).

**gravity-correction** 'gzævɪ-tɪ-kə,zəkʃən *n.* a correction of a reading of a standard mercurial barometer on account of the variation of the force of gravity at different altitudes and the resulting changes in the pressure of the atmosphere.

**gregale** gzi'gɑ:lɪ *n.* a dreaded northeast wind in the island of Malta and other Mediterranean regions, resembling the tramontana wind of Italy.

**ground** gzaʊnd *n.* the solid part of the earth's surface; any portion of the land-surface; firm land; also, a tract or region.

*ground attitude*, see under *attitude*.

**ground-current** 'gzaʊnd,kʌzənt *n.* an air-current near the surface of the ground or earth; a current or stream of air due to the influence of the earth or objects thereon upon the motions of the atmosphere.

**ground-level** 'gzaʊnd,ləvəl *n.* the level of the ground; the general level of the land-surface in a given locality.

**guide-line** 'gaid,lain *n.* a line used as a guide-rope on a balloon; a guide-rope.

**guide-rod** 'gaid,zəd *n.* one of the rods used in a flying-model devised by H. Sutton of Australia, about 1888, for guiding or directing the stroke of the wings.

**guide-rope** 'gaid,zɒp *n.* a long rope attached to a balloon and allowed to dangle or hang below, so that when the balloon

**descends** too close to the earth or ground=surface the rope will, by resting on or dragging along the ground, relieve the balloon of weight, and cause it to rise, thus guiding it automatically or tending to keep it at a uniform distance from the earth; 'the rope'; a drag-dope; a balancer.

**guiding-plane** 'gɑɪ-dɪŋ,plæn *n.* a plane or aeroplane serving to guide or direct the course of a flying=machine; a rudder.

**gull** gʌl *n.* any long-winged, web-footed bird of the family Laridae, such as of the genus Larus; also, popularly, a tern, a skua.

**gust** gʌst *n.* a sudden violent rush or blast of wind.

**gust-swept** 'gʌst,swept *adj.* swept by gusts of wind; fitfully windy; wind=swept; squally.

**gusty** 'gʌstɪ *adj.* (of wind) blowing in gusts or violent blasts; (of wether) markt by gusts or squalls of wind; fitfully windy or stormy.

**guy** gɑɪ *n.* [plural *guys*] a rope or wire used to guide or steady any part of a balloon or airship; a guy=rope; a guy=wire.

**guy** gɑɪ *tr.* fasten with a guy or guys; make secure by means of the guy=rope or guy=wire.

**guy-line** 'gɑɪ,lɑɪn *n.* a line or cord used to guide or steady a kite.

**guy-rope** 'gɑɪ,rɔ:p *n.* a rope used as a guy; a stedying=rope; specifically, one of the ropes extending between the basket or car of a balloon or airship and the netting or envelop above.

**guy-wire** 'gɑɪ,wɑɪz *n.* one of the wires forming or serving as a guy or stay in an airship; a stedying=wire.

**gyrate** 'dʒɑɪ,zet, ,dʒɑɪ'zɛt *intr.* move in a gyre, circle, spiral, or helix; revolv, usually round a fixt point or on an axis; rotate, whirl, circle, wheel.

**gyrating** 'dʒɑɪ,zetɪŋ, ,dʒɑɪ'zɛɪ-tɪŋ *n.* the action of birds in soaring in a spiral course; circling.

**gyration** ,dʒɑɪ'zɛɪ-ʃən *n.* the action or process of gyrating; motion in a circle, spiral, or helix; revolution round a fixt center or axis; turning round, wheeling, whirling; also, an instance of any of these: as, a Helmholtz surface of \*gyration.

*Dove's law of gyration*, same meaning as *Dove's law of the rotation of the winds*. see under *wind*.

*gyration in storm areas*, the mode of gyration or rotation of the winds in the areas covered by storms as formulated by Ferrel; the anticlockwise cyclonic movements occurring in the northern hemisphere, and the clockwise cyclonic movements occurring in the southern hemisphere.

**gyrator** 'dʒaɪ,zetəz, ,dʒaɪ'zɛɛ-təz *n.* he who or that which gyrates or whirls.

**gyratory** 'dʒaɪ-zə,tɔʒɪ *adj.* moving in a gyre, circle, spiral, or helix; revolving; whirling.

**gyre** dʒaɪz *n.*

1. a turning round, revolution, whirl; a circular or spiral turn.

2. a ring, circle, spiral, or helix; also, a vertex.

**gyroplane** 'dʒaɪ-zə,plɛn *n.* a flying-machine in whose design the principle of sustentation by means of gyrating or rotating aerofóils is given prominence; a flyer of the helicopter type.

**gyropter** ,dʒaɪ'zɔptəz *n.* a gyrating or rotating wing or aerocurv; also, a flying-machine of the helicopter type invented or advocated by Davidson.

**gyroscope** 'dʒaɪ-zə,skɔp *n.* a device consisting essentially of a rotating wheel mounted in a ring and having its axis free to turn in any direction, exhibiting in its action the opposition which the axial momentum of a rotating body makes to any change in the plane of its rotation.

**gyroscopic** ,dʒaɪ-zə'skɔpɪk *adj.* pertaining to or of the nature of a gyroscope; rotatory.

*gyroscopic effect*, the balancing-effect of gyroscopic action; the steadying-effect characteristic of the gyroscope.

*gyroscopic motor*, a motor or gasoline engine in which, by rotation of cylinders, etc., a certain gyroscopic effect is obtained.

*gyroscopic stability*, stability or steadiness of an airship due to gyroscopic action of revolving aerofóils or other rotary mechanism.

**gyrostat** 'dʒaɪ-zə,stæt *n.* a device consisting ordinarily of a rapidly rotating fly-wheel pivoted as finely as possible within a rigid case, having a convex curvilinear polygonal border, in the plane perpendicular to the axis thru the center of gravity of the whole.

**gyrostatic** ,dʒaɪ-zə'stætɪk *adj.* pertaining to the gyrostat or gyrostatics; connected with the principle that a rotating body tends to maintain its plane of rotation.

**gyrostatically** ,dʒaɪ-zə'stætɪkə-lɪ *adv.* in a gyrostatic manner.

**gyrostatics** ,dʒaɪ-zə'stætɪks *n.* the science of gyrating or rotating bodies.

**hail** heɪl *n.* ice or frozen vapor falling in pellets or masses in a shower from the atmosphere.

*soft hail*, hail made up of small hailstones or frozen rain-drops, usually mixt with rain and melting rapidly.

**hail** *heel v.*

1. *intr. (impersonally): it hails, hail falls;* (*with subject*) pour or send down hail.

2. *tr.* pour down as hail; throw or send down a shower like hail in a storm.

**hail-band** 'heel,bænd *n.* a band or narrow tract of ground coverd with hail; one of the strips of land (usually parallel to each other and to the path of the storm) which, as a result of a hailstorm, is left coverd over with hailstones.

**hail-cloud** 'heel,klaud *n.* a cloud from which hail falls; a cumulus cloud in the hail stage.

**hail-gage** 'heel,gædz *n.* [also spelt *hail-gauge*] a gage for measuring the amount of hail which has fallen; a rain-gage so arranged as to separate the hail from the rain and allow of the separate measurement of each.

**hail-shower** 'heel,ʃau-əz *n.* a shower or light fall of hail.

**hailstone** 'heel,stoon *n.* one of the stones or pebble-like masses of ice which fall in a hailstorm; a pellet of hail.

**hailstorm** 'heel,stø:zm *n.* [also spelt *hail-storm*] a storm or violent fall of hail.

**hair-hygrometer** 'he:z-haɪ,gzəmɪ-təz *n.* an instrument invented by Saussure for measuring atmospheric humidity; a hair-hygroscope.

**half-gale** 'hɑ:f,gæɪ *n.* a gale intermediate between a moderate gale and a whole gale; a fresh or strong gale.

**halo** 'hæ-lə *n.* [plural *halos, haloes*] a circle of either white or prismatically colored light seen round a luminous body and usually due to refraction; specifically, one of the pair of large colored or white concentric circles, red inside, commonly of 22 or 46 degrees radius, sometimes seen around the sun or moon, and due to the refraction of light as it passes thru ice-crystals of cirrus cloud or cirro-nebula.

*diffraction halo*, a halo due to diffraction of light, rather than to refraction or dispersion.

**halter** 'hæltəz *n.* [plural *halteres*] one of a pair of slender processes with clubd ends placed near the insertion of the wings in a dipterous insect or a male cœcid, supposed to aid in balancing the insect; a poiser; a balancer.

**halteres** 'hæltɪ:zɪz *n. pl.* see *halter*.

**hamuli** 'hæmjʊ,lɪ *n. pl.* see *hamulus*.

**hamulus** 'hæmjʊ-ləs *n.* [plural *hamuli*] one of the minute hooks or hook-like processes similar to the (plain) barbicles or cilia, forming a fringe or frayed edge to a barbule of a bird's feather; a hooklet.



**hand-wheel** 'hænd,wɪl n. a wheel worked by hand, as one of those for warping wings or operating the elevating-plane, at either side of the driver's seat in a monoplane.

**hang** hæŋ *intr.* remain suspended or poised in the air, as a bird or an airship sometimes does or seems to do; be pendent; hover.

**hangar** 'hæŋ,gaz, 'hæŋgəz, 'hæŋəz, 'høŋ,gaz, 'øŋ,gaz n. [also, sometimes, spelt *hanger*] a shed or house for sheltering balloons or airships; an airship=shed; an aeroplane=shed.

**hangarward** 'hæŋəz-wəzd *adv.* toward the hangar or aeroplane=shed.

**hanger** 'hæŋəz n. that part of a kite to which the 'guy=line is hung or attached.

**harbor** 'hɑ:z-bəz n. [also spelt *harbour*] a place of shelter; a sheltered recess in a coast=line fit for use as a port or haven for water=ships.

*air harbor*, same meaning as *air=harbor*.

*earth harbor*, same meaning as *earth=harbor*.

**harmattan** ,haz'mætŋ n. a dry parching land=wind which blows during December, January, and February on the coast of Upper Guinea in Africa, obscuring the air with clouds of reddish or white dust from the desert.

**hawk** hɔ:k n. any diurnal bird of prey which is neither a vulture nor an eagle, or, more exclusively, neither a buzzard, falcon, harrier, nor a kite; a bird of the subfamily Accipitrinae.

**hawk-like** 'hɔ:k,lʌk *adj.* [also spelt *hawklike*] like or resembling a hawk; like that of a hawk.

**haze** heez n. an obscuration of the atmosphere or grayish tint of sky due to particles of dust in the air: especially frequent in dry spells in summer, and, in hot climates, causing the sky to assume even a pea=soup color.

*aqueous haze*, a haze, or misty appearance of the atmosphere, due to the presence of aqueous particles (water=particles), and usually having a blue or whitish tint according as the particles are small or large; water=haze.

*cirrus haze*, cirro=stratus cloud.

**haze-fire** 'heez,faɪz n. brilliantly luminous haze or mist.

**hazeless** 'heez-ləs *adj.* free from haze; without haze.

**head** hed n. [also spelt *hed*]

1. the main part or surface of a kite, such as Tatin's, as distinguished from the tail or fins.

2. the fore or foremost part or end of an aerofoil, airship, or flyer; the part in front of the shoulder; the front.

3. (in *aerostatics*) the difference of pressure on a unit of base existing between two fluid columns of different den-

sities communicating at their bases; also, the pressure of a confined volume of gas upon a unit of the interior surface of the confining vessel.

**head-area** 'hed,ε:-zi-ə *n.* [also spelt *hed=area*] the area of the hed (or part in front of the shoulder) of an aerofoil or airship; the area of a surface which offers hed-resistance.

*equivalent head-area*, a hed-area or area of hed which is equivalent to the aggregate of the hed-areas of all the parts of an airship considered separately; the sum of the hed-areas of any air-machine.

**head-breeze** 'hed,bɜ:iz *n.* [also spelt *hed=breeze*] a breeze or light wind blowing directly against the hed or fore-part of an airship; a breeze coming from the front.

**header** 'hedəz *n.* [also spelt *heder*] a fall hed-first or on the hed, as of a bird. compare *cropper*.

**headless** 'hed-ləs *adj.* [also spelt *hedless*] having no hed; destitute, or nearly destitute, of hed-piece or front projecting portion: as, the Wright \*hedless biplane.

**head-piece** 'hed,pri:s *n.* [also spelt *headpiece*, *hed=piece*] the piece or part which forms the hed or front projecting portion of an aeroplane flying-machine: the opposit of *tail-piece*.

**head-resistance** 'hed-zɪ,zɪstns *n.* [also spelt *head resistance*, *hed=resistance*] the resistance which the hed, hull, body, frame, or car of a balloon, airship, or flyer, considered apart from the spars, rigging, and sustaining-surfaces, offers to the air, in flight; the hull-resistance; the body-resistance. compare *drift*.

**headway** 'hed,wee *n.* [also spelt *hedway*] the motion (of an airship) ahead or forward; rate of progress: as, initial \*hedway; to make \*hedway against the wind.

**head-wind** 'hed,wɪnd *n.* [also spelt *hed=wind*] a wind blowing directly against the hed or fore-part of an airship; a wind coming from in front.

**heat** hɪt *n.* the form of energy concomitant with the sensation felt when near fire, etc.

*latent heat of precipitation*, that part of the latent heat of evaporation which is set free when the vapor is precipitated or condensed in the form of water or cloud.

**heat-haze** 'hɪt,heez *n.* a hazy condition of the air in hot wether; haze.

**heat-lightning** 'hɪt,lɪt-nɪŋ *n.* [also spelt *heat lightning*] sheet lightning, occurring in hot wether as a result of a storm so distant that the thunder is inaudible; summer-lightning.

**heat-stroke** 'hiit,stri:k n. an affection of the nervous system, often fatal, caused by exposure to excessiv heat; col-laps or fever due to exposure to atmosferic heat.

**heat-wave** 'hiit,wæv n. a wave of hot wether; a hot wave.

**heaven** 'hevən n. [also spelt *heven*; commonly used in the plural] the sky, the firmament; also, a zone or region.

**heavenward** 'hevən-wærd *adv.* [also spelt *hevenward*] to-ward the heavens; hevenwards; skyward.

**heavier-than-air** ,hevi-ət-ðə'ne:z, (*assumptivly*) 'hevi-ət-ðə-,ne:z *adj.* [also spelt *hevier-than-air*] possessing greater weight in proportion to bulk than the air or atmosfere; of greater specific gravty than the air, as a gasless aerial ve-hicle: said of gliders, aeroplanes, and other airships which do not depend upon gases lighter than the air, or upon rarrified air or a vacuum, for sustaining-power: the opposit of *lighter-than-air*.

**heel** hiit *intr.* incline or cant from a vertical position; turn partly over; tilt.

**height** ha:t n. [also spelt *hight*; synonimous cognate *highth*]

1. the quality of being high; highness, altitude, elevation: as, the \*height of the earth's atmosfere; the \*height of his flight.

2. the maximum vertical dimension of an aerial vehicle.

3. a high point or position: as, to fall from a given \*height; to fly from \*height to \*height.

**height-control** 'ha:t-kən,tri:k n. the control of the height of a balloon or airship above the earth; altitude-control.

**height-flyer** 'ha:t,flai-ət n. one who flies for a height-record; an aviator who is trying for altitude.

**height-prize** 'ha:t,praiz n. a prize for attaining height, as in an aeroplane; a prize for high flying.

**height-record** 'ha:t,zekərd n. a record for height; the best recorded achievement in high aeroplane-flying.

**helical** 'helɪ-kəl *adj.* belonging to or having the form of a helix; screw-shaped; spiral.

**helicoid** 'helɪ,kəid n. (in *geometry*) a warped surface generated by a moving straight line which always passes thru or touches a fixt helix.

**helicoid** 'helɪ,kəid *adj.* of or pertaining to a helicoid or a helix.

**helicoidal** ,helɪ'kəi-dl *adj.* relating to a helicoid or helix; screw-shaped; spiral.

**heliconef** 'helɪkə,nɛf n. an aroref or hevier-than-air fly-ing-machine of the helicopter type invented by H. Chatley.

**helicoplane** 'helɪkə,pleən n. a flying-machine of the heli-

copter type invented by Hinkler; a flyer with revolving aeroplanes.

**helicopter** ,hɛl'kɒptɜz, ,hi:l'kɒptɜz *n.* [synonymous cognate *hélicoptère, hélicoptère*] a flying-machine invented by Pénard about the year 1870; also, any one of various similar flying-machines, such as those designed or advocated by Leonardo da Vinci, Launoy and Bienvenu, Phillips, Edison, Berliner, Cornu, and others, depending, for lifting-power, upon vertical screws or rotating aerofoils; a flying-screw; a gyroplane: distinguished from *aeroplane* and *ornithopter*.

**helicopteric** ,hɛl'kɒptɜ-zɪk *adj.* of the nature of a helicopter or vertical-screw flyer.

**helicoptic** ,hɛl'kɒptɪk *adj.* same meaning as *helicopteric*.

**helicoptically** ,hɛl'kɒptɪkə-lɪ *adv.* by means of, or in the manner of, a helicopter: as, to fly \*helicoptically.

**helices** 'hɛlɪsɪz *n. pl.* see *helix*.

**heliophotometer** ,hri-li-ɔ-fə'tɒmɪ-tɜz *n.* [also spelt *heliophotometer*] an instrument for measuring and recording the duration of sunlight introduced by F. Craveri about 1874.

**helix** 'hri-lɪks *n.* [plural *helices, helixes*] anything of a spiral or coil form whether in two dimensions (like a watch-spring) or in three dimensions (like a corkscrew); (in *geometry*) a curve formed by a straight line traced on a plane surface which is then wrapt round a cylinder; a curve on any developable surface which becomes a straight line when the surface is unrolled into a plane; a gyre: sometimes distinguished from *spiral*, which is often a plane curve.

*helix of travel*, the helix or helical curve described by the extremity of the blade of a screw propeller in its travel or translatory motion thru the air.

**helm** hɛlm *n.*

1. the handle, tiller, or wheel by which the rudder of an airship is managed; the steering-wheel; the steering-gear.

2. a helm-cloud; a helmet.

**helm-bar** 'hɛlm,bɑ:z *n.* a bar of cloud formed at the summit of a standing wave of air; a roll of cloud suspended below a helm-cloud.

**helm-cloud** 'hɛlm,kləud *n.* a stationary cloud formed at the summit of a standing wave of air; a dark cloud which rests on the brow of a mountain before a storm; a helm or helmet.

**helmet** 'hɛlmɪt *n.* a helm-cloud; a helm.

**helm-wind** 'hɛlm,wɪnd *n.* a wind which produces helm or helm-cloud.

**hemipter** hɪ'mɪptɜz *n.* any insect of the order hemiptera.

- hemiptera** hɪ'mɪptə-zə *n.* [singular *hemipteron*] a large order of insects, such as bugs, lice, and plant-lice, characterized by a suctorial mouth and, in the largest group (*heteroptera*), by wings of heterogeneous or non-uniform texture, in that they are coriaceous at the base and membranous at the tip; the rhyncota.
- hemisphere** 'hɛmɪ,sfɪ:z *n.* [also spelt *hemisfere*] a half sferc; one of the halves of a sferc or globe, such as the gasbag of a balloon, fcrmd by a plane passing thru its center.
- heteropter** ,hɛtə'zɛptɚz *n.* any bug or insect of the suborder *heteroptera*.
- heteroptera** ,hɛtə'zɛptə-zə *n. pl.* a suborder of *hemiptera* comprizing those insects whose wings are of heterogeneous texture or consist of dissimilar parts, being coriaceous at the base and membranous at the tip; the true bugs: contrasted with *homoptera*.
- high** haɪ *n.* an area of high barometric pressure, bounded by an isobar; an anticyclone.
- high-flyer** 'haɪ,fɫaɪ-ɚz *n.* [also spelt *high-flier*] one who flies high; an aviator who makes flights at great altitudes. habitually flying high in the air; used to flight at great altitudes.
- high-flying** ,haɪ'fɫaɪ-ɪŋ, (*assumptively*) 'haɪ,fɫaɪ-ɪŋ *adj.* habitually flying high in the air; used to flight at great altitudes.
- hill-map** 'hɪl,mæp *n.* a map showing the hills or the relief of the land-surface.
- hillside** 'hɪl,sɑɪd *n.* [also spelt *hill-side*] the side of a hill; the lateral slope of a hill.
- hilltop** 'hɪl,tɒp *n.* [also spelt *hill-top*, *hill top*] the top or summit of a hill.
- hind-wing** 'haɪnd,wɪŋ *n.* [also spelt *hind wing*] one of the hinder or under pair of wings of an insect having two pairs of wings; a posterior wing; a metathoracic wing; an inferior wing: as, the \**hind-wing* of a butterfly.
- hoar-frost** 'hɔ:z,fɹɔ:st *n.* the white deposit fcrmd by the freezing of dew; frozen dew; white frɹst.
- holding-rope** 'hɔʊl-dɪŋ,zɔʊp *n.* one of the ropes attacht to a balloon or airship and used in holding the craft to earth previous to starting.
- homer** 'hɔʊ-mɚz *n.* a homing pigeon; a carrier-pigeon.
- homing** 'hɔʊ-mɪŋ *adj.* that goes home; trained to fly homeward, as a carrier-pigeon.
- homopter** hɔ'mɒptɚz *n.* any insect of the suborder *homoptera*.

**homoptera** hómoptə-zə *n. pl.* a suborder of hemiptera comprising insects of various kinds, with wings of homogeneous or uniform texture: contrasted with *heteroptera*.

**hood** hod *n.*

1. a false cirrus cloud enveloping a mountain-top or the summit of a cumulus-dome, formed by the upward air-currents.

2. a covering fastened to the valve-ring of a balloon and extending over the gasbag which it protects from the heat of the sun, etc.

**hooklet** 'hókzət- *n.* one of the minute hooks or hook-like processes similar to the (plain) barbicels or cilia, forming a fringe or frayed edge to a barbule of a bird's feather; a hamulus.

**hoop** houp, hop *n.* the circular band or ring of metal or other stiff material from which the car of a balloon hangs and to which are fastened the guy-ropes or cords connected with the network enveloping the gasbag above; the concentrating-hoop; the ring.

**hop** hep *v.* fly along or over the ground in a manner similar to that of a person or a bird that hops or leaps.

**horizon** hə'zai-zən *n.*

1. the line at which the earth and sky appear to meet; the boundary-line of that part of the earth's surface which is visible from a given point of view, or any particular part of this line as contrasted with another part of it; more strictly, the circle bounding that part of the earth's surface which would be visible if no irregularities or obstructions were present: also called the *apparent, physical, natural, sensible, or visible horizon*: as, sweeping round the \*horizon; clouds moving from one \*horizon to the other.

*artificial horizon*, a level reflecting-surface, usually of mercury, used in taking altitudes.

*axis of the horizon*, an axis or straight line which is perpendicular to the plane of the horizon at the point where the observer stands.

*contracted horizon*, an horizon whose limits are contracted, or which is less distant or extensive than usual on account of mist, smoke, rain, snow, etc.

*false horizon*, same meaning as *artificial horizon*.

*mean horizon*, the average horizon or horizon-line; the middle or intermediate position in any irregularity of the line of the horizon.

2. (in astronomy) a great circle of the celestial sphere the plane of which passes thru the center of the earth and is parallel to the plane of the sensible horizon of a given

place: distinguished as the *astronomical, celestial, mathematical, rational, real, or true horizon*.

*geographical horizon*, the great circle on the earth's surface in the plane of the celestial or astronomical horizon.

*oblique horizon*, the celestial horizon of any place between the equator and either pole.

*right horizon*, the celestial horizon of a place on the equator of the earth, the plane of which is perpendicular to the plane of the equinoxial.

**horizonless** hə'zai-zən-ləs *adj.* having no definite horizon; visually boundless.

**horizon-line** hə'zai-zən,lain *n.* the line of the horizon; the horizon.

**horizontal** ,hɔɪ'zɒntl *adj.* parallel to the plane of the horizon; level, flat.

**horse-power** 'hɔ:z,pau-əz *n.* [also spelt *horsepower*] the power or rate of work of a horse in drawing; (in *mechanics*) a unit for measuring the work of a motor, usually 550 foot-pounds per second (or about one and one-third times the actual power of an average horse).

**horsetail** 'hɔ:z,tɛl *n.* a form of cirrus cloud resembling a horse's tail; mare's-tails.

**hot-windy** 'hɒt,wɪndɪ *adj.* (in *Australia*) characterized by the presence of hot winds. see under *wind*.

**house** haʊz *tr.* put away in a house or shed; place under cover; shelter: as, methods of \*housing balloons.

**house-top** 'haʊs,tɒp *n.* the top of a house; roof.

**hover** 'hʌvəz *v.*

1. *intr.* hang or remain suspended in the air over, above, or about a particular place or spot, with or without the flapping of wings, especially when preparing to dart or swoop in some direction; float or remain suspended in air.

2. *tr. (obsolete)* flap or flutter (the wings), so as to maintain itself in the air; as a bird sometimes does.

**hover** 'hʌvəz *n.* an act of hovering, as that of a bird.

**hoverer** 'hʌvə-zəz *n.* a creature or thing that hovers in the air; specifically, any bird that habitually hovers, or practises hovering flight.

**hovering** 'hʌvə-zɪŋ *n.* an act of hovering; the action or condition of hovering; suspension or posing in the air, as with fluttering or outstretched wings.

**hull** hʌl *n.* the frame or body of a dirigible; the float-vessel of an airship: as, an aluminum \*hull divided into sixteen gastight compartments.

**hull-resistance** 'hʌl-zɪ,zɪstns *n.* the resistance which the hull, body, frame or car of a balloon, airship, or flyer,

considered apart from the spars, rigging, and sustaining-surfaces, offers to the air, in flight; body-resistance; head-resistance: contrasted with *drift*.

**humidity** hɔʊ'mɪdɪ-tɪ *n.*

1. the quality or condition of being humid or moist; moisture, dampness.

2. liquid matter, especially condensed water-vapor, which makes a body or locality humid or moist; moisture in the air, such as vapor, mist, or fog; damp.

**humming-bird** 'hʌmɪŋ,bɪ:z d *n.* any bird of the large family Trochilidae, remarkable for the humming sound made by the vibration of the wings, which is more rapid than that of any other kind of bird.

**hurricane** 'hʌzɪ,ken *n.* a violent wind-storm or wind prevailing around the center of a West Indian or other tropical cyclone, whose rate varies from 80 to 130 miles an hour; any storm or tempest in which the wind blows with terrific violence; specifically, a wind (numbered 12 in Beaufort's wind-scale) having a velocity of about 50 meters per second.

*hurricane wind*, see under *wind*.

**hurricane-distance** 'hʌzɪ-ken,dɪstns *n.* the distance of the center of a hurricane from any given point, often roughly calculated from the average rate at which the barometric pressure is falling; the distance of the center of a hurricane according to the law of storms.

**hurricane-range** 'hʌzɪ-ken,zændʒ *n.* a range or region in which hurricanes prevail or occur.

**hurricane-signal** 'hʌzɪ-ken,sɪgnl *n.* a wind-signal used with reference to an approaching hurricane; a hurricane-warning.

**hurricane-track** 'hʌzɪ-ken,tɹæk *n.* the track, path, or course of a hurricane.

**hurricane-warning** 'hʌzɪ-ken,wɔ:z-nɪŋ *n.* a warning of an approaching hurricane; a hurricane-signal.

**hurtle** 'hʌztl *intr.* move with a clattering or clashing noise; dash along with a rattling or rustling sound; rush noisily.

**hurtling** 'hʌztlɪŋ *n.* the action of the verb *hurtle*; rushing, clattering flight or other movement: as, the \*hurtling of a falcon.

**hurtling** 'hʌztlɪŋ *adj.* that hurtles; characterized by noisy rush: as, a \*hurtling gait.

**hydro-aeroplane** ,haɪ-dro'ee-əzə,plæn *n.* a hydroplane equipt with aeroplanes enabling it to rise from the water and fly thru the air; a combination of a hydroplane with an aeroplane flyer; also, an aeroplane with floats.



**hydrodynamics** ,hæi-drə-dar'næmɪks *adj.* the science of the forces acting upon or exerted by liquids, now often including both hydrostatics and hydrokinetics. see *dynamic*.

**hydrogen** 'hæi-drə-dʒɪn *n.* an elementary substance, under ordinary conditions a colorless, odorless gas, burning with a pale-green flame, and the lightest substance known, having a specific gravity of about one fourteenth that of air; used for inflating balloons; hydrogen gas.

*liquid hydrogen*, hydrogen in the liquid form; a colorless liquid obtained by cooling hydrogen gas under great pressure.

**hydrogen-balloon** 'hæi-drə-dʒɪn-bə,lʊn *n.* a balloon whose gasbag is inflated with hydrogen gas.

**hydrographic** ,hæi-drə'gʒæfɪk *adj.* [also spelt *hydrografic*] pertaining or relating to hydrography.

**hydrography** ,hæi'drɔgʒə-fɪ *n.* [also spelt *hydrografy*] the science or description of the seas, lakes, rivers, and other waters of the earth's surface as to distribution, contour, currents, shallows, and otherwise; the study and mapping of the water-features of the earth.

**hydrometeor** ,hæi-drə'mi-ti-əz *n.* a meteor or atmospheric phenomenon dependent upon water-vapor; any one of the aqueous phenomena of the air, as cloud, rain, snow, hail.

**hydrometeorological** hæi-drə,miti-əzə'lɔdʒɪ-kəl *adj.* of hydrometeorology.

**hydrometeorology** hæi-drə,miti-ə'zɔlə-dʒɪ *n.* that branch of meteorology which is concerned with hydrometeors.

**hydroplane** 'hæi-drə,plæn *n.*

1. a machine consisting essentially of a plane or plate designed to be driven by power along the surface of a body of water; a boat designed to ride on planes submerged in or skimming along the surface of water.

2. a plane or plate designed to be attached to the lower part of an aeroplane flying-machine so as to enable the aeroplane to skim along on the surface of the sea or other body of water; a hydroplane plate attached to a flying-machine.

**hydrostatic** ,hæi-drə'stætɪk *adj.*

1. relating to the equilibrium of, and pressure exerted by, liquids, when static or at rest; belonging to hydrostatics; also, depending on air-pressure.

2. floating in or on the water, as certain univalv shells; also, relating or instrumental thereto.

**hygrodeik** 'hæi-gʒə,dæɪk *n.* an instrument for showing the moisture or humidity of the air; a form of hygrometer con-

sisting of a wet-bulb and a dry-bulb thermometer with a scale and pointer between them.

**hygrometer** ,haɪ'gʒəmɪ-təz *n.* an instrument for measuring the humidity of air and other gases; a device for determining the degree of saturation of the atmosphere with water-vapor.

*chemical hygrometer*, a hygrometer in which a known volume of air is past over a hygroscopic substance, as calcium chloride, contained in a drying-tube.

*condensing hygrometer*, a hygrometer which operates by means of the condensation of the atmospheric water-vapor; a dew-point hygrometer.

*Daniell hygrometer*, a condensing or dew-point hygrometer consisting of a bent glass tube ending in two bulbs and working by means of the evaporation of ether.

*dew-point hygrometer*, a hygrometer, as that of Daniell, by means of which the dew-point is first obtained, and thence the humidity of the air is calculated; a condensing hygrometer.

*Dufour's hygrometer*, a hygrometer which operates by diffusion of air thru a porous diaphragm on one side of which the air is kept saturated with aqueous vapor.

*Edelmann's hygrometer*, a hygrometer especially adapted for measuring the tension or volume of the gaseous water-vapor in the air, without taking account of fog-particles.

*Mason's hygrometer*, the psychrometer or wet-and-dry bulb as arranged by Mason.

*Regnault's hygrometer*, a condensing or dew-point hygrometer invented by Regnault.

*Renoux-Matern hygrometer*, a hygrometer by which the quantity of water-vapor required in order to saturate a given volume of air is first determined and the humidity thence calculated.

*Trouton's electrical dew-point hygrometer*, a hygrometer operating by the deposition of a film of dew on a polished metallic surface and the consequent closing of an electric circuit thru this moisture.

*Trouton's gravimetric recording hygrometer*, a hygrometer which operates by recording the weight of a hygroscopic or moisture-absorbing body by means of a stylus on a revolving drum.

**hygrometric** ,haɪ-gʒə'metrɪk *adj.*

1. of hygrometry; hygrometrical; also, hygroscopic.

*hygrometric balance*, a form of hygroscope.

*hygrometric state*, the state of the atmosphere as to humidity or water-vapor.

2. readily absorbing and retaining moisture: as, a \*hygrometric substance, a \*hygrometric plant.

**hygrometrical** ,hɑɪ-gzə'metɪkəl *adj.* same meaning as *hygrometric*.

**hygrometrically** ,hɑɪ-gzə'metɪkəli *adv.* in a hygrometric manner; with respect to hygrometry.

**hygrometricity** ,hɑɪ-gzə-mɪ'tɪsɪtɪ *n.* the property of being hygrometric or of becoming moist by absorbing water from the air.

**hygrometry** ,hɑɪ'gzəmɪ-tɪ *n.* the art of measuring humidity, especially that of the atmosphere.

**hygroscope** 'hɑɪ-gzə,skɒp *n.* an instrument for showing the humidity of the air, as that of Saussure; a hair hygrometer.

**hygroscopy** ,hɑɪ'gzɒskə-pɪ *n.* the art of using or of making hygrosopes; also, the art of observing humidity-conditions, or of making them apparent.

**hygrothermal** ,hɑɪ-gzə'θɜːz-məl *adj.* of the humidity and temperature of the atmosphere considered together.

*hygrothermal area*, an area of the earth's surface over which the atmospheric conditions are included within certain limits as to humidity or temperature.

**hymenopter** ,hɑɪ-mɪ'nɒptəz *n.* any insect of the order Hymenoptera.

**hymenoptera** ,hɑɪ-mɪ'nɒptə-zə *n. pl.* a large order of insects including the ants, wasps, and bees, having (normally) four hymenoid or membranous wings.

**hyperbola** ,hɑɪ'pɜːz-bə-lə *n.* [plural *hyperbolas*] a plane curve consisting of two separate equal infinite branches formed by the intersection of a plane with both branches of a double cone.

**hypopteron** ,hɑɪ'pɒptə-zən *n.* the linear feather-tract which extends from the axilla or arm-pit outward, on the under side of a bird's wing.

**hypoptilum** ,hɑɪ'pɒptɪ-ləm *n.* same meaning as *hyporachis*.

**hyporachis** ,hɑɪ-pə'zɛe-kɪs *n.* [also spelt *hyporhachis*, *hyporhachis*] the accessory or subsidiary rachis, shaft, or plume of a bird's feather which springs from the main stem at the junction of quill and rachis; the hypoptilum; the after-shaft.

**iceberg** 'aɪs,bɜːg *n.* a large mass or mountain of ice detached from a Polar glacier and carried out to sea.

**ice-blink** 'aɪs,bɪŋk *n.* a peculiar whitening of the sky, low down near the horizon, seen in the Arctic regions on ap-

proaching an ice-floe, and caused by the reflection of light by the ice.

**ice-cloud** 'aɪs,klaʊd *n.*

1. any one of the class of clouds or cloudlike bodies comprising the cirrus clouds and cirro-nebulæ, whose component particles are minute ice-crystals; a cirrus; a cirro-nebula: distinguished from *water-cloud*.

2. a low cloud composed of ice-particles or of water-globules colder than ice which, upon contact with solid bodies, adhere as frostwork; a frost-cloud; a rime-cloud.

**ice-crystal** 'aɪs,kɹɪstl̩ *n.* a crystal of ice; one of the minute crystals or particles of which an ice-cloud or cirro-nebula is made up; an ice-particle.

**ice-cycle** 'aɪs,sai-kəl *n.* an apparatus for traveling or coursing on the surface of the ice of rivers, lakes, etc., driven by an aerial screw propeller; a motor-driven ice-boat.

**ice-field** 'aɪs,fi:ld *n.* a field or wide flat expanse of ice, especially of marine ice in Polar regions.

**ice-floe** 'aɪs,fləʊ *n.* a large sheet of floating ice, sometimes several miles in extent; an ice-float; a floe.

**ice-fog** 'aɪs,fɒg *n.* a fog due to wind blowing over ice-fields or ice-floes.

**ice-pack** 'aɪs,pæk *n.* a body of separate pieces or drift-ice closely packed so as to form one ice-field.

**ice-particle** 'aɪs,pɑ:ti-kəl *n.* one of the minute particles of ice occurring suspended in the atmosphere, often forming ice-cloud or cirro-nebula; an ice-crystal.

**ice-sky** 'aɪs,skai *n.* a bright whitish sky or atmospheric appearance near the horizon, in the Polar regions, indicative of fields of ice or snow.

**ice-spicula** 'aɪs,spɪkʊlə *n.* [plural *ice-spiculæ*] a spicula or spicule of ice; an ice-spicule.

**ice-storm** 'aɪs,stɔ:zm *n.* a precipitation of ice from the atmosphere, as a hailstorm or a fall of sleet or rain which freezes or turns to ice upon coming into contact with objects.

**ichthyoid** 'ɪkθi,ɔɪd *adj.* resembling a fish; fish-shaped.

**igniter** 'ɪg'nai-təz *n.* an electric coil or other device in an internal-combustion engine for igniting or setting fire to the explosive mixture of gases with which the cylinder is charged.

**ignition** 'ɪg'nɪʃən *n.* the process or action of igniting or being set on fire; a kindling; specifically, the igniting of the mixture of air and hydrocarbon in the cylinder of an internal-combustion engine, causing the gaseous mixture to expand and thus produce motion.

*hot-tube ignition*, ignition in an internal-combustion engine by means of compressing the explosive gaseous mixture thru a tube which is kept hot by an external flame.

*jump-spark ignition*, a form of electric ignition, in an internal-combustion engine, which utilizes a spark which is made to jump between the gap-terminals of the secondary circuit of an induction-coil.

*make-and-break ignition*, a form of electric ignition, in an internal-combustion engine, which utilizes a spark in a primary circuit which is made and broken mechanically or magnetically.

**ignition-point** ,ɪɡˈnɪʃən,pɔɪnt *n.* the point of time at which the ignition of the explosive gaseous mixture takes place in an internal-combustion engine; that point in the stroke of a gasoline-engine at which the charge is ignited.

**ignition-tube** ,ɪɡˈnɪʃən,tʃəʊb *n.* the tube in an internal-combustion engine in which the ignition of the explosive gaseous mixture takes place, as in the hot-tube system.

**impeller** ɪmˈpeləz *n.* a device for impelling or driving forward; a propeller: as, Gordon's fumifur \*impeller.

**impermeable** ɪmˈpɜːz-mi-ə-bəl *adj.* not permeable; not permitting the passage of gas or other fluid thru its substance, as a gas-tight balloon-envelop.

**impulsion** ɪmˈpʌʃən *n.* the act of impelling or forcing forward; impelling force or action; propulsion.

**incidence** ˈɪnsɪ-dns *n.* the falling of a line, or anything moving in a line, upon a surface; also, the manner of such falling.

*angle of incidence*, see under *angle*.

**index** ˈɪn,deks *n.* a numerical quantity which measures some property of a particular substance or structure, for which it is constant; an exponent; a coefficient.

**Indian** ˈɪndi-ən *adj.*

*Indian summer*, a hazy condition of the air known as dry fog, caused by dust high up in the air, occurring sometimes in November or early December in some parts of the United States and known also in Central Europe.

**indirigible** ,ɪnˈdɪrɪdʒə-bəl *adj.* not dirigible; incapable of being steered.

**indraft** ,ɪnˈdra:ft *n.* [also spelt *indraught*] an inward draft or current, as of air; a drawing or flowing inward.

**inflate** ɪnˈflæet *tr.* blow out or distend, as with wind, air, or gas; fill (a balloon, gasbag, tire) with air or gas.

**inflated** ɪnˈflæe-tɪd *adj.* puffed out or swollen by air or gas.

**inflater** ɪn'flɛɛ-təz *n.* [also spelt *inflator*] one who or that which inflates.

**inflating-gas** ɪn'flɛɛ-tɪŋ,gæs *n.* gas used for inflating a balloon or the gasbag of an airship; balloon-gas.

**inflating-neck** ɪn'flɛɛ-tɪŋ,nek *n.* the neck or tube through which a balloon is inflated or filled with gas; the inflation-tube.

**inflation** ɪn'flɛɛ-ʃən *n.*

1. the action of inflating or filling with air or gas; filling.

2. the condition of being inflated with air or gas; distended or swollen condition.

**inflation-tube** ɪn'flɛɛ-ʃən,tʃəub *n.* the tube or pipe through which a balloon is inflated; the inflating-neck.

**inflowing** 'ɪn,fləʊ-ɪŋ *adj.* flowing or blowing inward, that is, toward the land; blowing inland: as, an \*inflowing sea-breeze.

**inrush** 'ɪn,rʌʃ *n.* a rushing in; a rapid inflow, as of air; an inrun; an influx.

**instability** ,ɪnstə'biɪl-ɪ-ti *n.* lack of stability, steadfastness, or balance; unsteadiness: as, rotative \*instability.

**intake** 'ɪn,tɛk *n.* the amount or quantity of air taken in by, or passing thru, a propeller or air-screw.

**intercity** 'ɪntəz,sɪtɪ *adj.* extending or taking place between cities: as, an \*intercity flight.

**interplane** 'ɪntəz,pɛɛn *adj.* [also spelt *inter=plane*] extending between the planes or aerofóils of a flying-machine: as, an \*interplane strut.

**inversion** ɪn'vɛɛʃən *n.* same meaning as *inversion-zone*.

**inversion-zone** ɪn'vɛɛʃən,zəʊn *n.* a horizontal zone or canopy consisting of compact masses of warm air which have risen and spread out, floating in the cold atmosphere at a considerable altitude: as, the upper \*inversion-zone. compare *zone of discontinuity*, under *zone*.

**inviscid** ,ɪn'vɪsɪd *adj.* not viscid; having no viscosity; not sticky.

**irrotation** ,ɪzə'tɛɛ-ʃən *n.* absence of rotation; want of rotatory movement.

**irrotational** ,ɪzə'tɛɛ-ʃə-nɪ *adj.* not rotational; characterized by absence of rotation; destitute of rotatory motion; possessing irrotation.

**isametral** ,aɪ-sə'metrəl *adj.* having the same average climatic conditions during a specified period; marking equal-

ity of climate; passing thru points or places so characterized: as, an \*isametral line.

**isametral** ,aɪ-sə'metɹəl *n.* an isametral line.

**isanomal** ,aɪ-sə'nəməl *n.* a line, as on a wether-map, which passes thru points or places on the earth's surface having equal anomalies of temperature, atmospheric pressure, etc.; an isanomalous line.

**isanomalous** ,aɪ-sə'nəmə-ləs *adj.* having or marking equal anomalies or departures from normal meteorologic conditions.

**isobar** 'aɪ-sə,bɑːz *n.* a line, as on a wether-map, which passes thru points or places on the earth's surface where the sea-level barometric pressure is the same (at a given time, or on the average for a given period); an isobaric line.

**isobaric** ,aɪ-sə'bæzɪk *adj.* of equal weight or pressure; marking equality of atmospheric pressure; passing thru points or places on the earth's surface where the atmospheric pressure is the same; isobarometric: as, an \*isobaric line.

**isobarometric** ,aɪ-sə-bæzə'metɹɪk *adj.* of equal barometric conditions; marking equality in atmospheric pressure; passing thru points or places on the earth's surface having such conditions, as a line on a wether-map; isobaric.

**isobront** 'aɪ-sə,bɹɒnt *n.* a line, as on a wether-map, which passes thru points or places on the earth's surface at which the first thunder is heard at the same instant of time; a line of equal front. In France the isobront is drawn thru the points where the mean of the time at which the first and last thunder is heard is the same instant.

**isochimal** 'aɪ-sə,kɑɪ-məl *adj.* [also spelt *isocheimal*] of an isochime or isochimes; of equal mean summer temperature; isochimenal; isochimonal: as, \*isochimal lines, an \*isochimal chart. compare *isothermal*.

**isochime** 'aɪ-sə,kɑɪm *n.* [also spelt *isocheim*] a line, as on a wether-map, which passes thru points or places on the earth's surface where the mean winter temperature is the same; an isochimal line.

**isochimenal** ,aɪ-sə'kɑɪ-mɪ-nəl *adj.* same meaning as *isochimal*.

**isochimonal** ,aɪ-sə'kɑɪ-mə-nəl *adj.* [also spelt *isocheimonal*] same meaning as *isochimal*.

**isohelic** ,aɪ-sə'hɪɪ-lɪk *adj.* having equal amounts of clear sunshine; marking equality as regards sunshine: as, an \*isohelic line.

- isohelic** ,aɪ-sə'hii-lɪk *n.* an isohelic line.
- isohyetal** ,aɪ-sə'hai-tl̩ *adj.* of equal rainfall; marking equality of rainfall; passing thru points or places on the earth's surface where the amount of rain which falls is the same: as, an \*isohyetal line, an \*isohyetal chart.
- isopag** 'aɪ-sə,pæg *n.* a line, as on a wether-map, which passes thru points or places on the earth's surface where the conditions as to frozen water-surfaces, as of rivers, lakes, harbors, etc., are the same.
- isopyc** 'aɪ-sə,pɪk *n.* [also spelt *isopyk*] an isopycnic line; an isopycnic: the inverse of *isostere*.
- isopycnal** ,aɪ-sə'pɪknəl *adj.* same meaning as *isopycnic*.
- isopycnic** ,aɪ-sə'pɪknɪk *adj.* of equal density; marking equality of atmospheric density; passing thru points or places in the earth's atmosphere where the density of the air is the same; isopycnal: as, an \*isopycnic line.
- isopycnic** ,aɪ-sə'pɪknɪk *n.* an isopycnic line; an isopyc.
- isostath** 'aɪ-sə,stæθ *n.* a line which passes thru points or places in the earth's atmosphere where the air has equal buoyancy, due allowance being first made for variation in the force of gravitation.
- isostere** 'aɪ-sə,stɪ:z *n.* a line which passes thru points or places in the earth's atmosphere where the air has equal specific volume; an isosteric line: the inverse of *isopyc*.
- isothermal** 'aɪ-sə,θɪ:zəl *adj.* of an isothere or isotheres; of equal mean summer temperature: as, \*isothermal lines, an \*isothermal chart.
- isothermal** 'aɪ-sə,θɪ:zəl *n.* an isothermal line; an isothere.
- isothere** 'aɪ-sə,θɪ:z *n.* a line, as on a wether-map, which passes thru points or places on the earth's surface having equal mean summer temperature; an isothermal line.
- isotherm** 'aɪ-sə,θɪ:zm *n.* a line, as on a wether-map, which passes thru points or places on the earth's surface where the mean temperature is the same; an isothermal line.
- isothermal** ,aɪ-sə'θɪ:z-məl *adj.* of equal heat; of the same temperature; marking equality of temperature; isothermous: as, an \*isothermal chart, \*isothermal relations.
- isothermal line*, a line, as on a wether-map, which passes thru points or places on the earth's surface where the mean temperature is the same; an isothermal; an isotherm.
- isothermal zone*, a zone or belt on either side of the earth's equator having the same mean temperature.
- isothermal** ,aɪ-sə'θɪ:z-məl *n.* an isothermal line; an isotherm.



**jet** dʒet *n.*

*jet propulsion*, propulsion by means of a jet; a proposed mode of propelling airships by means of a powerfully emitted stream of air, steam, or gaseous products of explosion.

**jettison** 'dʒɛtɪ-sən *n.* the action of throwing goods or material overboard, as in order to lighten a balloon or airship in distress; also, the goods thus thrown out; jetsam.

**kaguan** ,ka'gwɑ:n *n.* a flying-lemur, colugo, or kubeng.

**kedge** kedʒ *intr.* warp; move a balloon by means of a rope attached to an anchor.

**keel** kiil *n.* a long structure or framework of wood or other material extending lengthwise under an airship or kite for purposes of support, rigidity, or equilibration; the keel-like understructure of a dirigible; an aeroplane fixed in a vertical position underneath or in the hinder part of certain monoplanes or other aircraft as an aid in maintaining lateral stability.

*on an even keel*, in a position such that the keel is level or horizontal; in horizontal position: said of an airship.

**keel-cloth** 'kiil,klə:θ *n.* a cloth or sail placed longitudinally at the lower part of an airship or keel-kite, to aid in equilibrating or balancing the craft in flight.

**keel-kite** 'kiil,kait *n.* a kite, invented by H. H. Clayton, in which a keel is employed to aid in equilibration or balancing.

**keel-plane** 'kiil,plæn *n.* a plane or aeroplane serving as a keel in a flying-machine; a keel in the form of a plane.

**khamsin** 'kæmsɪn *n.* [also spelt *kamsin*] a hot and sometimes pestilential south or southeast wind which blows in Egypt at intervals for a period of about 50 days in March, April, and May, filling the air with sand from the desert.

**kinematic** ,kɪnɪ'mætɪk *adj.* relating to motion.

**kinematics** ,kɪnɪ'mætɪks *n.* the science of motion: distinguished from *dynamics*.

**kinetic** kɪ'netɪk *adj.* of or pertaining to motion; causing motion; motory. compare *static*, *dynamic*, *kinematic*.

**kite** kait *n.*

1. a long-winged diurnal bird of prey of the family Falconidae and subfamily *Milvinae*; a glede.

2. an apparatus consisting of a light frame with paper or other thin material stretched upon it, designed so that it

may be flown or floated in the air by means of a long string or wire attached to it.

*aerocurve kite*, a cellular kite, invented by C. H. Lamson, the main supporting-surfaces of which are aerocurves or curved aerofoils.

*auxiliary kite*, a kite which is auxiliary or supplementary to the main or highest kite, being attached to the line of the main kite in order to relieve the strain on the main kite or to support the line.

*Bell kite*, a composite kite made up of tetrahedral cells, invented by A. G. Bell about 1903; a tetrahedral kite.

*biplane kite*, a kite having the form of a biplane; a kite with two parallel superposed sustaining-planes.

*bipolar kite*, a kite tried by Bazin in 1888, the frame of which consists of a bow and a central stick, both of which are flexible.

*bow kite*, a kite whose frame consists of two sticks, one of which is a flexible rod at the head, bent to a bow, and the other a main central vertical spine (at right angles to the bow) to which the bow-strings are fastened.

*box kite*, a box-like kite or a kite made up of box-like parts; a cellular kite, such as that of Hargrave, Clayton, or Marvin, in which the front and rear cells are rectangular parallelepipeds.

*boys' kite*, any one of the various forms of kite commonly made or flown by boys; a flat or single-plane kite, such as the bow kite, the diamond kite, the hexagonal kite, or the star kite, whose frame consists of two or more cross sticks.

*catamaran kite*, see under *catamaran*.

*cellular kite*, a kite consisting of cellular compartments or parts, originally designed by Lawrence Hargrave of New South Wales, Australia, about 1892; a kite made up of open cells, which may be of rectangular, tetrahedral, circular, or other shape, and either simple or composite; a multi-plane kite; a box kite.

*Chinese kite*, a kite of a kind especially common in China, Japan, and the Malay Peninsula, made to resemble a bird, dragon, man, or other object.

*circular kite*, a kite of circular shape; a round kite.

*collapsible kite*, a kite which is collapsible or can be folded up for transportation.

*diamond kite*, a flat diamond-shaped kite; a single-plane kite having the form of a rhomb; a lozenge-shaped boy's kite.

*double kite*, a kite consisting of two sustaining-units, as two Malay kites upon one backbone.

*Eddy kite*, a form of Malay kite which was introduced by Eddy about 1894, and was one of the first kites used in the United States for scientific purposes. The bowd cross-stick is placed at a point distant 18 per cent of the length of the vertical stick from the top of the kite.

*electrical kite*, a kite covered with silk or varnished paper and armed with a wire, such as that employed by Benjamin Franklin to verify his hypothesis respecting the identity of electricity and lightning.

*folding kite*, a kite that may be folded, for transportation; a collapsible kite.

*Hargrave kite*, any one of the various forms of cellular kites invented by Lawrence Hargrave of New South Wales, Australia, about 1893 or subsequently; a box kite.

*hexagonal kite*, a flat kite of hexagonal form; a single-plane kite having the form of a hexagon or six-angled figure; a six-sided boy's kite.

*Japanese kite*, a tailless kite, flexible in both dimensions, used in Japan and now commonly on sale in toy-shops.

*Malay kite*, a kind of lozenge or diamond-shaped kite, commonly tailless, much used in the Malay Peninsula. The frame consists of two flexible sticks crossing at right angles, one of the sticks being either so elastic as to bend easily in the wind, or permanently bent in the form of a bow.

*military kite*, a kite used for military or war purposes, sometimes man-carrying; a war-kite.

*monoplane kite*, a kite having the form of a monoplane; a single-plane kite; a flat kite; a boy's kite.

*multiplane kite*, a kite made of many, or several, planes or aerofoils; a cellular kite.

*multiple-disk kite*, a kite consisting of a series of superposed disks or kites, such as the life-saving kite patented in Great Britain in 1859 by E. J. Corder, or as the Chinese dragon-kite.

*musical kite*, a Chinese kite provided with a bamboo resonator which in flight produces an intense and plaintive sound audible at a great distance.

*rigid kite*, a kite which is rigid or unyielding; a kite with a stiff frame; a non-flexible kite.

*rope-bearing kite*, a kite proposed by Jobert in 1887, for bearing a life-saving rope to a wrecked vessel.

*self-registering kite*, a kite carrying self-registering meteorological instruments, sent up in investigations of the atmosphere.

*sextuple kite*, a kite consisting of six sustaining-units, as six Malay kites upon one backbone; a sixfold kite.

*single kite*, a kite which has but a single sustaining-surface; a single-plane kite; a simple or non-multiple kite.

*single-plane kite*, a kite having but a single sustaining-plane; a monoplane kite; a uniplane kite; a flat kite; a boy's kite.

*star kite*, a flat star-shaped or pentagonal kite; a single-plane kite having the form of a star or pentagon; a five-angled or five-sided boy's kite.

*tailless kite*, a kite having no equilibrating tail, as a Japanese kite: as, the Eddy Malay \*tailless kite.

*tetrahedral kite*, a kite having a tetrahedral form, or made up of tetrahedral compartments, invented by A. G. Bell about 1903; a simple or composite cellular kite whose cell or cells have the general form of a tetrahedron or four-sided solid figure.

*triple kite*, a kite, consisting of three sustaining-units, as three Malay kites upon one backbone; a threefold kite.

*uniplane kite*, a kite having only a single plane or aerofoil; a single-plane kite; a flat kite; a boy's kite.

**kite** *kart v.*

1. *intr.* fly, soar, or glide thru the air like a kite; move along after the manner of a paper kite.

2. *tr.* cause to fly high in air like a paper kite.

**kite-aeroplane** 'kart-εε-εζə,plæn *n.* an aeroplane used in or as a kite; a sustaining-surface in a kite.

**kite-ascension** 'kart-ə,sensən *n.* an ascension of a kite into the air; a kite-ascent.

**kite-ascent** 'kart-ə,sent *n.* same meaning as *kite-ascension*.

**kite-balloon** 'kart-bə,loun *n.* a captiv balloon which flies somewhat in the manner of a kite; a longish balloon held captiv (by means of ropes attacht not to the basket but to the front and back of the gasbag or balloon itself), which sets itself diagonally, like a kite, to the direction of the wind: first proposed by A. Douglas, in 1845, and now used considerably in meteorologic work.

**kite-battle** 'kart,bætl *n.* a battle, fight, or conflict between kites; a kite-game in which the kites are made to war or fight with one another. Kite-battles constitute a regular sport in Japan.

**kite-boat** 'kart,boot *n.* a boat which is especially designed to be propeld or pold along by a flying kite.

**kite-building** 'kart,bıldrɪŋ *n.* [also spelt *kite-bilding*] the art of bildng or constructing kites; kite-making.

**kite-carriage** 'kart,kæzɪdʒ *n.* a man-carrying apparatus described by G. Pouceck of Bristol, England, about 1827, con-

sisting of a kite with a chair swung just below, and provided with cords for regulating flight.

**kite-cell** 'kɑɪt,sɛl *n.* a cell intended for use as or in a kite; one of the cells or compartments of a cellular kite.

**kite-club** 'kɑɪt,kɫʌb *n.* a club or society devoted to kite-flying, as in Japan

**kite-designer** 'kɑɪt-dɪ,zɑɪ-nɜz *n.* one who designs or contrives kites.

**kite-designing** 'kɑɪt-dɪ,zɑɪ-nɪŋ *n.* the act or process of designing kites; the occupation of a kite-designer.

**kite-experiment** 'kɑɪt-ɪk,speɪzɪ-mənt *n.* an experiment in kite-flying; a testing of kites.

**kite-expert** 'kɑɪt,ɛk-spɜ:t *n.* an expert on kites; one skilled in the art of kite-making or kite-flying.

**kite-factory** 'kɑɪt,fæktɔ-zɪ *n.* a factory where kites are made; a kite-builder's establishment.

**kite-fancier** 'kɑɪt,fænsi-əz *n.* one who fancies, or makes and flies kites; a kite-flyer.

**kite-flier** 'kɑɪt,flaɪ-əz *n.* same meaning as *kite-flyer*.

**kite-flight** 'kɑɪt,flaɪt *n.*

1. the mode of flight characteristic of paper kites.

2. a flight made by a kite; the action of flying a kite: as, the highest \*kite-flights.

**kite-flyer** 'kɑɪt,flaɪ-əz *n.* [also spelt *kite-flier*] one who flies kites; a kite-fancier.

**kite-flying** 'kɑɪt,flaɪ-ɪŋ *n.* the practice, art, or amusement of flying kites.

**kite-frame** 'kɑɪt,freɪm *n.* the frame or framework of a kite.

**kite-game** 'kɑɪt,geɪm *n.* a game or sport in which kites are flown, as in Japan.

**kite-house** 'kɑɪt,haʊs *n.* a house or structure from which a meteorologic kite is flown or controlled.

**kite-like** 'kɑɪt,lɑɪk *adj.* [also spelt *kitelike*] like a kite in form or appearance; resembling a kite.

**kite-line** 'kɑɪt,lɑɪn *n.* the line by which a kite is flown or controlled; a kite-string.

**kite-meteorograph** 'kɑɪt-mi,tɔə-gzɑ:f *n.* [also spelt *kite-meteorograf*] a small meteorograf designed to be carried by a kite; a combination of a barograf, thermograf, and anemograf adapted for use on a kite designed for exploring the atmosphere.

**kite-observation** 'kɑɪt-əbzəz,vɛe-ʃən *n.* an observation or accurate remarking of weather-conditions made by means of a kite or kites.

**kite-photograph** 'kɑɪt,fotə-gzɑ:f *n.* [also spelt *kite-foto-*

*graf]* a fotograf taken by means of a camera attacht to a kite or kite-balloon.

**kite-reel** 'kairt,ziil *n.* a reel for letting out or polling in the line or string of a kite.

**kite-sail** 'kairt,seel *n.* the sail or sustaining-surface of a kite, or a sail or sustaining-surface similar to that of a kite.

**kite-shaped** 'kairt,ʃept *n.* shaped like a kite; having the form of a kite.

**kite-station** 'kairt,steɪ-sən *n.* a station, or point on the ground, from which kites are flown in meteorologic work.

**kite-string** 'kairt,striŋ *n.* the string or cord by which a kite is flown or controlled; a kite-line.

**kite-surface** 'kairt,sɜ:ʃɪs *n.* the surface or sustaining-surface of a kite.

**kite-track** 'kairt,tɹæk *n.* a track, course, or grounds for racing or testing kites.

**kite-winch** 'kairt,wɪntʃ *n.* a winch or windlass used in controlling a kite-line.

**kite-wind** 'kairt,wɪnd *n.* a south or southwest wind in Siam, prevailing in the latter part of February and early March.

**kite-wire** 'kairt,waiɹ *n.* the wire by which a kite is flown or controlled; a wire kite-line.

**kite-work** 'kairt,wɜ:zk *n.* work done with or by the aid of kites, as meteorologic investigation.

**knock-down** 'nɒk,daʊn *adj.* knocked down or taken apart, as a flying-machine for shipment: as, the machine was shrpt in \*knock-down form.

**kona** 'kɒn-nə *n.* a southwest wind, usually associated with rain, interrupting the northeast tradewind, occurring in the Hawaiian Islands, principally from December to April.

**krypton** 'ksɪp,tɒn *n.* a constituent gas of the atmosfere discovered by Ramsay in 1898.

**kubong** ,ku'boŋ *n.* a flying-lemur, colugo, or kaguan.

**land** lænd *n.* the solid portion of the earth's surface, as contrasted with *sea, water*; also, ground, soil; and further, country, territory, landed property.

**land** lænd *v.*

1. *tr.* bring (an airship or its passengers) to land; set on the ground; disembark.

2. *intr.* come to land or earth with, in, or from an airship; get out on the ground; disembark. compare *alight*.

**land-area** 'lænd,e:-zi-ə *n.* [also spelt *land area*] the area or region of the land as distinguished from the water or air; also, an area or tract of land. compare *water-area*.

**land-bird** 'lænd,bɜ:zd *n.* any bird which habitually lives on or above the land. compare *sea-bird*.

**land-breeze** 'lænd,bɜ:ɪz *n.* a breeze or light wind blowing from the land toward the sea; specifically, a regular night-wind blowing seaward on the coasts of continents and islands; a land-wind. compare *sea-breeze*.

**land-flight** 'lænd,flaɪt *n.* a flight over the land or land-area, as distinguished from a flight over the sea or other large body of water. compare *water-flight*.

**landing** 'lændɪŋ *n.*

1. the act or process of bringing an airship to rest on the land.

*emergency landing*, a landing due to some emergency or unexpected happening, such as engine-trouble.

2. a place or spot on the land or earth suitable for bringing an airship to rest; a place of coming to earth or land; a landing-place; an alighting-place.

**landing-area** 'lændɪŋ,ɛ:-zi-ə *n.* an area or tract upon which an airship may land or come to earth; an alighting-area.

**landing-certificate** 'lændɪŋ-sɜ:tɪfɪ-kət *n.* a certificate or written permit authorizing one to land or come to earth with or in a balloon or airship.

**landing-chassis** 'lændɪŋ,ʃæsɪs *n.* [plural *landings-chassis*] the chassis or under-framework upon which a flying-machine lands.

**landing-ground** 'lændɪŋ,gɹaʊnd *n.* ground or land area which is suitable for landing in aeroplanes or other airships.

**landing-hawser** 'lændɪŋ,hɜ:-sɜ: *n.* a hawser or large rope attached to and cast from a dirigible balloon when landing.

**landing-operation** 'lændɪŋ-əpə,zeɪ-ʃən *n.* the operation or process of landing a balloon or bringing it to earth; the act of alighting.

**landing-pit** 'lændɪŋ,pɪt *n.* a pit dug in the earth, proposed as a place for landing and sheltering airships.

**landing-place** 'lændɪŋ,plɛs *n.*

1. a place where an aeroplane or other airship lands or lodges, after a fall; a place where an involuntary landing is made.

2. a place or spot on the earth or ground suitable for landing or bringing a balloon or airship to rest; a landing-spot; an alighting-place; a landing.

**landing-point** 'lændɪŋ,pɔɪnt *n.* a point or spot on the earth or ground suitable for landing or bringing an airship to rest; a landing-spot; a landing-place.

- landing-privilege** 'lændɪŋ,pɹɪvɪ-lɪdʒ *n.* a privilege to land or come to earth with or in a balloon or airship.
- landing-skate** 'lændɪŋ,skæɪt *n.* a skate-like runner or skid attacht to the under part of an aeroplane or other airship as an aid in landing or alighting upon the ground.
- landing-skid** 'lændɪŋ,skɪd *n.* a skid or ski-like runner attacht to the under part of an aeroplane or dirigible as an aid in landing or alighting upon the ground; a landing-skate; a runner; a skid.
- landing-speed** 'lændɪŋ,sprɪd *n.* the speed with which a landing or descent to the earth is made, as by a man falling from a height.
- landing-spot** 'lændɪŋ,spɒt *n.* a spot or place where a landing is or may be made with an airship; a landing-place.
- landing-stage** 'lændɪŋ,steɪdʒ *n.* a stage or platform, sometimes floating on water, for the landing of airships or their passengers or freight.
- landing-station** 'lændɪŋ,steɪʃən *n.* a station consisting of or provided with suitable grounds or structures for landing dirigible balloons or airships.
- landing-wheel** 'lændɪŋ,wɦɪl *n.* one of the wheels attacht to the under part of an aeroplane flying-machine as an aid in landing or alighting upon the ground.  
*main landing-wheels*, the principal landing-wheels; the chief wheels of an alighting-gear.
- landmark** 'lænd,mɑ:zɪk *n.* an object in the landscape which, by its conspicuousness or convenience, serves as a guide in directing one's course when voyaging in a balloon or airship.
- land-sailing** 'lænd,sæɪ-lɪŋ *adj.* habitually sailing or soaring over the land or land-area; capable of sailing over the land: as, \*land-sailing birds.
- landscape** 'lænd,skeɪp *n.* a view or prospect of natural inland scenery such as can be taken in at a glance from one point of view; the portion of the earth's surface seen by, or in sight for, an observer at any particular moment.
- landsman** 'lændz,mən *n.* [plural *landsmen*] one who lives or stays on the land or surface of the earth, as distinguished from air-sailors or airmen; an earthman.
- land-surface** 'lænd,sɜ:fsɪs *n.* a surface which is of land rather than of water; the ground; the terrain: distinguished from *water-surface*. compare *land surface*, under *surface*.
- land-wind** 'lænd,wɪnd *n.* a wind blowing from the land seaward; a land-breeze.
- lap** læp *n.* a single round or turn of a flying-course or circuit of flight; one of the number of turns round a race



track or path of light which are required to complete the course.

**larboard** 'lɑ:z,bɔ:zd *adj.* on that side of an aircraft which is on the left as one faces the bow; port: the opposite of *starboard*.

**latitude** 'lætɪ,tʃud *n.* distance north or south measured in degrees along the meridian vertically below the observer, on the surface of the earth; especially, the angular distance (of the plane passing thru any point, place, or position on or above the earth's surface and the center of the earth, perpendicular to the plane of the meridian at that point) north or south from the plane of the equator of the earth; also, a locality as marked by parallels of latitude; in plural, regions, climes, or parts of the world.

*calm latitude*, same meaning as *region of calms*. see under *calm*.

*horse latitudes*, same meaning as *Calms of Cancer*. see under *calm*.

**lattice-girder** 'lætɪs,gɜ:z-dəz *n.* [also spelt *lattice girder*] a latticed girder or beam often used in the framework of aerial vehicles; a compound longitudinal structural support consisting of two horizontal bars connected by vertical and diagonal bars cross so as to resemble lattice-work.

**launch** 'lɑ:ntʃ *tr.* cause to move or slide into the air; start in flight; start; send off: as, \*launching a kite.

**launching-apparatus** 'lɑ:n-tʃɪŋ-əpə,zæe-təs *n.* an apparatus with or from which to launch an aerodrome or flying-machine; a launching-mechanism; a starting-mechanism.

**launching-derrick** 'lɑ:n-tʃɪŋ,dəzɪk *n.* a derrick or catapult used in launching a flying-machine; a starting-derrick; a pylon.

**launching-device** 'lɑ:n-tʃɪŋ-dɪ,vaɪs *n.* a device or apparatus used for launching a flying-machine; a launching-mechanism; a starting-device.

**launching-ground** 'lɑ:n-tʃɪŋ,gɜ:ʊnd *n.* a ground or field from which flying-machines may be launched into the air or started in flight.

**launching-mechanism** 'lɑ:n-tʃɪŋ,mekə-nɪzəm *n.* a mechanism with or from which to launch an aerodrome or flying-machine; a launching-apparatus; a launching-device; a starting-apparatus.

**launching-platform** 'lɑ:n-tʃɪŋ,pɹæt-fə:zm *n.* a platform, as on the deck of a water-ship, from which flying-machines may be launched into the air or started in flight.

**launching-rail** 'lɑ:n-tʃɪŋ,zæɪl *n.* a rail or continuous bar,

as of wood, along which a flying-machine is run in launching it into the air; a monorail launching-track.

**launching-scow** 'lɔ:n-tʃɪŋ,skəʊ *n.* a scow or large flat-bottomed boat used as a launching-platform for a flyer.

**launching-staff** 'lɔ:n-tʃɪŋ,stɑ:f *n.* a staff used for launching an experimental aerofoil into the air. It consists of a straight rod a few feet in length, capped with a small rectangular platen on which the aerofoil is carried; a launching-stick.

**launching-stick** 'lɔ:n-tʃɪŋ,stɪk *n.* a stick or stick-like device for launching an experimental aeroplane or aerofoil into the air; a launching-staff.

**launching-track** 'lɔ:n-tʃɪŋ,tɹæk *n.* a track or railway along which a flying-machine is run in launching it into the air.

**launching-vehicle** 'lɔ:n-tʃɪŋ,vɪ-i-kəl *n.* a vehicle, such as an automobile or a boat, upon which a flying-machine may be mounted and moved along so as to launch it into the air.

**law** lɔ: *n.* a principle or proposition which expresses the constant or regular order of certain phenomena; a general formula or rule to which all things or events of a given class tend to conform.

*Allen's law*, the normal law of skin-friction as stated by H. S. Allen.

*Ferrel's law*, the law or principle, as formulated by William Ferrel in 1854, that a body moving in any direction along the surface of the earth is deflected toward the right in the northern hemisphere and toward the left in the southern hemisphere by an amount which varies directly as the velocity of the body and as the sine of the latitude.

*Galton's anticyclonic law*, see under *anticyclonic*.

*Langley's law*, the law or principle that (under certain conditions) the power required to propel an aeroplane diminishes indefinitely as the speed increases.

*law of Avanzini*, the law or principle that as the speed of an inclined or oblique plane moving thru a fluid increases, and as the angle of incidence becomes less, the center of pressure moves toward the rear of the plane.

*law of slip*, the law to which the slip of a propeller or other solid body which is moving thru a fluid conforms; the principle that, at low pressures, the relative motion of a gas along a solid surface is the same as tho the solid surface were removed to a distance equal to twice the mean free path of the gaseous particles and were replaced by a layer of gas at rest.

*law of storms*, the law or principle that the distance of

the center of a hurricane or other such storm from any given point has a certain rough relation to the average rate at which the barometric pressure is falling.

*Maxwell's law of viscosities*, the law or principle that the viscosity of a gas is independent of its pressure.

*sine law*, same meaning as *sine=square law*.

*sine=squared law*, same meaning as *sine=square law*.

*sine=square law*, the law or principle stated by Isaac Newton, that in a (Newtonian) fluid the resistance to a moving solid surface varies directly as the square of the sine of the angle of incidence; the *sine=squared law*; the *sine law*.

**leaden** 'ledn *adj.* [also spelt *leden*] having the color of lead; dull=colored; gloomy: as, a \*leaden sky.

**leading-angle** 'li-dɪŋ,æŋgəl *n.* the angle of a wing or other aerofoil which is in leading or forward position; the angle of the leading or advancing edge; the angle of entry: the opposite of *trailing-angle*.

**leakage** 'li-kɪdʒ *n.* the action of leaking; gradual escape of inflating-gas, as thru a hole or orifices in a balloon=envelop.

**lee** li *n.* the sheltered side of an airship, the land, an eminence, or other object; the side turned away from the wind.

*lee shore*, the shore or coast on the lee side of the ship; the shore toward or against which the wind blows; the leeward shore.

**leeward** 'li-wəd *adv.* toward the lee or side which is turned away from the wind; toward the sheltered side: opposed to *windward*.

**leeward** 'li-wəd *adj.* away from the wind; farthest from the point toward which the wind blows: the opposite of *windward*.

**leeward** 'li-wəd *n.* the part or side which is sheltered from the wind; the sheltered side; the lee.

**leewardly** 'li-wəd-dli *adj.* (*nautical*) apt to fall to leeward: opposed to *weatherly*.

**leg** leg *n.* a run made (by a water=ship) on a single tack; a flight made in a single direction or over a single division or section of the whole course.

**leonid** 'li-ə-nɪd *n.* a falling star or meteor which appears to issue or hail from the constellation Leo.

**lepidopter** ,ləprɪ'dɒptəz *n.* any insect of the order lepidoptera.

**lepidoptera** ,ləprɪ'dɒptə-zə *n. pl.* a large order of insects comprising the butterflies and moths, characterized by having four membranous wings covered with scales; the scaly=winged insects.

**lever-arm** 'li-vəz,ɑ:zm *n.* the arm which connects one of the controlling-levers, as in a Wright biplane, with the corresponding lever=crank in the hēd=piece of the machine.

**lever-crank** 'li-vəz,ksæŋk *n.* the crank or short rotating bar, as in the hēd=piece of a Wright biplane, which is connected (by means of the corresponding lever=arm) with one of the controlling-levers.

**levitation** 'levɪ'tee-ʃən *n.* the action or process of rising in virtue of lightness or buoyancy: the opposite of *gravitation*.

**lifeboat** 'laɪf,bʊt *n.* a boat specially constructed for life=saving, as one attached to an airship at sea, to be used in case of downfall.

**lifebuoy** 'laɪf,bu:ɪ *n.* a life=preserver; a life=belt.

**life-kite** 'laɪf,kart *n.* a kite flown from a vessel wrecked on a lee shore for the purpose of sending a life=saving line to the shore.

**life-preserver** 'laɪf-psɪ,zb:z-vəz *n.* a lifebuoy; a life=belt.

**life-saving** 'laɪf,sæ-vɪŋ *adj.* organized for or devoted to saving life at sea: as, \*life=saving servis.

**lift** *lift n.* (*obsolete*) the sky; the upper regions; the atmosphere; the air.

**lift** *lift v.*

1. *tr.* raise into the air; cause to rise; elevate.

2. *intr.* rise into the air; begin to glide or fly into the air; leave the earth in flight, as an aeroplane flying=machine does just after the get=off.

**lift** *lift n.* the action or mode of lifting in or into the air; a rising, a raising; elevation; tendency to lift or rise, as of a balloon; lifting=power; specifically, the force with which a fluid, as the air, presses vertically upon an aerofēil, aeroplane, kite, or airship; the vertical component of the air=pressure upon an airship; the vertical component of the pull on a kite=string.

2. a going up, as of a passenger in a balloon; an ascent into or thru the air; an air=trip.

**lifter** 'lɪftəz *n.* something which lifts or is used in lifting or raising: as, both surfaces act as \*lifters.

**lifting-capacity** 'lɪftɪŋ-kə,pæsi-tɪ *n.* capacity or ability to lift or raise or rise into the air; lifting=power.

**lifting-effect** 'lɪftɪŋ-ɪ,fekt *n.* the effect or result of lifting or raising; raising=effect.

**lifting-force** 'lɪftɪŋ,fɔ:z *n.* force applicable to or tending to lift; lifting=power.

**lifting-power** 'lɪftɪŋ,pau-əz *n.* power or capacity to lift or raise (an aeroplane or airship) in the air; lifting=force;

lifting=capacity: as, the \*lifting=power of gas; the \*lifting=powers of hot air.

**lifting-propeller** 'lɪftɪŋ-prɒpələz *n.* a propeller of an airship whose function is to lift or raise the airship in the air; a lifting=screw; a vertical screw.

**lifting-screw** 'lɪftɪŋ-skruː *n.* a revolving screw designed for lifting an airship; a gyrating helical aerofoil for raising a flying=machine into or thru the air; a lifting=propeller.

**lifting-test** 'lɪftɪŋ,tɛst *n.* a test or trial of the lifting=powers of a helicopter or other mechanism.

**lifting-wheel** 'lɪftɪŋ,wɦil *n.* a wheel or screw used to lift or raise an air=machine; a lifting=screw.

**lighter-than-air** 'laɪ-təz-də'neɪz, (*assumptively*) 'laɪ-təz-də'neɪz *adj.* possessing less weight in proportion to bulk than the air or atmosphere; of less specific gravity than the air: said of balloons or dirigibles which depend upon gases lighter than the air, or upon rarified air or a vacuum for sustaining=power: the opposite of *heavier-than-air*.

**lightning** 'laɪt-nɪŋ *n.* the visible discharge of electricity between one group of clouds and another or between the clouds and the ground.

*ball lightning*; lightning in the form of a slowly moving ball of fire which finally explodes, sometimes seen in heavy downpours of rain, and consisting of incandescent rarified air and gas.

*chained lightning*, same meaning as *chain lightning*.

*chain lightning*, lightning which assumes the form of a zigzag or broken line; forked lightning.

*forked lightning*, zigzag lightning; chain lightning.

*sheet lightning*, lightning in which a wide surface is illuminated at once, as summer=lightning or heat=lightning.

*summer lightning*, see *summer=lightning*.

**lightning-flash** 'laɪt-nɪŋ,flæʃ *n.* a flash or flame of lightning.

**lightning-recorder** 'laɪt-nɪŋ-rɪkɔːd-əz *n.* a modification of a wireless=telegraph instrument which records or indicates the presence of distant lightning.

**limbat** 'lɪm,bæt *n.* a cool northwest wind in the island of Cyprus.

**line-storm** 'laɪn,stɔːzm *n.* an equinoctial storm.

**list** lɪst *intr.* careen, heel, or incline to one side, as an airship in flight: as, initial \*list; augmented \*list.

**listing-moment** 'lɪstɪŋ,moo-mənt *n.* the moment or effect of listing. see *list*.

**load-grading** 'lɔod,gzeɪ-dɪŋ *n.* the grading (or rate of variation or change) of a variable load or normal pressure, as

- along the length of an aerial screw-propeller blade. compare *thrust-grading* and *linear grading*.
- load-value** 'lɒd,væliə *n.* the value or amount of the load or normal external pressure, as upon the blade of a propeller.
- locomotion** ,ləkə'moʊ-ʃən *n.* motion from place to place; the action or power to move from one place to another; progressive movement.
- lofty** 'lə:f-tɪ *adj.* very high in air; extending to or existing at great elevations; taking place or occurring at great altitudes: as, his \*lofty car; birds of \*lofty wing.
- log-book** 'lɒg,bʊk *n.* a book in which the particulars of a balloon-trip or airship-flight are entered or kept.
- longitude** 'lɒndʒɪ,tʃud *n.* distance east or west measured in degrees along the parallel of latitude vertically below the observer on the surface of the earth, especially the angular distance (of the plane of the meridian of any point, place, or position on or above the earth's surface) east or west from the plane of some standard meridian (such as that of Greenwich, England).
- loom** lʊm *n.* same meaning as *looming*.
- looming** 'lʊ-mɪŋ *n.* a form of mirage in which a distant object, as a ship at sea, appears abnormally elevated, and often inverted and vertically magnified.
- low** ləʊ *n.* an area of low barometric pressure, bounded by an isobar; a cyclone.
- low-flying** 'lʊ,flaɪ-ɪŋ *adj.* habitually flying low or near the ground; used to flight at small altitudes.
- low-hanging** 'lʊ,hæŋɪŋ *adj.* hanging low; suspended at a relatively small altitude: as, \*low-hanging clouds.
- low-lying** 'lʊ,lai-ɪŋ *adj.* lying low; located at a relatively small altitude above the earth's surface: as, \*low-lying fogs and clouds.
- loxodrome** 'ləksə,drom *n.* a line on a spherical or spheroidal surface (as the earth) which cuts the meridians at a constant angle; a loxodromic spiral; a rhumb-line.
- lozenge** 'ləzɪndʒ *n.* a plane figure, form, or shape, having four equal straight sides and two obtuse angles, as of certain kites; an oblique equilateral parallelogram; a diamond-shaped plane figure.
- lubrication** ,liʊbrɪ'keɪ-ʃən *n.* the act of lubricating; the process of making smooth or slippery the joints of the engine or driving-mechanism of an airship, as by means of oil, for the purpose of diminishing friction; also, the state or condition of being lubricated.
- forced lubrication*, lubrication by means of oil which is

forced into the bearings; lubrication by oil which is furnished to the bearings under pressure.

*gravity lubrication*, lubrication by means of oil which is caused to flow into the bearings by the force of gravity.

*splash lubrication*, lubrication of an engine by means of a splash of oil brought about by enclosing the crank and connecting-rod in a case filled with oil to a certain level such that the crank dips into it and spatters the oil upward over the appropriate surfaces.

**machine** mə'sjɪn *n.* a structure or vehicle; an apparatus for applying or converting power; specifically, an air-machine; a flying-machine.

*altitude machine*, a flying-machine designed for attaining great altitudes; an air-machine adapted to high-flying.

*endurance machine*, a flying-machine designed for great endurance; an air-machine adapted to making continuous flights of long duration.

*passenger-carrying machine*, a flying-machine designed for carrying passengers; an air-machine adapted to transporting other persons besides the aviator himself.

*speed machine*, a flying-machine designed for attaining great speed; an air-machine adapted to swift flight.

*weight-lifting machine*, a flying-machine designed for lifting and carrying great weight; an air-machine of great lifting-capacity; a weight-carrier.

**mackerel-sky** 'mækəzəl,skɑr *n.* a sky dappled with small white fleecy clouds resembling the markings of a mackerel; a mackerel sky; cirro-cumulus; spotted alto-stratus.

**main-line** 'meɪn,laɪn *n.* the principal line or string of a kite; the main kite-line. compare *pennant-line*.

**main-plane** 'meɪn,pleɪn *n.* one of the main or principal supporting-planes or aerofoils in an aeroplane flying-machine.

**mammato-cirrus** mə,mæe-to'sɪzəs *n.* a rounded festoon-shaped cloud related to cirrus.

**mammato-cumulus** mə,mæe-to'kʌmju-ləs *n.* cloud consisting of protuberances on the under side of an otherwise flat-bottomed cloud.

**man-bearing** 'mæn,bɛ:-zɪŋ *adj.* bearing aloft, or carrying, a man; man-lifting: as, a \*man-bearing kite.

**man-bird** 'mæn,bɜ:d *n.* [also spelt *manbird*]

1. [plural *man-birds*] an artificial bird or flyer operated

by a man or human being; a man-carrying flying-machine, by an aeroplane.

2. [plural *man=birds*, *men=birds*] a bird-like man; a man likend to a bird on account of his power to fly; a birdman: as, the \*man=bird profession.

**manflight** 'mæn,flaɪt *n.* [also spelt *man=flight*]

1. the flight of man, or the power of man to fly thru the air, as in a glider or aeroplane; human flight; artificial or mechanical flight.

2. an instance of this power; a flight made by a man.

**manhole** 'mæn,hooʃ *n.* the neck of a balloon.

**man-lifting** 'mæn,lɪftɪŋ *n.* the action of lifting or raising a man or men into the air.

**man-lifting** 'mæn,lɪftɪŋ *adj.* capable of lifting a man, as a kite; man-carrying.

**manned** mænd *adj.* [also spelt *mand*] provided with a man or operator; furnished with an aviator or aeronaut: as, a \*mand balloon: the opposit of *unmanned*.

**manoeuvring-plane** mə'njəu-və-zɪŋ,plæn *n.* a plane or aerocurv used for manoeuvring or managing a dirigible balloon; a governing-plane.

**manometer** mə'nɒmɪ-təz *n.* an instrument for determining the elastic pressure of the air and other fluids: as, an open-air \*manometer; a compressed-air \*manometer; a static \*manometer.

**man-propelled** 'mæn-prɒ,peld *adj.* [also spelt *man=propeld*] propelled or driven by man power, as a flying-machine.

**mantle** 'mæntl *n.* the covering or envelop of the gasbag of a balloon.

**man-vessel** 'mæn,vesəl *n.* the car or basket of a balloon or airship: distinguished from *gas-vessel*.

**map** mæp *n.* a representation of the earth's surface or any part of it, or of the heavens, on a flat surface, as of paper, according to a definite scale and system of projection; a chart: as, an aeronautical \*map of Europe.

**mare's-tails** 'mɛ:z,tæɪlz *n. pl.* long straight tail-like strands of cirrus cloud, sometimes considered as indicating the approach of stormy wether; horsetail.

**marline** 'mɑ:z-lɪn *n.* small two-strand line, used by sailors for seizings, and also sometimes used in kite-making.

**mass-center** 'mɑ:s,sentəz *n.* [also spelt *mass=centre*] the center of mass, as of a flying projectile: identical in position with the center of gravity. see under *center*.

**mast** mɑ:st *n.* a tall upright pole or rod forming part of a flying-machine, held in position by truss-wires and serving in the control of rudders, etc.



**mattress** 'mætɹəs *n.* a mattress-like arrangement attacht to the netting of some balloons.

**May-carp** 'mee,kɑ:ɹp *n.* a hollow Japanese fish-shaped bag kite deckt out so as to resemble a carp, hoisted on the tops of houses on May 5th if the father of the family has been presented with a son during the preceding year.

**mean** mi:n *adj.* forming an average between two or more terms; average: as, \*mean winds, \*mean temperature.

**megaphone** 'megə,fo:n *n.* [also spelt *megafone*] an instrument consisting of two funnels and flexible ear-tubes, devised by T. A. Edison for enabling speech and other sounds to be heard at a distance; also, a large speaking-trumpet.

**meridian** mɹ'zidi-ən *n.* the great circle of the earth which passes thru a given place or point and the axis of rotation of the earth, or the north and south poles; also, that half of this circle which extends from pole to pole thru a given place or point.

**mesh** meʃ *n.* one of the open spaces or interstices of a balloon-net, between the adjacent knots.

**meteor** 'mri-ti-əz *n.* any atmospheric fenomenon; specifically, a transient firey or luminous body seen at night in the atmosfere or sky; a shooting-star; a falling-star.

**meteor-cloud** 'mri-ti-əz,kləud *n.* the cloud-like train or streak left by a meteor or shooting-star in its course thru the upper air or sky; a meteor-train.

**meteoric** ,miti'əzɹɹk *adj.* of the region of mid-air; of the atmosfere; atmospheric; meteorological; of meteors.

**meteorograph** ,miti'əzə,gzɑ:f *n.* [also spelt *meteorograf*] an apparatus for automatically recording several drfferent kinds of meteorologic fenomena at the same time.

*aerial meteorograph*, a light form of meteorograf used on kites and sounding-balloons.

**meteorologic** ,miti-əzə'fədzɹk *adj.* pertaining to or connected with meteorology; meteorological.

**meteorological** ,miti-əzə'fədzɹ-kəl *adj.* same meaning as *meteorologic*.

*meteorological chart*, a chart or map on which meteorological fenomena are represented; a wether-map.

*meteorological equator*, see under *equator*.

*meteorological photography*, fotografy as applied to meteorological record-making or other work; fotografy of meteorological fenomena.

**meteorologically** ,miti-əzə'fədzɹk-ɹ *adj.* in a meteorological manner; by means of, or with respect to, meteorology.

**meteorologist** ,miti-ə'zələ-dzɹst *n.* one skild in meteorology.

**meteorology** ,miti-ə'zələ-dzɹ *n.* the science of the atmosfere.

*cosmical meteorology*, meteorology as related to cœsmical phenomena; the science of the earth's atmospheric phenomena as modified by or modifying the rest of the material universe.

*dynamic meteorology*, meteorology from the point of view of dynamics; the science of the forces which produce the movements of the atmosphere.

*statical meteorology*, meteorology from the point of view of statics; the science of the statical phenomena of the earth's atmosphere; the study of the atmosphere at rest.

**meteorometer** ,miti-ə'zəmɪ-təz *n.* an instrument for measuring meteors or for receiving and transmitting information as to the amount of rainfall, air-pressure, wind, etc.

**meteoroscope** ,miti'əzə,skop *n.* an instrument for observing meteors; a meteoroscope.

**meteor-train** 'mri-ti-əz,treen *n.* the cloud-like train or streak left by a meteor or shooting-star in its course thru the upper air or sky; a meteor-cloud.

**microphotograph** ,maɪ-ksə'fotə,gzɑ:f *n.* [also spelt *microfotograf*] a microscopic reduction or miniature fotograf, as of a map or written message, sometimes used in ballooning, in place of an ordinary map, or for transport by carrier-pigeons.

**microphotoscope** ,maɪ-ksə'fotə,skop *n.* [also spelt *microfotoscope*] a magnifying-device for reading microfotograf.

**midair** 'mɪd,ɛ:z, ,mɪd'ɛ:z *n.* [also spelt *mid-air*] the middle region of the air; the tract or zone between the clouds and the part of the atmosphere near the ground.

**midair** 'mɪd,ɛ:z *adj.* [also spelt *mid-air*] of, pertaining to, or produced in, midair.

**midflight** 'mɪd,fli:t *n.* the midst of a flight: as, he was halted in \*midflight by the failure of his motor.

**midrib** 'mɪd,zɪb *n.* the middle or principal rib or stick in the frame of a kite.

**mid-section** 'mɪd,sekʃən *n.* a section thru the middle part.

**mid-zone** 'mɪd,zʊn *n.* the zone or region in the middle, or at the equator, of the gasbag of a balloon.

**mile-high** 'maɪ,haɪ *adj.* situated or floating at a height or altitude of a mile from the ground-surface.

**milky way** ,mɪlki'weɪ *n.* the whitish or luminous cloudlike starry streaks and sheets visible in the sky at night and forming a belt girdling the entire heavens; the galaxy.

**mirage** mɪ'zɑ:ʒ *n.* an optical illusion due to refraction or bending of light-rays in traversing air-layers of different densities, common in hot sandy deserts and occurring sometimes at sea, in which distorted, displaced, or inverted

images of distant objects are seen and often taken (when below the horizon) for real objects reflected in a body of water.

*inferior mirage*, a mirage located below the horizon; an illusory appearance as of a body of water at some distance with trees or other objects reflected in it.

*superior mirage*, a mirage located above the horizon; the appearance in the sky of an inverted image, as of a ship which is really on the sea below the horizon.

**mist** *mist* *n.* a cloud consisting of an aggregation of minute globules of water and resting on or near the ground; fog; also, a precipitation of closely aggregated and very fine droplets, intermediate between fog and rain.

**mist-cloud** 'mist,klaud *n.* [also spelt *mist cloud*] a low cloud composed of mist or fog.

**mist-foam** 'mist,foom *n.* (*poetical*) mist considered as foam, as when beating upon an airship in flight; foam-like mist.

**mistral** 'mistrəl *n.* a cold northwest wind in the Mediterranean provinces of France and neighboring districts.

**misty** 'mistɪ *adj.* characterized by mist; covered or obscured by mist; consisting of mist.

**mock-moon** 'mek,moun *n.* a paraselene.

**mock-sun** 'mek,san *n.* a parhelion.

**model** 'medl *n.*

1. a representation in three dimensions showing the details of the structure or working of a flying-machine or other mechanism: as, a working \*medel.

2. a type of design or structure, as of a flying-machine; style of structure; pattern, bild, make: as, the Herring-Chanute \*medel; the firm's 1911 \*medel.

**moisture-laden** 'mɔɪs-tʃəz,læe-dn *adj.* laden or freighted with moisture or dampness: as, a \*mɔɪstʃəz-laden wind.

**moisture-proof** 'mɔɪs-tʃəz,pʊv *adj.* proof against moisture or dampness; damp-proof.

**moment** 'mɔ-mənt *n.* an effect; a function serving as the measure of some mechanical effect the quantity of which depends on different factors: as, center of \*moments; \*moment of friction.

**momentum** mɔ'mentəm *n.* [plural *momenta*] the product of the mass and velocity of a moving body; the quantity of motion of a body: as, angular \*momentum, negativ \*momentum.

*principle of no momentum*, the principle that when a body moving thru an incompressible fluid contained in a

fixt enclosure experiences resistance to its motion, the body imparts no momentum to the fluid.

**monoplane** 'mɒnə,plæn *n.* a single-plane flying-machine; a flying- or gliding-machine having commonly but one main sustaining-plane (at least on either side of its central body), or (if it have two or more main sustaining-planes), having the sustaining-planes which are located on either side of its central body disposed in one geometric plane; an aeroplane flying-machine without superposed sustaining-planes: contrasted with *biplane*, *triplane*, *multiplane*, etc.

*double monoplane*, a monoplane having two sustaining-planes, placed one after the other; a tandem monoplane having two sustaining-surfaces.

*tandem monoplane*, a monoplane which has separate sustaining-planes placed tandem, or one after the other, as in a double monoplane. see *tandem*.

**monoplane** 'mɒnə,plæn *adj.* resembling or having the characteristics or nature of a monoplane; single-plane; one-plane; flat: as, a \*monoplane tail.

**monoplane-flight** 'mɒnə-plæn,flaɪt *n.* a flight made by or in a monoplane.

**monoplanist** 'mɒnə,plæn-nɪst *n.* one who uses monoplanes; an aviator who drives monoplanes.

**monsoon** ,mɒn'su:n *n.* a seasonal wind prevailing in southern Asia and the Indian Ocean, which from April to October blows from the southwest and from October to April from the northeast.

*dry monsoon*, same meaning as *winter monsoon*.

*rainy monsoon*, the southwest monsoon, occurring in summer and commonly accompanied by heavy and continuous rainfall; the wet monsoon; the summer monsoon.

*summer monsoon*, same meaning as *rainy monsoon*.

*wet monsoon*, same meaning as *rainy monsoon*.

*winter monsoon*, the northeast monsoon, occurring in winter; the dry monsoon.

**montgolfier** ,mɒnt'gɒlfi-əz *n.* [also spelt *montgolfiere*, *montgolfière*] a balloon of the kind invented by the brothers J. M. and J. E. Montgolfier of Annonay (Ardèche), France, in 1783, raised by heated air; a hot-air balloon; a fire-balloon; a Montgolfier balloon.

**moonlight** 'mʊn,lʌɪt *n.* the light of the moon; moonshine.

**mooring** 'mʊ:-zɪŋ *n.* something by which an airship or balloon is made fast to earth, or the object to which it is moored or made fast.

**moth** mə:θ *n.* any lepidopterous insect of the suborder heterocera, which resemble the butterflies (rhopalocera) but are

distinguishable from them by their (usually) nocturnal habit and non=clubd antennae.

**motor** 'mɔo-təz *n.* an apparatus or mechanism for moving machinery or vehicles of locomotion; a motory engine: sometimes distinguisht from *steam=engine*.

**motor-airship** 'mɔo-təz,ɛ:z-ʃɪp *n.* an airship or aerial vehicle propelled by a motor; a power=driven airship.

**motor-balloon** 'mɔo-təz-bə,lʊn *n.* a balloon propelled by a motor; a motor=driven balloon.

**motor-driven** 'mɔo-təz,dɪvən *adj.* driven or propelled by a motor: as, a \*motor=driven kite; a \*motor=driven flyer.

**motorless** 'mɔo-təz-ləs *adj.* having no motor; without a motor: as, a \*motorless soaring=machine.

**motor-propelled** 'mɔo-təz-pɚ,peld *adj.* [also spelt *motor=propeld*] propelled by a motor, as a kite or airship; motor=driven.

**motory** 'mɔo-tə-zɪ *adj.* related to or causing motion; kinetic.

**mount** maunt *intr.* go up; ascend; rise; make an ascension.

**mountain-breeze** 'maʊn-tɪn,bɛ:ɪz *n.* same meaning as *mountain=wind*.

**mountain-sickness** 'maʊn-tɪn,sɪk'nɪs *n.* a sickness or malady caused by breathing the rarefied air of mountain=heights, or to ascending or descending rapidly at considerable altitudes.

**mountain-wind** 'maʊn-tɪn,wɪnd *n.* a very regular wind normally blowing up a mountain by day and down by night, due to the heat of the inclined surface of the mountain; a mountain=breeze.

**mounting** 'maʊn-tɪŋ *n.* the mode in which a flying=machine is mounted or set up, as upon skids or wheels, or both.

**mouth** maʊθ *n.* the orifis or opening at the lower end of the neck of the gasbag of a balloon.

**muffler** 'mʌflɜz *n.* a device to muffle, deden, or silence the explosiv puff of the exhaust of hot gases from an internal=combustion motor; an exhaust=muffler; a silencer.

**multiplane** 'mʌltɪ,plæn *n.* a flying=machine with several or many sustaining=planes, especially many superposed sustaining=planes; a multiple=wingd aeroplane flying=machine: distinguisht from *monoplane* and *biplane*.

**multiplane** 'mʌltɪ,plæn *adj.* having several or many planes or aeroplanes; a polyplane.

**multiple-wing** ,mʌltɪpəl'wɪŋ *adj.* having several wings; having more than one or two wings; multiple=wingd: said of gliders or flying=machines; multiple=wingd.

**multiple-winged** 'mʌltɪpəl,wɪŋd *adj.* [also spelt *multiple-winged*] same meaning as *multiple-wing*.

**multiply** 'mʌltɪ-pɫɪ *adv.* in a multiple manner; in a manifold way; by many paths: as, a multiply-connected region of fluid-filled space.

**murky** 'mɜːki *adj.* dark, obscure, gloomy.

**muslin** 'mʌzɪn *n.* any one of several kinds of fine cotton cloth, sometimes used in making aerial apparatus.

**nacelle** ,ne'sel, ,næ'sel *n.* the car of a balloon; the framework or body of a dirigible balloon or other airship; the body-frame; the fuselage.

**nadir** 'næ-dəz *n.* the point directly underneath the observer; the point opposite to the zenith.

**nainsook** 'neen,sək, 'neen-sək *n.* a cotton fabric, a kind of muslin or jaconet of East Indian origin, sometimes used in making kites.

**nausea** 'nɔː-ʃə *n.* a feeling of sickness with inclination to vomit; seasickness.

**navigable** 'nævɪgə-bəl *adj.*

1. admitting of being navigated; affording passage for airships: said of the air or atmosphere.

2. capable of being navigated or guided; steerable; dirigible: as, a \*navigable balloon.

**navigate** 'nævɪ,geɪt *v.*

1. *tr.* sail or drive: as, to \*navigate a balloon.

2. *tr.* sail in or thru: as, to \*navigate the air.

3. *intr.* sail or travel thru the air or atmosphere.

**navigating-level** 'nævɪ-geɪtɪŋ,levəl *n.* a horizontal tract or level, in the atmosphere, which is adapted for aerial navigating or sailing: as, the inversion \*navigating-level.

**navigation** ,nævɪ'gæe-ʃən *n.* the action of navigating; the practice or art of passing or traveling thru the air; air-sailing.

*aerial navigation, see under aerial.*

**navigator** 'nævɪ,geɪtəz *n.* one who navigates; a pilot or one of the crew of an airship or flyer; an air-sailor; an aeronaut.

**near-ground** 'nɪːz,gʌʊnd *adj.* taking place near the ground; conducted at a low altitude above the land-surface; close to the ground: as, \*near-ground flights.

**neck** nek *n.* the narrow or constricted part at the lower end

of the gasbag of a balloon, thru which the inflating-gas is introduced, and which is often left open while voyaging; the tail.

*open neck*, the neck of a balloon as left open or unclosed, as is sometimes the case when incomplete inflation of the gasbag is employd: as, the \*open-neck scheme.

**neck-pipe** 'nek,paɪp *n.* a pipe or tube fitted into the neck of a balloon.

**needle-hole** 'ni:dl,hʊʊl *n.* one of the holes in a balloon-envelop or gasbag, made by the needle in sewing the gores together.

**negotiate** nɪ'gəʊ-ʃi,et *tr.* manage, handle: as, to \*negotiate a curv; \*negotiating air-currents.

**neon** 'ni:,əʊn *n.* an elementary gas, a constituent of the atmosphere, discovered by Ramsay about 1898.

**neossoptile** ,ni-ə'sɒptɪl *n.* [also spelt *neossoptil*] one of the soft fethers of a newly hatcht bird, as contrasted with a fether of a mature type.

**nephological** ,nefə'lɒdʒɪ-kəl *adj.* [also spelt *nefological*] pertaining to nefology; relating to clouds or cloudiness.

**nephologist** nɪ'fɛlə-dʒɪst *n.* [also spelt *nefologist*] one skild in nefology; a student of the clouds.

**nephology** nɪ'fɛlə-dʒɪ *n.* [also spelt *nefology*] the science of the clouds; cloud-study.

**nephoscope** 'nefə,skɒp *n.* [also spelt *nefoscope*] an instrument for observing cloud-motion and determining the altitude of clouds and the velocity and direction of their movement.

*Abbe's marine nephoscope*, a nefoscope designed for observing the motions of the clouds at sea.

*Aimé's nephoscope*, a nefoscope for showing the altitude of the clouds; a reflecting anemometer.

*Besson's zenithal nephoscope*, a nefoscope especially adapted for observations near the zenith.

*vanishing-point nephoscope*, a nefoscope designed for quickly observing the vanishing-point and radiation-point for the motion of clouds which are moving in parallel directions.

**nephoscopic** ,nefə'skɒpɪk *adj.* [also spelt *nefoscopic*] of, or made by means of, the nefoscope: as,, \*nefoscopic observations.

**nephoscopist** nɪ'fɛskə-pɪst *n.* [also spelt *nefoscopist*] a student of nefoscopy; a nefologist.

**nephoscopy** nɪ'fɛskə-pɪ *n.* [also spelt *nefoscopy*] scientific observation of the clouds; nefology.

**nervulet** 'nɜ:z-vio-lət *n.* a little nervure, in an insect's wing.

- nervure** 'nɜːz,viəz *n.* one of the slender hollow tubes forming the framework of an insect's wing.
- net** net *n.* the open-work fabric made of cord forming coarse meshes, used for enclosing and confining the gasbag of a balloon or airship; the network; the netting.
- net-cord** 'net,kɔːzd *n.* one of the cords attached to the net or network of a balloon and connecting it to the concentrating-hoop or ring below; a net-rope.
- net-rope** 'net,zɒp *n.* a rope of the net of a balloon; one of the ropes attached to the network or netting of a balloon and connecting it to the concentrating-hoop or ring below; a net-cord.
- netted-winged** 'netɪd,wɪŋd *adj.* [also spelt *netted-wingd*] having reticulated wings; characterized by conspicuous neurulation of the wings; neuropterous; neuropteral.
- netting** 'netɪŋ *n.* the net of a balloon; the network spread over the envelop of a non-rigid balloon in order to preserve the form of the gasbag and distribute the load of the car and cargo; the net.
- netting-hoop** 'netɪŋ,hʊp *n.* the concentrating ring of a spherical balloon.
- network** 'net,wɜːk *n.*
1. the net of a balloon, made of cord or twine; the netting.
  2. a piece of work or a structure having the form or construction of, or resembling, a net or netting: as, the \*network of an insect's wing.
- neuropter** ,nju'zɒptəz *n.* an insect of the order neuroptera; a neuropterous or netted-winged insect.
- neuroptera** ,nju'zɒptə-zə *n. pl.* an order of insects including the flies, having four naked membranous transparent wings, with reticulate neurulation; the netted-winged insects.
- night** naɪt *n.* the time when there is no sunlight; the interval between the rising and the setting of the sun.
- night-breeze** 'naɪt,briːz *n.* a breeze or light wind which blows in the night. compare *day-breeze*.
- night-cloud** 'naɪt,klaʊd *n.* cloud of night; stratus cloud; fall-cloud.
- night-dew** 'naɪt,djuː *n.* dew which is formed in the night.
- night-flying** 'naɪt,flaɪ-ɪŋ *adj.* flying habitually in the night, as the bats.
- nimbi** 'nɪm,bai *n. pl.* see *nimbus*.
- nimbus** 'nɪmbəs *n.* [plural *nimbi*] a dense cloud spreading out into a crown of cirrus and passing beneath into a shower; rain-cloud.



- nimbus-like** 'nɪmbəs,laɪk *adj.* like nimbus; resembling nimbus cloud.
- nocturnal** ,nɒk'tʊənl *adj.* of the night; done or occurring at night; active during the night: as, a \*nocturnal ascent.
- non-dirigible** ,nɒn'dɪrɪdʒə-bəl *adj.* not dirigible; incapable of being steered: as, a \*non-dirigible balloon.
- non-gasproof** ,nɒn'gæs,psuʊf *adj.* not gasproof: said of balloon-fabrics.
- non-lifting** ,nɒn'lɪftɪŋ *adj.* incapable of lifting or of raising weight: said of balloons in which the ascensional force and the weight balance each other at the ground level, so that there is no tendency to rise spontaneously.
- non-rigid** ,nɒn'rɪdʒɪd *adj.* not having a rigid frame; not rigid; flexible: as, a \*non-rigid balloon; a \*non-rigid propeller. compare *semi-rigid*.
- non-soaring** ,nɒn'sɔːzɪŋ *adj.* that does not soar; incapable of soaring.
- non-spherical** ,nɒn'sfeɪrɪ-kəl *adj.* [also spelt *non-sferical*] not of a spherical or globular shape; elongated, as a cigar-shaped balloon.
- non-stop** 'nɒn,step *adj.* made without steps; no-step: as, a \*non-step flight.
- norther** 'nɔːz-dəz *n.* a northerly wind, especially a strong north wind accompanied by intense cold, occurring in autumn and winter in the region of Missouri, Texas, the Gulf of Mexico, and Florida.
- northern** 'nɔːz-dəzn *adj.*  
*northern lights*, the aurora borealis.
- northwester** ,nɔːzθ'westəz *n.* a wind or gale blowing from the northwest; a nor'wester.
- nor'wester** ,nɔz'westəz *n.* a wind or gale blowing from the northwest; a northwester; also, a southerly wind in New Zealand, of the same nature as the pampero of South America, and corresponding to the norther of the northern hemisphere; the southerly buster.
- nose** nɔz *n.* the fore-end or projecting front part of a dirigible balloon or airship or of any part thereof; the equalizer or front rudder of an aeroplane flyer.
- nose-on** 'nɔz,ən *adj.* occurring with the nose or front projecting part of the machine directed toward or hitting against the ground or other obstacle: as, a \*nose-on crash.
- nose-on** ,nɔz'en *adv.* with the nose or front projecting part directed against the obstacle: as, the aeroplane struck the ground \*nose-on.
- no-stop** 'nɔ,step *adj.* executed or carried on without steps; non-step: as, a \*no-step flight.

- obscuration** ,ɒbskʊˈzʃeɪ-ʃən *n.* the act of obscuring or darkening; the state of being obscured: as, the obscuration of the moon in an eclipse; specifically, in meteorology, the darkening or hiding of the sun by clouds; cloudiness.
- observation-kite** ,ɒbzəˈveɪ-ʃən,kɑɪt *n.* a man-lifting kite used in warfare for purposes of observation or reconnaissance; a war-kite.
- observer** əbˈzɜːv-əz *n.* a soldier or other person whose business is to observe the enemy from an airship; one who makes a reconnaissance while riding in a balloon or aeroplane.
- observing-board** əbˈzɜːv-ɪŋ,bɔːzd *n.* a board or board-like structure sometimes used in balloons in connection with the making of observations.
- observing-station** əbˈzɜːv-ɪŋ,stʃeɪ-ʃən *n.* a station where meteorological observations are made; a wether-station.
- obstacle** ˈɒbstə-kəl *n.* any hindrance or obstruction to the motion of air or other fluid, as an aerofoil.
- ocellus** ɔˈsɛləs *n.* one of the eye-like spots in the tail-fethers of a peacock or in the wing of an argus-pheasant; an eye-spot.
- oil-silk** ˈɔɪl,sɪlk *n.* silk cloth impregnated with hard oil, semitransparent, waterproof, and gasproof, used in making balloon-envelops or gasbags; oiled silk.
- oilskin** ˈɔɪl,skɪn *n.* cloth made gasproof or waterproof by treatment with oil, often used in making balloons and other aircraft; cotton, silk, or linen fabric prepared with oil so as to be impermeable.
- one-man** ˈwʌn,mæn *adj.* performed by one man only: as, a \*one-man exhibition flight.
- operating-wire** ˈɒpə-zetɪŋ,wɑɪz *n.* a wire, in a flying-machine, used in operating the rudder; a rudder-operating wire.
- orbit** ˈɔːz-bɪt *n.* a track, course, or circuit; a circular or elliptical path; the orbit-like oval flight-path of a bird soaring against the wind: as, the form of \*orbit in dynamic soaring.  
*Ferrel's orbit theory*, a theory advanced by Ferrel attributing the growth of hailstones to their motion in loop-like orbits or paths in and out of the air-streata where rain or ice is forming.
- orbital** ˈɔːz-bɪ-tl̩ *adj.* taking place in an orbit; of revolution.
- orbit-motion** ˈɔːz-bɪt,moo-ʃən *n.* motion in an orbit; movement along a path, as a circle or ellipse, which returns upon itself.
- ornithopter** ,ɔznɪˈθɒptəz *n.* [also spelt *ornithoptère*] a bird-wing flying-machine; a heavier-than-air aerial vehicle designed to fly by means of flapping or oscillating wings,

after the manner common among birds: distinguished from *helicopter* and *aeroplane*. compare *orthopter*.

**ornithopterous** ,ɔznɪ'θɛptə-zəs *adj.* having wings or forelimbs like those of a bird; bird-winged.

**orthogonal** ,ɔz'θɛgə-nl *adj.* pertaining to or characterized by right angles; right-angled; characterized by rising or appearing to rise vertically from the ground, as the sparrow is sometimes supposed to do: as, an \*orthogonal flyer.

*orthogonal flight*, a supposed mode of bird-flight in which the creature rises vertically from the ground.

*orthogonal theory*, the theory or notion that certain birds can, by flapping their wings, rise vertically from the ground in flight.

**orthopter** ,ɔz'θɛptəz *n.*

1. an insect of the order orthoptera; a straight-winged insect; an orthopteran or orthopteron.

2. a straight-winged flying-machine, usually or always dependent upon the flapping-wing idea and thus often confused with *ornithopter*.

**orthoptera** ,ɔz'θɛptə-zə *n. pl.* an order of insects comprising cockroaches, walking-sticks, crickets, and grasshoppers, having coriaceous and usually straight and narrow fore-wings, broad longitudinally folded hind-wings and incomplete metamorphosis.

**orthopterous** ,ɔz'θɛptə-zəs *adj.* having straight wings; straight-winged; of the nature of an orthopter.

**outfly** ,aʊt'flaɪ *tr.* [past participle *outflown*; preterit *outflew*] outdo or excel in flight.

**outride** ,aʊt'zɑɪd *tr.* ride out, or survive the violence of (a storm).

**outrigger** 'aʊt,zɪgəz *n.* any framework, structure, or part, rigged up outside the main or usual limits of a structure, especially a moving structure such as a ship, wagon, or flying-machine, for stedying, strengthening, or other purpose; the projecting framework supporting a tail-plane, rudder, or control: as, an estyich's wings are used as \*outriggers to aid in running; the front and rear \*outriggers of a Curtiss biplane.

*front outrigger*, the outrigger at the front or fore part of an aeroplane flying-machine, carrying the head-piece or front rudder.

*rear outrigger*, the outrigger at the rear or hind part of an aeroplane flying-machine, carrying the tail-piece, etc.

**outrigger-joint** 'aʊt-zɪgəz,dʒɔɪnt *n.* the joint or junction of one of the outriggers of an aeroplane flying-machine, as with a spar of one of the main-planes.

- outrigger-member** 'aot-zigəz,membəz *n.* a structural member or part of an outrigger of an aeroplane flying-machine.
- outrigger-wheel** 'aot-zigəz,wiił *n.* a wheel attached to the outrigger of a flying-machine.
- outspread** ,aot'spsəd, (*assumptively*) 'aot,spɪəd *adj.* [also spelt *outspred*] spread out, as the wings; outstretched; extended.
- outstretch** ,aot'stɛtʃ *tr.* stretch out; spread: as, like a gigantic bird with \*outstretched wings.
- overboard** 'oʊ-vəz,bɔ:zd *adv.* over or beyond the side of a balloon: as, a piece of gold-leaf thrown \*overboard.
- overcharge** ,ovəz'tʃɑ:ɔ:dʒ *tr.* put too great a charge in; fill too full: as, the balloon was \*overcharged with gas.
- overhead** ,ovəz'hed *adv.* above one's head; on high, aloft; up in the air or sky; near the zenith.
- overhead** ,ovəz'hed, (*assumptively*) 'oʊ-vəz,hed *adj.* placed or situated overhead.
- over-ocean** 'oʊ-vəz,oʊ-ʃən *adj.* occurring or executed in the air over or above the ocean; oversea.
- oversea** 'oʊ-vəz,sii *adj.* occurring or executed in the air over or above the sea; over-ocean.
- over-water** 'oʊ-vəz,wɔ:-təz *adj.* occurring or carried on over a water-area; transaquatic: as, \*over-water flight: distinguished from *overland*.
- paddle-wheel** 'pædł,wiił *n.* a wheel containing radial floats or paddle-boards similar to that used for boats, proposed or propelling airships.
- pagoscope** 'pægə,skop *n.* an instrument for showing the probability of frost; a device for predicting frosts; a form of hydroscope which shows the current temperature of the dew-point.
- pampero** ,pæm'pɛ:-zə *n.* [plural *pamperos*] a cold, dry, southwesterly wind that sweeps over the pampas of Argentina and Uruguay, and northeastward to the Brazilian coast, in the rear of barometric depressions, corresponding to the norther of the Gulf States.
- panel** 'pænił *n.* one of the vertical planes or aerofoils in a box-like structure; a curtain; a partition.
- panorama** ,pænə'zɑ:-mə *n.* a complete or entire view; also, a picture representing a wide general view, as of a tract of country.
- panoramic** ,pænə'zæmik *adj.* of or pertaining to a panorama; of the nature of a panorama: as, a \*panoramic view, a \*panoramic camera or lens.

**parabola** pə'zæbə-lə *n.* a curv such as fōrmd by the inter-section of a cone with a plane parallel with its side; a plane curv which is everywhere equally distant from a certain fixt point or focus and a certain straight line or directrix.

**parabolic** 'pæzə,bəlik *adj.* having the form of, or resembling a parabola; of which the section is a parabola; of or related to the parabola: as, a \*parabolic wing-section.

**parachute** 'pæzə,ʃut *n.*

1. an apparatus, usually of an umbrella shape, carried in a balloon and used by the aeronaut as a means of descending safely to the ground, as in the case of an accident to the balloon; also, any similar but smaller device.

*dirigible parachute*, a parachute that may be guided or steerd; a steerable parachute.

*double double=parachute leap*, a leap or jump made by two performers by the aid of a double parachute.

*double parachute*, a parachute=apparatus invented by Lattemann consisting of two parachutes which at the start are attacht to the balloon folded and one above the other, the lower one opening out first, and the other afterward.

*double parachute descent*, a descent in a double parachute.

*parachute light*, a bright light given by a burning composition usually attacht to a small parachute and issuing, along with the parachute, from a small bōm (cald a parachute light=ball) from which it is set free by explosion, used by armies in observing the position or movements of the enemy at night.

*rotary parachute*, a parachute which descends with a rotary or turning motion.

2. any natural structure or organ serving to check a fall thru the air, or to support something in the air, as the patagium of a flying=squirrel.

**parachute** 'pæzə,ʃut *v.*

1. *tr.* convey by the aid of a parachute: as, I was \*parachuted down.

2. *intr.* descend by, or as if by, a parachute.

**parachute-bearing** 'pæzə-ʃut,be:-ziŋ *adj.* bearing or having a parachute; provided with a parachute or patagium.

**parachute-cloak** 'pæzə-ʃut,kləok *n.* a cloak=like sleeveless garment for aviators, which, in case of a fall, is designed to open out and act as a parachute; a fall=mantle.

**parachute-cord** 'pæzə-ʃut,kə:zd *n.* the cord which connects a parachute with a balloon or airship.

**parachute-descent** 'pæzə-ʃut-di,sent *n.* a descent in, or by means of, a parachute.

**parachute-jump** 'pæzə-ʃʊt,dʒʌmp *n.* a jump or leap made by the aid of a parachute; a parachute-leap.

**parachute-jumper** 'pæzə-ʃʊt,dʒʌmpəz *n.* one who jumps by means of a parachute; one whose occupation is to make parachute-jumps.

**parachute-knife** 'pæzə-ʃʊt,nɑɪf *n.* the knife by which a parachute is cut loose or freed from a balloon.

**parachute-plane** 'pæzə-ʃʊt,pɹæən *n.* an aeroplane or plane aerofoil which forms part of an aircraft and serves as or acts like a parachute; an emergency-wing.

**parachuting** 'pæzə,ʃʊtɪŋ *n.* the art or practice of using parachutes; the occupation of one who parachutes or makes parachute-leaps.

**parachutism** 'pæzə-ʃʊ,tɪzəm *n.* the art or practice of parachuting.

**parachutist** 'pæzə,ʃʊtɪst *n.* one who uses a parachute; a parachute-jumper.

**parakite** 'pæzə,kɑɪt *n.* any kite of advanced type; a kite used for serious work rather than as a mere toy; a tailless kite such as used for scientific purposes.

**paraselenae** ,pæzəsɪ'li:ni *n. pl.* see *paraselene*.

**paraselene** ,pæzəsɪ'li:nɪ *n.* [plural *paraselenae*] one of the bright spots sometimes seen at the intersection of the lunar halos with the parhelic circle; a mock-moon.

**parhelia** ,pɑz'hɪ:li-ə *n. pl.* see *parhelion*.

**parheliacal** ,pɑz-hɪ'lai-ə-kəl *adj.*

*parheliacal ring*, same meaning as *parhelic circle*. see under *parhelic*.

**parhelic** ,pɑz'helɪk *adj.*

*parhelic circle*, a circle of white light extending all around the sky, passing thru the sun or moon, parallel to the horizon; a parheliacal ring.

**parhelion** ,pɑz'hɪ:li-ən *n.* [plural *parhelia*, *parhelions*] one of the bright spots sometimes seen at the intersection of the solar halos with the parhelic circle or some supernumerary circle or band of light; a mock-sun; a sun-dog.

2. an image of the sun in the sky at a point directly opposite the real position of the sun.

**passenger-plane** 'pæsɪndʒəz,pɹæən *n.* an aeroplane flying-machine designed to carry passengers.

**patagial** pə'tee-dʒi-əl *adj.* of a patagium.

**patagiate** pə'tee-dʒi-ət *adj.* of the nature of, or having, a patagium.

**patagium** ,pætə'dʒai-əm *n.* [plural *patagia*]

1. a fold of skin or membrane extending along the side of the body of certain mammals and reptils, capable of ex-

pansion so as to enable the animal to take flying leaps; the wing-membrane of a bat; a parachute.

2. a fold or integument occupying the angle between the upper arm and the forearm of a bird.

3. one of a pair of processes or appendages on the pronotum and thorax of certain lepidoptera.

**path-curvature** 'pɑ:θ,kʌ:z-və-tʃəz *n.* the curvature of the flight-path of a flying aircraft.

**patrol** pə'trɔʊl *tr.* to traverse, or move about in, as if on duty or on the watch; to traverse leisurely in all directions: as, \*patrolling the sky.

**peace-bomb** 'pri:s,bəm *n.* [also spelt *peace-bom*] a bomb-like missile used for peaceful purposes; one of the medal-like disks dropped from a friendly airship, intended as a symbol of peace, or as an advertisement, destined to be picked up and kept as a souvenir by the people upon the earth below.

**pear-shaped** 'pe:z,ʃeɪpt *adj.* having the shape or form of a pear, as certain balloons or gasbags.

**pectoral** 'pektə-zəl *adj.* of, pertaining to, or situated on, the breast or chest of a bird or other animal, or some part or region of a flying-machine likened thereto; thoracic: as, \*pectoral fins, \*pectoral muscles.

**pedal** 'pedl *n.* a device, as in a flying-machine, which is actuated by the foot of the operator; a foot-lever; a treadle.

**pedal** 'pedl, 'pri-dl *adj.* of or by means of the foot: as, \*pedal control.

**pegamoid** 'pegə,mɔɪd *n.* a parchment-like material used on the outside of balloon-envelops for protection from the sun, rain, etc.

**pegasidae** pi'gæsɪ,di *n. pl.* a family of fishes, typified by the genus Pegasus; the flying sea-horses.

**pendulum** 'pendʒu-ləm *n.* a body suspended in such a manner as to swing freely to and fro under the influence of gravity and its energy of position. The pendulum has been suggested as a means of automatic balance for flying-machines.

**penna** 'penə *n.* [plural *pennae*] a contour-feather; a plume.

**pennant-line** 'penənt,laɪn *n.* the line or cord connecting a branch kite with the main kite-line.

**pennipotent** ,pe'ni:pə-tnt *adj.* strong on the wing; powerful in flight.

**percaline** 'pɜ:kəlɪn *n.* [also spelt *percalin*] a glossy French cotton cloth, sometimes used for kite-sails.

**percher** 'pɜ:tʃəz *n.* a bird which habitually perches, as distinguished from birds which rest on the ground; a perching bird.

**peripheral** pə'zɪfə-zəl *adj.* [also spelt *periferal*] of the periphery: as, \*peripheral speed.

**periphery-line** pə'zɪfəzi,laɪn *n.* [also spelt *periphery-line*] the line of the periphery of a balloon.

**peripteral** pə'zɪptə-zəl *adj.* of or pertaining to the periptery; situated or occurring in the neighborhood of a wing or other aerofoil: as, the \*peripteral system of flow.

*peripteral area*, the area of the cross-section of a peripteral zone: as, the \*peripteral areas of adjacent blades overlap.

*peripteral motion*, the motion of the air or other fluid in the immediate vicinity of a moving wing or aerofoil; the forced wave or system of air-currents about a moving aerofoil.

*peripteral theory*, theory regarding wing-form and the resultant fluid motions in the peripteral zone; doctrine as to the shapes of aerofoils and the systems of currents due to their motion thru the air or other fluid.

*peripteral zone*, the zone or sphere of influence of an aerofoil; the tract or region of fluid-filled space which surrounds an aerofoil.

**peripteroid** pə'zɪptə,zəɪd *adj.* like the periptery; resembling that which occurs round about the wing or aerofoil of a natural or artificial flyer: as, \*peripteroid motion.

**periptery** pə'zɪptə-zɪ *n.* the region round about the wing, or in the vicinity of the aerofoil, of a natural or artificial flyer: as, an unstable \*periptery.

**perspectometer** ,pɜzspek'təmɪ-təz *n.* a device for marking dimensions or distances on a fotograf, or perspective drawing, as an aid in interpretation or in judging perspective.

**petaurist** pɪ'tɔ:-zɪst *n.* a flying-falanger; a flying-opossum; an Australian flying-squirrel; an acrobat; one of the Petaurista.

**petrol** 'petrəl, pɪ'trɔəl *n.* a volatil inflammable liquid, one of the first products in the distillation of crude petroleum, used in the motors of automobiles and flyers; petroleum spirit; gasoline.

**petrol-depot** 'petrəl,dɪɪ-pɔ *n.* a depot or storehouse where petrol or gasoline is kept for the use of airships.

**petrol-tank** 'petrəl,tæŋk *n.* the gasoline-tank of an airship.

**phase-curve** 'fæz,kɜ:v *n.* [also spelt *phase curve*, *phase-curve*] a curve or curved line drawn thru the mid-phase points, or points of greatest flight-velocity, in a series of fugeid curves.

**photogrammeter** ,fɔtə'gɜæmɪ-təz *n.* [also spelt *fotogrammeter*] a fotografic camera used in measuring the location



and motion of clouds and in other surveying-work; a cloud-camera.

**photogrammetry** ,fotə'gʒæmɪ-tʃɪ *n.* [also spelt *fotogrammetry*] the use of the fotogrammeter; the art of mesuring fotograms or bird's-eye-view fotografs taken from airships.

**piano-wire** pi'æno,wʌɪz *n.*

1. a kind of slender steel wire of great strength such as used for the musical strings in pianos, often employd in airship-construction.

2. one of the stays or braces made of such wire, as in an aeroplane flying-machine.

**phugoid** 'fiu,gəɪd *adj.* [also spelt *fugoid*] like flight; flight-like; of or related to a flight-path.

*phugoid chart*, a chart or drawing showing a complete series of fugoid curvs.

*phugoid curve*, a curv showing the form of a flight-path.

*phugoid equation*, the equation of the flight-path of an air-craft.

*phugoid oscillation*, the øscillation, or periedic up-and-down swinging which often characterizes flight; the wavering, or alternate fluctuation of the flight-path of an air-craft.

*phugoid plane*, the vertical plane passing thru the curv of the flight-path of an air-craft.

*phugoid theory*, the theory relating to løngitudinal stability and the form of the fugoid curv or flight-path.

**phugoid** 'fiu,gəɪd *n.* a fugoid curv.

*inflected phugoid*, a fugoid having the form of an inflected curv.

**pilot** 'pʌɪ-lət *n.* one who steers or directs the course of an airship; a steersman; a helmsman; an air-pilot; an aeronaut; an aviator.

**pilot** 'pʌɪ-lət *tr.* conduct as a pilot; direct the course of (an airship); steer; guide.

**pilot-balloon** 'pʌɪ-lət-bə,lʊn *n.* a small unmand auxiliary balloon (sometimes attacht to a main balloon) allowd to rise in advance of the main balloon in ørder to ascertain the direction of the overhed air-currents.

**pilot-chart** 'pʌɪ-lət,tʃɑ:z *n.* a chart for the use of pilots, showing wether-conditions, storm-paths, etc.

**pilotess** 'pʌɪ-lə-tɪs *n.* a female pilot; a woman air-pilot.

**pilot-kite** 'pʌɪ-lət,kʌɪt *n.* the first, upper, and smaller kite in a series of superposed kites (such as that described by Wenham in 1866), sent up in advance and used to lift the others or help sustain them in the air. compare *draft-kite*.

**pinfeather** 'pɪn,fedəz *n.* [also spelt *pinfether*] one of the

pin-like ungrown feathers of a bird, as it is before it has burst its confining sheath and expanded its vanes; any young undeveloped feather as it first pierces the skin.

**pinion** 'pinjən *n.*

1. the distal or terminal segment of a bird's wing; the outer part of a bird's wing, borne on the manus or hand and consisting commonly of ten primaries, the primary coverts, and the alula or bastard wing; also, the anterior border of an insect's wing.

2. a wing, especially with reference to flight.

3. the outermost feather, or any flight-feather, of a bird's wing; a pinion-feather.

**pinion-bone** 'pinjən,bʊn *n.* any one of the several bones of the pinion, hand, manus, or distal joint of a bird's wing.

**pinion-claw** 'pinjən,kɫɔ: *n.* a horny claw borne by the index or pollex of certain birds.

**pinion-feather** 'pinjən,fedəz *n.* one of the feathers on the pinion of a bird's wing; the outermost feather, or any flight-feather, of a bird's wing; a pinion.

**pirouette** ,pɪzʊ'et *n.* a quick, short turn or whirl, as of a flying-machine.

**pirouette** ,pɪzʊ'et *intr.* perform a pirouette; turn or whirl quickly.

**pitch** pɪtʃ *v.*

1. *tr.* plunge, throw, or hurl downward thru the air.

2. *intr.* plunge with prow or head downward thru the air; also, rise or fall alternately at bow and stern; plunge in a longitudinal direction: distinguished from *roll*.

**pitch** pɪtʃ *n.*

1. an act of plunging head foremost.

2. the height to which a bird of prey soars before swooping down upon its victim: as, to fly a \*pitch.

3. the constant distance between fixed points or lines, as between any two successive convolutions or threads of a screw propeller, or between any two successive turns of a screw propeller considered as moving in a solid nut, measured in a direction parallel to the axis.

*straight pitch*, the pitch of an aerial propeller the angle of whose blade-surface remains constant, so that the different portions of the blade tend to advance thru the air at different velocities: distinguished from *uniform pitch*.

*uniform pitch*, the pitch of an aerial propeller the angle of whose blade-surface varies from hub to tip in such a manner that all portions of the blade tend to advance thru the air with uniform velocity: distinguished from *straight pitch*.

**pitch-angle** 'pɪtʃ,æŋɡəl *n.* the angle of pitch, as of the blades of an aerial propeller.

**pitching** 'pɪtʃɪŋ *n.* the forward downward plunging of an airship; the alternate rising and falling of bow and stern; plunging lengthwise: distinguished from *rolling*.

**pit-gage** 'pɪt,ɡeɪdʒ *n.* [also spelt *pit-gauge*] a rain-gage arranged in a pit or saucer-like cavity in the ground.

**plane** pleɪn *n.*

1. a surface or superficies such that every straight line joining any two points in it lies wholly in it; a surface whose intersection with any other like surface is a straight line; often, a horizontal plane; a level.

2. [also, sometimes, spelt 'plane] a material surface approximately of this nature; also, a thin flat structure presenting such surface or surfaces to the air; a plane aerofoil; an aeroplane.

*articulated plane*, a sustaining-plane in a flying-machine articulated or jointed in such a manner as to make possible the reduction or increase of the supporting-area according to the speed of the machine.

*falling plane*, an aeroplane or aerofoil which is falling freely thru the air or other fluid, as in aerodynamic experimentation.

*following plane*, a plane or aerofoil which follows, or is attached at the rear of the other planes or parts of a kite or flying-machine; one of the hinder supporting-planes among several which are placed tandem. compare *leading plane*.

*horizontal plane*, an aeroplane or aerofoil which is in a horizontal position in the air or other fluid, as in aerodynamic experiments: distinguished from *inclined aeroplane*.

*leading plane*, a plane or aerofoil which leads.

*main plane*, see *main-plane*.

*normal plane*, a plane or aeroplane whose surface is normal, or at right angles to, the line of the direction of its translatory motion thru the air.

*oblique plane*, a plane or aeroplane whose surface is oblique or inclined to the line of the direction of its translatory motion thru the air; a slanting plane or aeroplane.

*superposed plane*, an aeroplane or aerofoil which is placed above another, as the upper of the two planes of a biplane flying-machine or kite; one of a series of such planes.

*trochoidal plane*, a plane the center of which moves in a circular path at a uniform speed while the plane is kept normal to the surface of a trochoidal wave the period of which is equal to the time occupied by the center of the plane in making one revolution.

3. [also spelt 'plane] a flying-machine whose sustaining structures are planes or aeroplanes; an aeroplane flyer; an aeroplane.

**plane** plæen *adj.* such that every straight line joining any two points in it lies wholly in it; flat; level.

**plane** plæen *intr.* drive an aeroplane flying-machine; move in a flyer: as, he \*planed gently downward to earth.

**plane-dropper** 'plæen,drɒpəz *n.* a device invented by S. P. Langley of Washington, D. C., for studying the aeroplane when allowed to drop or fall under the influence of gravity against the aerodynamic resistance encountered in its flight.

**plane-spar** 'plæen,spɑːz *n.* one of the spars, sticks, or poles forming the framework of an aeroplane supporting surface; the front or rear longitudinal beam of a main plane of an aeroplane flyer.

**planetary** 'plæni,tɛzi *adj.* of the planet or earth.

*planetary circulation*, see under *circulation*.

*planetary wind*, see under *wind*.

**plan-form** 'plæn,fɔːzm *n.* a form of plan; the plan or shape (of a wing or other aerofoil) as projected on a horizontal or vertical plane.

**planophore** 'plænə,fɔːz *n.* [also spelt *planofore*] a flying-model produced by A. Pénaud in 1871.

**plan-view** 'plæn,vjuː *n.* the view or aspect of the plan of an aerofoil.

**pluma** 'plou-mə *n.* [plural *plumae*, *plumas*] a contour-feather of a bird; a penna.

**plumage** 'plou-mɪdʒ *n.* the feathers of a bird, collectively; the natural covering of a bird; the ptilosis.

**plunge** plʌndʒ *intr.* throw or hurl itself downward thru the air; dive headforemost; fall or sink headfirst in a rapid or erratic manner: as, to soar and \*plunge.

**pluviograph** 'plou-vɪ,gɹæ:f *n.* [also spelt *pluviograf*] an instrument for recording rainfall.

**pneumatics** njʊ'mætɪks *n.* the science of air and other gases.

**pneumotide** 'njumə,tɑɪd *n.* (*fanciful*) the tide or swelling current of the air; the flood of the airy ocean.

**pecky** 'pɛki *adj.* having pecks or peck-marks, as mammato-cumulus cloud.

**pogonip** 'pɒgə-nɪp *n.* a frozen fog which forms in cold air of the high mountain-valleys of Colorado, Idaho, and Nevada, and which, if inhaled, is apt to cause pulmonary trouble.

**pogonium** pə'gɒ-ni-əm *n.* the vane or web of a bird's feather on either side of the shaft; the vexillum.

**point** pɔɪnt *n.* precise limit or degree.

**point-to-point** 'pɔɪnt-tə,pɔɪnt *adj.* extending from one point or city to another: as, a \*point-to-point trip.

**poise** pɔɪz *n.*

1. equality of weight; a balanced or hovering condition; equilibrium, balance, equipoise.

2. one of the poisers of a dipterous insect; a balancer; a halter.

**poise** pɔɪz *v.*

1. *tr.* hold or maintain in equilibrium; keep balanced.

2. *intr.* be balanced or held in equilibrium; be kept balanced; remain steady.

**poise-point** 'pɔɪz,pɔɪnt *n.* the point at which the whipline of a kite is attached to the bridle, and at which the kite is thus poised.

**poiser** 'pɔɪ-zɪz *n.* one of a pair of slender processes with clubbed ends placed near the insertion of the wings in a dipterous insect or a male cœcid, supposed to aid in poising, balancing, or equilibrating the insect; a halter, a balancer.

**poising** 'pɔɪ-zɪŋ *n.* balancing, hovering.

**polar** 'pɔɔ-lɪz *adj.*

*polar band*, a band or strip of cloud extending over the sky from a point on the horizon to the opposite point; a Noah's Ark.

*polar cap of cold air*, the cap or mass of cold air which covers the north or south polar region of the earth, flowing toward the equator into the westerly planetary currents.

**pole** pɔɔl *n.*

1. either one of two points on the surface of the earth or other spherical body or the like which are equidistant from the equator, or are otherwise established as centers, termini, or points having certain prominent characteristics of position, influence, or function: as, the north \*pole; the magnetic \*pole; the galactic \*pole.

*magnetic pole*, one of the two points on the earth's surface where the magnetic dipping-needle stands vertical; the pole of verticality.

*pole of cold*, the pole or point in the polar regions of the earth where, at any given season, the weather is coldest; the cold pole.

*pole of snow*, the pole or point in the polar regions of the earth having the most, or the longest-lasting snow.

2. either of the extremities (upper or lower) of the vertical axis of the sphere or gasbag of a spherical balloon.

**pole-star** 'pɒl, stɑ:z *n.* the star alfa in Ursae Minoris, at present about 1 1-4 degrees distant from the northern pole of the heavens; the North Star; the Polar Star; Polaris.

**polyplane** 'pɒlɪ, pʌɛn *n.* a multiplane.

**pongee** ,pɒn'dʒi, (assumptively) 'pɒn,dʒi *n.* a soft unbleached Chinese silk made from the cocoons of a wild silk-worm, *Bombyx pernyi* or *fantoni*, which feeds on oak-leaves, sometimes used in making balloon-envelops or gasbags; Chefoo silk.

**pontoon** ,pɒn'tu:n *n.* a floating structure of light framework such as one of the flat-bottomed boats used to support a dirigible upon a water-surface, or one of the hollow floats attached to the lower part of a flying-machine to keep it afloat in case it falls into or alights upon the water.

**port** pɔ:zt *adj.* on that side of an air-craft which is on the left as one faces the bow; larboard: the opposite of *star-board*.

**potential-gradient** pə'tenʃəɪ, gʒɛe-di-ənt *n.* the gradient of electric potential; the rate of change in the electric potential of the air.

**powder-down** 'pau-dəz, daʊn *n.* the powdery down or fluffy, dusty, or scurfy exfoliation due to the presence of certain down-feathers or plumulae in some birds, as the heron; pulviplume.

**power** 'pau-əz *n.* the capacity (of a balloon) to rise; ability to ascend or mount; lifting-capacity; ascensive power.

**power-gas** 'pau-əz, gæs *n.* gas used for power, as that used in an internal-combustion engine.

**power-plant** 'pau-əz, pʌ:nt *n.* a plant or apparatus which furnishes power; the engine or motor of an airship.

**power-vessel** 'pau-əz, vesəl *n.* the vessel or car in which the power-plant of an airship is located.

**precess** ,psi'ses *intr.* move forward; advance: as, vertices which \*precess downward.

**precipitation** pʀɪ, sɪpɪ'tee-ʃən *n.* condensation and deposition of moisture from the state of vapor, as in the formation of dew, rain, or snow by cooling; also, that which is so deposited, as rain, snow, or hail.

**presentation** ,pʀɪzən'tee-ʃən *n.* the process, state, condition, or mode of being presented to view; exhibition; appearance, aspect: as, the shape of an aerofoil's face in \*presentation.

*diagonal presentation*, the presentation of an aeroplane in a diagonal or oblique manner, as in aerodynamic experimentation; oblique presentation.

*square presentation*, the presentation of an aeroplane in

in a square manner, as in aerodynamic experimentation; full-on presentation of a square plane.

**pressure** 'pʁɛʃəz n.

1. push or thrust, as of the gas inside of a balloon, or of the air upon an aeroplane, airship, or other object.

*center of pressure*, see under *center*.

*forced pressure*, an increased pressure or density which is forced upon the air or other fluid adjacent to an aerofœil or other surface which is acting upon it. compare *forced vacuum*, under *vacuum*.

*negativ pressure*, pressure in a negativ sense or direction, as that produced by rarefaction of the air in front of a revolving propeller; suction.

*tangential pressure*, pressure in a direction tangential to the surface of an aerocurv or curvd aerofœil; push or thrust upon a curvd sustaining-surface in the direction of a tangent to the curv of that surface parallel to the line of the direction of the impinging air-current or to the direction of flight.

*vapor pressure*, see *vapor-pressure*.

2. the elastic pressure of the atmosfere; atmospheric pressure; barometric pressure.

*belt of high pressure*, a belt or long narrow region of high barometric pressure, as between two areas of high pressure, or as the belt nearly encircling the earth near the Tropic of Capricorn.

*equatorial belt of low pressure*, a belt or long narrow tract nearly encircling the earth in the equatorial region and characterized by low barometric pressure due to the northeast and southeast tradewinds and the deflecting force resulting from the rotation of the earth.

*high pressure*, unusually high pressure of the air as indicated by a barometer; atmospheric pressure which is greater than the normal.

*high-pressure area*, an area or region of the earth's surface over which the barometric pressure is high.

*low pressure*, unusually low pressure of the air as indicated by a barometer; atmospheric pressure which is less than the normal.

**pressure-anemometer** 'pʁɛʃəz-æni,məmɪ-təz n. an anemometer for mesuring the pressure of the wind.

**pressure-gradient** 'pʁɛʃəz,gɹæd-i-ənt n. the gradient of pressure, as of the atmosfere; the rate at which the air-pressure changes in value.

**pressure-height** 'pʁɛʃəz,hait n. the atmospheric pressure in terms of the height of a vertical column of fluid of un-

form density equal to that of the air at the point where the pressure is measured; the height of a homogeneous atmosphere.

**pressure-plate** 'pʁeʃəz,plæt *n.* a plate used in ascertaining the pressure of the wind.

**pressure-reaction** 'pʁeʃəz-zɪ,ækʃən *n.* the reaction of a moving aeroplane to the pressure of the atmosphere acting against it.

**pressure-region** 'pʁeʃəz,ʁi-dʒən *n.* a region of air-pressure, as against the under or the upper surface of a moving aerofoil.

**pressure-value** 'pʁeʃəz,væliu *n.* the value or numerical amount of the pressure of a fluid, as air upon an aerofoil.

**primaried** 'pʁaɪ-mə-zɪd *adj.* furnished with primaries or primary feathers: as, nine\*primaried.

**primary** 'pʁaɪ-mə-zɪ *n.* one of the wing-feathers seated upon the manus or hand of a bird.

**prob** pʁəb *n.*

*old prob*, the chief of the weather-bureau; the weather-prefet.

**projector** pʁə'dʒektəz *n.* an apparatus for projecting or throwing a beam of light, often consisting essentially of a parabolic mirror.

**pronation** pʁə'neɪ-ʃən *n.* the act or result of pronating; the prone position of the forearm in which the bones of the forearm are more or less crest and the palm of the hand turned downward: the opposite of *supination*.

**propellant** pʁə'pələnt *n.* an agent or force that propels; a propelling-agent.

**propeller** pʁə'pələz *n.* any device for propelling, driving forward, or imparting translatory motion; a contrivance such as an oar, a paddle-wheel, or especially a screw, actuated by a motor and used for the propulsion of an airship; a screw propeller.

*collapsible propeller*, a propeller so made as to be capable of being collapsed or folded up.

*curved propeller*, a propeller the cross-section of whose blades, in a plane passing thru the shaft, is curved; a propeller the surface of the rotation of whose blades is curved.

*dihedral propeller*, a propeller whose blades form a dihedral angle with each other.

*fan propeller*, same meaning as *fan-propeller*.

*flexible propeller*, a propeller which is made of flexible material mounted on a frame; a non-rigid propeller; a collapsible propeller.



*multibladed propeller*, a propeller having several or many blades.

*non-rigid propeller*, an aerial propeller which is not rigid; a flexible propeller.

*plural propellers*, propellers which are placed several upon one given flying-machine; propellers two or more of which are placed upon a single machine; multiple propellers.

*rear propeller*, a propeller which is placed in the rear or hind part of an aircraft. compare *tractor propeller*.

*screw propeller*, a propeller in the form of a screw or system of blades arranged spirally around a central hub attached to a rotating shaft and made to rotate by power.

*single propeller*, a propeller which is single or the only one upon a given flying-machine. compare *plural propellers*.

*straight propeller*, a propeller the cross-section of whose blades, in a plane passing thru the shaft, is straight; a propeller the surface of the rotation of whose blades is a plane normal to the shaft.

*tractor propeller*, a propeller which is placed in the front or fore part of an aircraft, thus acting as a tractor drawing the machine forward; a tractor screw; a front propeller.

**propeller-blade** pɔ'pələz,bleɪd *n.* one of the blades or vanes of a propeller.

**propeller-diameter** pɔ'pələz-daɪ,æmɪ-təz *n.* the diameter of a propeller.

**propeller-efficiency** pɔ'pələz-ɪ,frɪʃən-sɪ *n.* the efficiency or effectual power of an aerial propeller.

**propeller-hub** pɔ'pələz,hʌb *n.* the hub or central block-like part of a propeller, from which the blades radiate and by which it is fastened to the shaft.

**propeller-reaction** pɔ'pələz-zi,ækʃən *n.* the reaction of the revolving (single or unneutralized) propeller of an aircraft against the air on which it acts, to which is due the tendency of the craft to revolve in the opposite direction.

**propeller-shaft** pɔ'pələz,ʃɑ:ft *n.* the rigid shaft which carries the propeller of an airship.

**propeller-speed** pɔ'pələz,spi:ɪd *n.* the rotational speed or velocity of an aerial propeller.

**propeller-thrust** pɔ'pələz,θɹʌst *n.* the thrust or push of a propeller against the air.

**propeller-travel** pɔ'pələz,tɹævəl *n.* the travel or translatable motion of a propeller thru the air.

- propeller-wheel** ˈpɒpələz,wɪl *n.* an aerial propeller or screw; a screw propeller.
- propelling-agent** ˈpɒpəlɪŋ,æ-dʒənt *n.* an agent for propelling; an agency for effecting the propulsion, or the forward translatory motion, of an airship; a propellant.
- propelling-apparatus** ˈpɒpəlɪŋ-æpə,zɛ-təs *n.* an apparatus or contrivance for propelling or driving forward an airship.
- propelling-device** ˈpɒpəlɪŋ-dɪvaɪs *n.* a device for propelling an aircraft; a propelling-apparatus.
- propelling-effect** ˈpɒpəlɪŋ-ɪ,fekt *n.* the effect of propelling; the fact of propulsion.
- propelling-force** ˈpɒpəlɪŋ,fɔ:z *n.* a force effective in propelling; a force used in airship-propulsion.
- propelling-machinery** ˈpɒpəlɪŋ-mə,ʃɪn-ən-əri *n.* machinery used in propelling; propulsive apparatus.
- propelling-screw** ˈpɒpəlɪŋ,skru *n.* the screw which propels an airship; a screw propeller.
- propelling-surface** ˈpɒpəlɪŋ,səʃɪs *n.* a surface or thin structure used in propelling; a propellant aerofoil, such as the wing of a bird.
- propelling-wing** ˈpɒpəlɪŋ,wɪŋ *n.* a wing which propels; a wing considered as a propelling-organ.
- propulsor** ˈpɒpələsəz *n.* anything which propels, drives forward, or imparts translatory motion; a propulsive apparatus; a propeller.
- propulsion** ˈpɒpələʃən *n.* the act of propelling or driving forward; impulse given.
- pro** ˈpɒ *n.* the fore or front part of an airship; the bow.
- pseudoneuroptera** ˌsju:dnjʊˈzɛptə-zə *n. pl.* an order of neuropterous insects comprizing the dragon-flies, May-flies, and others, having incomplete metamorphosis, four membranous wings, and mandibulate mouth-parts.
- psychrometer** ˌsaɪˈkɒmɪ-təz *n.* an instrument consisting of a wet-bulb thermometer and a dry-bulb thermometer, for measuring the pressure of the water-vapor in the air, or the relative humidity.  
*aspirator psychrometer*, a psychrometer fitted with an aspirator; an aspiration psychrometer.
- pterodactyl** ˌtɛzəˈdæktɪl *n.* an extinct reptile of the genus *Pterodactylus* or order Pterosauria; a pterosaurian; an ornithosaurian; a flying-dragon; a pterodactylian.
- pterophore** ˈtɛzə,fɔz *n.* [also spelt *pterofores*] a flyer proposed by Paucton in 1768, consisting of two aerial screws, one to sustain and the other to propel, attached to a light chair.

**pterygoid** 'tezi,gəid *adj.* winglike; wing-shaped; resembling that of a wing; as of something provided with wings or sustaining-surfaces; similar to that of a winged thing. compare *apteroid*.

*pterygoid aspect*, see under *aspect*.

**pteryla** 'tezi-lə *n.* [plural *pterylae*] a feathered tract or space on the skin of a bird; a feather-tract: distinguished from *apterium*.

**pterylae** 'tezi,li *n. pl.* see *pteryla*.

**puff** paf *n.* a sharp forcible blast of sudden emission, as of air, wind, or smoke; a whiff of air.

**puffy** 'pafi *adj.* coming in puffs; gusty.

**pull** pol *n.* drawing-power or action; a hauling; a tug.

**pulling-power** 'pɔln,pau-əz *n.* power or capacity to pull; tractive power.

**pulviplume** 'paɪvi,pləum *n.* powder-down.

**purga** 'pɜ:z-gə *n.* a cold wind in Siberia and Labrador in which fine snow or snow-sand is often whirled about. It is similar to the burga of Alaska.

**pygostyle** 'pai-gə,staɪl *n.* the large bone at the end of a bird's tail; the plowshare bone; the vomer.

**pylon** 'pai,lən, 'pai-lən *n.* the framework for raising and dropping the weight sometimes used for starting an aeroplane; a starting-derrick; a catapult; also, a similar upright tapering wooden framework used as a signal-tower or marking-post for the guidance of aviators on a flying-field.

**pyrheliometer** ,pɜ:z-hili'əmi-təz *n.* an instrument devised by Pouillet for measuring the intensity of the heat of the sun; a pyroheliometer.

**quadrant** 'kwɔdrənt *n.* an instrument consisting primarily of a graduated quarter circle, used for taking altitudes of heavenly bodies; especially, the reflecting quadrant invented in 1730 or earlier, used by navigators for taking the altitude of the sun, but now largely superseded by the sextant.

**quadruplane** 'kwɔdrə,plæn *n.* an aeroplane flying-machine having four main-planes; a multiplane having four sustaining-surfaces.

**qualm** kwɑ:m *n.* a (sudden) feeling or fit of faintness, illness, or sickness, as a touch of seasickness or nausea.

**qualmish** 'kwɑ:-mɪʃ *adj.* of the nature of a qualm.

**quarter** 'kwɔ:-təz *intr.* fly with the wind on the quarter, or 45 degrees abaft the beam: as, to \*quarter into the wind.

**quasi-aerial** ,kwæe-sai-e'ɪ:zi-əl *adj.* seemingly or nearly,

but not strictly, aerial; aerial in certain respects: as, \*quasi-aerial locomotion.

**quill** kwɪl *n.* the tube or barrel of a bird's feather, the part whose base is attached to the skin; sometimes, also, the tube and shaft, taken together; and, further, the whole feather; a quill-feather.

*bastard quills*, the quills growing upon the bastard wing, the winglet, or thumb of a bird; the quills of the alula; the spuriae.

**quill-covert** 'kwɪl,kʌvəɪt *n.* one of the feathers immediately covering the bases of the quill-feathers or quills of the wings of a bird; a wing-covert or a tail-covert; a tectrix.

**quill-feather** 'kwɪl,fedəz *n.* [also spelt *quill-feather*] one of the large flight-feathers or remiges of a bird's wing, or, sometimes, of the tail, provided with a quill or hollow tube at the base; a quill.

**rachis** 'zæe-kɪs *n.* [also spelt *rhachis*] the stem, shaft, or scape of a bird's feather, as distinguished from the vexilla, vanes, or webs; in quill-feathers, the upper opaque part of the stem which bears the vexilla or vanes, as distinguished from the calamus or quill.

**racing-aeroplane** 'zæe-sɪŋ,æe-æzə-plæən *n.* same meaning as *racing-plane*.

**racing-machine** 'zæe-sɪŋ-mə,ʃɪn *n.* an aeroplane or other air-machine used for racing; a speed machine; a racer.

**racing-plane** 'zæe-sɪŋ,plæən *n.* an aeroplane flying-machine designed for racing or speed; a racing-machine of the aeroplane type.

**radiation** ,zedi'æe-ʃən *n.* the act of radiating; the state of being radiated; the amount of heat-rays or other form of radiant energy shot forth from a given source.

*atmospheric radiation*, the thermal radiation from the earth's atmosphere; the radiant dissipation of heat from the atmosphere.

*solar radiation*, the radiation of the sun as measured by the heat the earth receives from it.

*coefficient of radiation*, the constant numerical measure of radiation; the unit of radiating-power, as of a given portion of the earth's atmosphere, or of a given quality of air.

**radiation-fog** ,zedi'æe-ʃən,fɒg *n.* fog caused by radiation of heat on low grounds.

**radiation-thermometer** ,zedi'æe-ʃən-θəz,məʊnɪ-təz *n.* a

mercurial thermometer enclosed in a glass vacuum-tube, used for measuring solar radiation.

**radiation-weather** ˌrediˈeɪ-ʃən, wədəz *n.* weather due to, or controlled largely by, radiation of heat from the ground; the weather characteristic of an area of high atmospheric pressure, clear sky, and light winds, varying with the thermal radiations from the earth.

**radiometer** ˌrediˈɒmɪ-təz *n.* an instrument consisting of a frame supporting mica-vanes which are free to revolve in a vacuum, used for measuring or demonstrating the effects of radiant energy, as light or heat.

**radius** ˈzeɪ-di-əs *n.* [plural *radii*] one of the processes on each side of the upper border of a bird's feather; a barbule.

*aerodromic radius*, the distance in a straight line from the mass-center of an aerodone to the aerodromic wing-center.

*aerodynamic radius*, the distance in a straight line from the mass-center of an aerodone to the aerodynamic wing-center.

**raft** zɑ:ft *n.*

*aerial raft*, a flat structure capable of floating in the air; an aeroplane.

**rail** zeɪl *n.* see *starting-rail* and *launching-rail*.

**rain** zeɪn *n.* water in the form of drops resulting from the condensation and aggregation of vapor, falling thru the lower regions of the air or atmosphere; also, the descent or fall of water in this form; and, further, a shower, period, or season characterized by the fall of water in this form.

*belt of rains*, the belt or long narrow equatorial region between the tradewinds, nearly encircling the earth, characterized by frequent rains thruout the year; the equatorial rain-belt.

*black rain*, rain or rainwater which is somewhat black, or which leaves a black residue owing to the presence of black fungi, black soil, or soot carried down from the atmosphere.

*coast rain*, one of the rains characteristic of the coast or costal regions of a continent or island, usually due to winds blowing off the sea toward the land.

*convective rain*, rain which is due to the cooling of air by expansion when forced upward by convection-currents.

*cyclonic rain*, rain which is due to the cooling of air by expansion when forced upward by cyclonic circulation.

*dynamic theory of the formation of rain*, the theory of Espy and others that rain, snow, etc., is caused by thermodynamic processes.

*monsoon rain*, a rain accompanying or due to a monsoon wind.

*luminous rain*, rain characterized by luminous electric discharges or sparks between the drops or between the drops and the ground.

*orographic rain*, rain which is due to the cooling of air by expansion when deflected upward by hills or mountains.

*yellow rain*, rain due to the pollen of fir-trees, etc., being raised by the wind and afterwards precipitated; sulfur-rain.

**rain-area** 'zɛn,ɛ:-zi-ə *n.*

1. an area or region of the earth over which rain is falling or has fallen, as one of those shown on a weather map.

2. the area or region of an extensive cyclone in which the maximum rainfall occurs, as one of the southerly quadrants, in the northern hemisphere, or a northerly quadrant in the southerly hemisphere.

3. the area or tract of a storm-area where rain is falling, as distinguished from the area where snow is falling.

**rainball** 'zɛn,bɔ:l *n.* (in *England*) one of the festoons of mammato-cumulus or pecky cloud, considered as being a sign of rain.

**rainband** 'zɛn,bænd *n.* a dark band in the solar spectrum due to absorption of light by the water-vapor in the atmosphere, studied by means of a spectroscope in forecasting weather.

**rain-bearing** 'zɛn,bɛ:-ziŋ *adj.* having, producing, or bringing rain: said of winds.

**rain-belt** 'zɛn,bɛlt *n.* a belt or elongated region where rain is relatively frequent; a tract where the rainfall is greater than in surrounding relatively arid tracts.

*equatorial rain-belt*, the rain-belt which girdles the earth in the equatorial region and is contained by the somewhat wider zone known as the equatorial cloud-belt.

**rain-bird** 'zɛn,bɪ:zd *n.* a bird, as the rain-crow, which is supposed to indicate rain by its noisy or uneasy actions. compare *storm-bird*.

**rainbow** 'zɛn,bʊ *n.* a bow or arch exhibiting the colors of the solar spectrum in concentric bands, formed in the sky opposite the sun, by the reflection, double refraction, and dispersion of the sun's rays in falling rain-drops; also, a similar arch in the spray of cataracts, breakers, and the like.

*moonlight rainbow*, a dim rainbow occurring by moonlight.

*spurious rainbow*, a relatively faint bow seen close inside the violet of the primary bow of a finely developed rainbow, or outside the violet of the secondary bow; a supernumerary rainbow.

*supernumerary rainbow*, same meaning as *spurious rainbow*.

**rain-chart** 'zeen,tʃɑ:zt *n.* a chart or map showing the distribution of the rainfall over a certain area; a rain-map.

**rain-cloud** 'zeen,klaʊd *n.* a cloud from which rain falls; nimbus; cumulo-nimbus or strato-nimbus; also, sometimes, fracto-cumulus, and, further, scud.

**rain-crow** 'zeen,kroʊ *n.* a tree-cuckoo often heard in lowering weather, and supposed to foretell rain.

**rainfall** 'zeen,fc:l *n.*

1. a fall or shower of rain.

2. the quantity of rain (or rain, snow, etc.) which falls in a certain time in a given area, measured by its average depth (or the depth of its equivalent in the form of water), in inches or otherwise.

**rainfall-chart** 'zeen-fc:l,tʃɑ:zt *n.* an isohyetal chart.

**rain-gage** 'zeen,geɪdʒ *n.* [also spelt *rain-gauge*] an instrument for collecting and measuring the amount of rainfall at a given place; a pluviometer.

**rain-maker** 'zeen,mæ-kəz *n.* one who pretends to cause rain by some physical process, as by the explosion of dynamite.

**rain-map** 'zeen,mæp *n.* same meaning as *rain-chart*.

**rain-proof** 'zeen,pʁʊf *adj.* proof against rain; rain-tight; waterproof in a shower.

**rain-storm** 'zeen,stɔ:m *n.* a storm of rain; a rain.

**rain-streak** 'zeen,stri:k *n.* a streak or tail-like mass seen in connection with cumulus cloud, due to rain falling slowly and drifting behind in the lower wind. compare *tailed cirrus* under *cirrus*.

**rain-tight** 'zeen,tart *adj.* so tight as to exclude rain; rain-proof.

**rain-wind** 'zeen,wɪnd *n.* a wind blowing from the point or region whence rain is coming, as one blowing from the ocean, from the earth's equator, or up a mountain-side.

**rake** ze:k *v.*

1. *intr.* incline from the perpendicular or the horizontal, as the mast, stem, or stern of a water-ship.

2. *tr.* give a rake to; cause to incline or slope.

**rake** ze:k *n.* inclination or slope away from a perpendicular or horizontal line: as, the \*rake of a ship's mast.

**raking** 'ze-kɪŋ *adj.* having a rake or inclination; inclining.

**rami** 'ze:,maɪ *n. pl.* see *ramus*.

**ramus** 'zæ-məs *n.* [plural *rami*] one of the barbs of the web, vane, or vexillum of a bird's feather.

**rarefaction** ,zæri'fækʃən *n.* the act or process of rarefying or making rare; also, the state of being rarefied or rare: opposed to *condensation* and *compression*.

*rarefaction side*, the side or surface of a wing, aeroplane, propeller-blade, or other aerofoil, which effects the rarefaction of, or recedes from, the air: the opposite of *compression side*.

**ratite** 'zæ,tait *adj.* raft-brested, as a bird; having a flat or keelless breast-bone or sternum; flat like a raft; having no keel, as a breast-bone.

**ratline** 'zætlin *n.* [also spelt *ratlin*] one of the horizontal ropes extending between the shrouds of a ship, or between ropes hanging vertically below the car of an aircraft, thus furnishing steps, like the rungs of a ladder, for climbing up and down.

**rattan** ,zæ'tæn *n.* [also spelt *ratan*] the stem of the rattan-palm, often split, used somewhat in flying-machine construction.

**reaction-jet** zi'ækʃən,dʒet *n.* a jet or fluid, as air or steam, the atmospheric reaction against which has been proposed as a means of propelling airships.

**rearward** 'zi:r-wərd *adj.* situated at or toward the rear; placed astern; aft.

**reascend** ,zi-ə'send *intr.* ascend again; mount or go up a second time.

**reascension** ,zi-ə'senʃən *n.* another ascension, as of an aeroplane after landing; the action of ascending again.

**rebalance** ,zi'bæləns *intr.* balance again; regain equilibrium.

**recession** zi'seʃən *n.* the action of an airship in retiring or withdrawing into the air, just after a swoop; the upward sweep which immediately follows the downward rush of a flying-machine.

**reckoning** 'zækə-nɪŋ, 'zækniŋ *n.* (*sea-term*) the calculation of the position of a ship from the rate as determined by the log and the course as determined by the compass, the place from which the vessel started being known.

**reconnaissance** zi'kəni-səns *n.* the act or operation of reconnoitering; preliminary examination or survey.

**reconnoissance** ,zækə'nɔi-səns *n.* same meaning as *reconnaissance*.

**reconnoiter** ,zækə'nɔi-təz *v.*

1. *tr.* examine; make a preliminary survey of; survey, as for military purposes.

2. *intr.* make a survey or inspection preliminary to tak-



- ing some action; examín a position or locality as a precaution.
- reconnoitering-balloon** ʒekə'nei-tə-zɪŋ-bə,loun *n.* a balloon used for military reconnoitering.
- recording-balloon** zɪ'ke:z-dɪŋ-bə,loun *n.* a balloon for sending meteorologic recording-instruments to high altitudes to obtain data as to atmospheric conditions.
- recording-instrument** zɪ'ke:z-dɪŋ,ɪnstɹə-mənt *n.* an instrument for automatically recording temperature, altitude, etc.
- record-sheet** 'ʒekəzd,ʃiit *n.* the sheet of paper on which a record is made by an instrument such as the meteorograf.
- rectrices** ʒek'tɹaɪ,sɪz *n. pl.* see *rectrix*.
- rectrix** 'ʒektrɪks *n.* [plural *rectrices*] one of the long large quill-fethers of a bird's tail; a rudder; a tail-fether.
- reef** zɪf *tr.* reduce the extent or surface of (an aerofeíl or supporting-plane) as by taking in, folding up, and securing, as for speedy flight.
- reek** zɪk *n.* smoke; vapor; exhalation, fume.
- reel** zɪl *intr.* turn round and round; whirl; sway from side to side as if dizzy.
- reentrance** ʒi'entɹəns *n.* the reentering angle in the posterior or rear border of a bird's wing, or the part of the wing adjacent thereto.
- registering-balloon** 'ʒedʒɪstɹɪŋ-bə,loun *n.* a small balloon to which a registering-instrument or recording-apparatus is attacht; a registration-balloon.
- registration-balloon** ʒedʒɪ'stɹɛ-ʃən-bə,loun *n.* a small balloon to which a registering-instrument is attacht; a registering-balloon; an exploring-balloon.
- regulating-cone** 'ʒegju-lətɪŋ,koon *n.* a conical opening or part in a parachute for regulating the escape or passage of the air thru the parachute.
- remex** 'zɪ,meks *n.* [plural *remiges*] one of the large stiff quill-fethers which form most of the spread of a bird's wing; a flight-fether; a rower.
- remiges** 'zɛmɪ,dʒɪz *n. pl.* see *remex*.
- rend** zɛnd *intr.* [past participle *rent*] tear, split, part asunder, as a balloon-envelop sometimes does.
- rent** zɛnt *n.* an opening made by rending or tearing; a tear, break, or breach; a crevice or crack: as, a \*rent in a balloon.
- resilient** zɪ'zɪli-ənt *adj.* having resilience; apt to resile, start back, recede, or recoil; tending to spring or bend back; rebounding: as, a mobile and \*resilient flight-fether.
- resistance** zɪ'zɪstəns *n.* the action of resisting; opposition, antagonism.

*fluid resistance*, the resistance offered by a fluid, as air, to a body moving in it.

**resisting-surface** ʒi'zisiŋ, sɛʒfɪs *n.* a surface which resists atmospheric pressure.

**resonator** 'rezə, netəʒ *n.* a device which resounds, as that used on certain Chinese kites, producing an intense plaintive sound which can be heard at a great distance.

**re-start** ʒi'stɑ:zɪ *intr.* start again, as on a flight; set out once more.

**resting-place** 'zestiŋ, plæəs *n.* a place or spot upon which a balloon or airship rests, or may rest; a landing-place; an alighting-place.

**restraining-rope** ʒi'stri:ŋ-niŋ, zɔp *n.* a short rope attached to a flying-machine and restraining or preventing it from rising too far, as in the circular testing-railway proposed by C. Weyher in 1884.

**return-trade** ʒi'tb:zŋ, tʁeɪd *n.* same meaning as *antitrade*.

**rhachis** 'zæ-kɪs *n.* same meaning as *rachis*.

**rhiptera** ʒi'piptə-zə *n. pl.* a family of heteromerous coleoptera including the genus *Stylops*; the rhipidoptera; the stylepidae.

**rhumb-line** 'zɑm, lɪn *n.* [also spelt *rum-line*] a line on the surface of the earth which cuts the meridians at a constant angle; a loxodrome, or loxodromic line.

**rib** ʒɪb *n.*

1. one of the curved cross-pieces in the frame of a kite or other aerofœil: as, the main \*rib of a kite.

2. one of the strips or rods extending between the front and rear spars of a main-plane or wing in an aeroplane or other flying-machine and helping to support it and maintain its peculiar arch form or outline; a rib-piece. compare *stiffener*, *wing-bar* (sense 2).

3. a rib-like stripe of cloud, such as a Noah's Ark or polar band.

**ridge** ʒɪdʒ *n.* the highest part of the roof of a building; the meeting of the upper ends of the rafters.

**rift** ʒɪft *n.*

1. an opening made by riving or splitting; a fissure, a cleft: as, a \*rift in the clouds.

2. a discontinuity in a fluid caused by a body coursing swiftly thru it.

**right-and-left** ʒaɪ-tŋ'left *adj.* side-to-side.

**rigid** 'ʒɪdʒɪd *adj.* characterized by having a rigid or stiff gasbag frame, as a Zeppelin airship; of airships of this type: as, a \*rigid balloon; the \*rigid type of dirigible: distinguished from *non-rigid* and *semi-rigid*.

- rigidity** ʀɪ'dʒɪdɪ-tɪ *n.* the quality or condition of being rigid; stiffness.
- rime** ʀaɪm *n.* white frost or hoarfrost, especially the thick heavy frost which forms upon objects from rain or the freezing of mist.
- ring** ʀɪŋ *n.* the concentrating-ring of a balloon; the concentrating-hoop; the hoop.
- rip** ʀɪp *v.*
1. *tr.* tear or cut open; split.
  2. be torn or split open; open or part.
- rip-cord** 'ʀɪp,kɔ:zd *n.* a cord in a balloon or airship, invented by John Wise in 1844, which, when pulled by the aeronaut, will cause the ripping-panel or the gasbag to be ripped or torn open, thus allowing the gas to escape and the balloon to descend quickly to the ground; the ripping-cord.
- ripping-cord** 'ʀɪpɪŋ,kɔ:zd *n.* same meaning as *rip-cord*.
- ripping-panel** 'ʀɪpɪŋ,pænl *n.* a panel or strip of balloon-cloth in the upper part of the gasbag of a balloon which, by manipulating the ripping-cord, may be suddenly ripped or or rent, so as to allow the inflating-gas to escape and the balloon to descend; the ripping-strip; a rip-strip.
- ripping-strip** 'ʀɪpɪŋ,stɪp *n.* same meaning as *ripping-panel*.
- ripple-cloud** 'ʀɪpəl,klaʊd *n.* a short-lived cloud formed as if marked by ripples; a waved cloud.
- rip-strip** 'ʀɪp,stɪp *n.* the ripping-strip of a balloon; the ripping-panel.
- rise** ʀaɪz *intr.* [past participle *risen*; preterit *rose*] move upward; ascend, mount.
- rising-angle** 'ʀaɪ-zɪŋ,æŋɡəl *n.* the angle at which rising is done; the angle which a rising aeroplane or glider makes with the direction of flight or with the horizontal; the angle of inclination of an aerofœil adjusted for rising into or thru the air: compare *gliding-angle*.
- rising-capacity** 'ʀaɪ-zɪŋ-kə,pæ-sɪ-tɪ *n.* capacity to rise, mount, or ascend in or thru the air; rising-power; ascending-power.
- rising-power** 'ʀaɪ-zɪŋ,pau-əz *n.* power to rise, mount, or ascend in or thru the air; rising-capacity; ascending-power.
- rising-track** 'ʀaɪ-zɪŋ,tɹæk *n.* the track or railway by the aid of which a flying-machine rises into the air in flight; a starting-track; a launching-rail.
- rocket** 'ʀɔkɪt *n.* a tube containing explosives which, when ignited, propel the tube forward; a sky-rocket. Rockets

are used in fireworks, warfare, and life-saving, and have been proposed as a means of propelling balloons.

**rocket** 'zəkɪt *intr.* fly swiftly straight up into the air, as a fésant when flusht; tower.

**rocketing** 'zəkɪ-tɪŋ *n.* the action of the verb *rocket*; a flying rapidly upward as a fésant does when flusht; towering.

**rocket-rising** 'zəkɪt,zəɪ-zɪŋ *adj.* rising swiftly in flight like a sky-rocket, as a flying-machine.

**roll** zɔʊl *intr.* go down or sink ɔn one side and then ɔn the other, as an airship; turn, swing, or ɔscillate from side to side about a longitudinal axis. compare *pitch*.

**roll-cloud** 'zɔʊl,kɫəʊd *n.* a roll-shaped, cylindrical, or spindle-shaped cloud as in cirro-cumulus, stratus, or cumulo-stratus; a cloud resembling a roller or breaker of the sea.

**roller** 'zɔʊ-ləz *n.* one of a series of vertex-filaments in a system of flow which act as rollers between the live fluid and the dɛd-water; a vertex roller.

**root** zɔʊt *n.* the part of a bird's wing toward the anatomical shoulder.

**rotation** zɔ'tæ-ʃən *n.* the act or process of rotating or turning, as do the parts or particles of a fluid; the action or state of whirling around.

**rotation-anemometer** zɔ'tæ-ʃən-ænɪ,mɔmɪ-təz *n.* an anemometer for measuring the velocity of the wind by means of the rotation of blades or cups moved by the wind.

**rough-winged** 'zʌf,wɪŋd *adj.* [also spelt *rough-winged*] having rough wings; having the outer web of the first primary rɛtɔrsely serrulate: as, the common \*rough-winged swallow.

**rower** 'zɔʊ-əz *n.*

1. one of the rɛmɪgɛs or flight-fɛthɛrs of a bird's wing; a quill-fɛthɛr of the wing.

2. a bird that rows with its wings, or practises rowing flight.

**rubbersilk** 'zʌbɪz,sɪlk *n.* a balloon-fabric of rubberized silk introduced by T. S. Baldwin about 1908, or earlier, used also in aeroplane-wings.

**rudder** 'zʌpɪz *n.*

1. a device, usually at the rear or front of an airship, by means of which the craft is guided or steerd; a steering-plane; a rudder-plane.

*box rudder*, a rudder in the form of a box with two opposite sides or ends wanting; a rudder typically consisting of four planes joining at right angles in lines lying

in planes parallel to the vertical plane passing thru the line of the direction of flight.

*double rudder*, any rudder having two planes or surfaces.

*flexible rudder*, a rudder which is made flexible or capable of being bent so as to present curved surfaces to the air.

*forward rudder*, same meaning as *front rudder*.

*front rudder*, a rudder, usually horizontal, located at the front or fore part of an airship; a forward rudder; an elevating-plane; an elevator.

*horizontal rudder*, a rudder, commonly at the front or rear of a flying-machine, whose axis of rotation is horizontal and which is used for up-and-down steering and to effect, or aid in maintaining, longitudinal equilibrium; an up-and-down rudder; an altitude-rudder; an elevating-plane; an elevator.

*lateral rudder*, a rudder, as in the rear of an aeroplane flying-machine, used to effect, or aid in maintaining, lateral equilibrium; a vertical rudder-plane designed to aid in balancing a flyer laterally; a right-and-left rudder.

*pivoted rudder*, a rudder which is pivoted so as to turn upon an axis, usually horizontal or vertical.

*right-and-left rudder*, same meaning as *lateral rudder*, *vertical rudder*, *side-to-side rudder*.

*side-to-side rudder*, same meaning as *right-and-left rudder*.

*stabilizing rudder*, a rudder or rudder-like aerofoil, as at either wing-tip of an aeroplane flying-machine, used for stabilizing or steadying the craft; a balancing-plane; an aileron.

*twisting rudder*, a flying-machine rudder which is capable of being twisted, warped, or revolved and flexed at the same time, and thus acting upon the air in every possible direction, after the manner of the tail of most birds.

*up-and-down rudder*, same meaning as *horizontal rudder*, *altitude rudder*.

*vertical rudder*, a rudder whose axis of rotation is vertical and which is used for right-and-left steering and to effect, or aid in maintaining, lateral equilibrium; a right-and-left rudder; a lateral rudder.

2. a rudder-fether.

**rudder-feather** 'zAdəz,fəðəz *n.* [also spelt *rudder-fether*] one of the rectrices or principal fethers of a bird's tail; a true tail-fether; a rudder.

**rudder-frame** 'zAdəz,fæem *n.* the frame of the rudder of an airship.

**rudder-lever** 'zADəz,hi-vəz *n.* a lever in an airship, used to control a rudder.

**rudder-plane** 'zADəz,pʌɛn *n.* an aeroplane used in or as a rudder, as in a Zeppelin airship; a steering-plane.

**rudder-rope** 'zADəz,zɔɔp *n.* the rope by which the steersman or aeronaut controls the rudder of an airship.

**rudder-tail** 'zADəz,tɛɛl *n.* a tail acting as a rudder; an airship-tail designed to function as a rudder; a steering-tail.

**rudder-wheel** 'zADəz,wɪɪl *n.* a wheel by which the rudder of an airship is controlled; a steering-wheel.

**rule** zɔʊl *n.* the expression of a uniformity among phenomena; a minor law; a formula.

*Archibald's rule*, the rule stated by E. D. Archibald as to the rate of diminution of wind-velocity with altitude.

*Brown's rule*, the rule stated by J. Allan Brown, in 1845, as to the direction of the movement of lower cumulus scud, etc.

*Buchan's rule*, the rule formulated by A. Buchan, in 1865, as follows: "Stand with your left hand toward the center of low barometer and your right hand toward the high, then, in the northern hemisphere, the wind will be on your back."

*Espy's rule*, the rough rule stated by Espy, about 1834, that the altitude (in feet), above the observer, of the base of cumulus cloud is 300 times the depression of the dew-point (in Fahrenheit degrees) at the locality of the observer.

*Galton's anticyclonic rule*, see under *anticyclonic*.

*Meldrum's rules*, the rules formulated by C. Meldrum for guidance in hurricanes in the Indian Ocean. These rules were elaborated by Blanford, in 1888.

*Stevenson's rule*, a rule or formula stated by Stevenson as to the velocity of wind, over level land-surfaces increasing with the altitude.

**run** zAn *n.* the buttock and tail (taken together) of an aerofoil or other streamline body; the stern or afterbody of an airship of streamline form: as, the flow has not time to close in round the \*run: distinguished from *entrance*.

**runner** 'zAnəz *n.* a skid, skate, or the like, attached under a flying-machine so as to allow it to run or slide along upon the ground in alighting; a landing-skid.

**running-gear** 'zAnɪŋ,ɡɪz *n.* the gear or apparatus by which a flying-machine is run or operated; the underbody or chassis.

**running-rope** 'zAnɪŋ,zɔɔp *n.* a fastening-rope, as in an airship or flyer, which, as it is loosened or let go and allowed to run out, permits the craft to rise.

**sack-cloud** 'sæk,kləʊd *n.* a cloud from which a sack-like or bag-like pocket hangs; a form of mammato-cumulus whose rounded pendent portions resemble sacks or bags.

**safety-bridle** 'seef-trɪ,bɪdʒl-dl̩ *n.* a kite-bridle provided with, or arranged in the form of, a safety-device which comes into play in case of breakage.

*Marvin safety-bridle*, a form of kite-bridle having two parts, a lower and an upper bridle, joined by a safety-line. If the safety-line breaks, the upper bridle comes into play.

**safety-buoy** 'seef-trɪ,buːɪ *n.* an aerial buoy or float, as a balloon, attached to or forming part of an airship and designed to act as a safety-device in case of a tendency to fall.

**safety-car** 'seef-trɪ,kɑːz *n.* a proposed auxiliary car to be suspended below the principal car or basket of a balloon so as to admit of cooking and other operations being carried on in it with safety or without danger of igniting the gas of the balloon, or so as to serve as a lifeboat, in case of the craft falling into water.

**safety-line** 'seef-trɪ,lʌɪn *n.* a line attached to the bridle of a kite, which acts as a safety-device.

**safety-stick** 'seef-trɪ,stɪk *n.* a stick attached like a bowsprit to the front of a (Hargrave) flyer to break or ease the fall of the machine when coming to earth.

**safety-valve** 'seef-trɪ,vælv *n.* [also spelt *safety-valv*] a valve in the gasbag of a balloon, allowing gas to escape, for safety's sake; a balloon-valve; an escape-valve.

**sag** sæg *intr.* slowly descend, as a kite sometimes does; sink, droop, settle.

**sagging** 'sægɪŋ *n.* the slack of a kite-string; sag.

**sail** see *v.*

1. *intr.* fly without visible movement of the wings, as a bird; float thru the air, as a cloud; glide; navigate the air.

2. *tr.* sail in or thru; navigate: as, to \*sail the air.

**sailer** 'see-ləz *n.* a bird that habitually sails or practises sailing flight, as the albatross; a sailing or soaring bird.

**sailing** 'see-lɪŋ *n.* the action or process of one who, or a thing which sails; moving or floating thru the air; soaring; gliding.

**sailing-balloon** 'see-lɪŋ-bə,lʊn *n.* a balloon fitted with sail-like surfaces for propulsion or steering.

**sailing-machine** 'see-lɪŋ-məʃɪn *n.* a machine or apparatus which sails thru the air; a soaring- or gliding-machine.

**sailing-man** 'see-lɪŋ,mæn *n.* a man who sails or soars in the air; a glider.

**sail-wagon** 'see,wæɡən *n.* a wagon provided with sails or vanes; a wind-wagon.

**sail-wheel** 'seel,wiił *n.* a wheel or revolving drum containing sails for supporting and propelling a flying-machine; a fan-wheel.

**saloon** sə'lu:n *n.* the main cabin of an airship.

**samara** 'sæmə-zə *n.* a dry, indehiscent, usually one-seeded fruit, as that of the elm, provided with a wing or aerofeil by which it is wafted thru the air; a key-fruit or key; a pteridium.

*double samara*, a samara such as the maple-fruit, having two wings or aerofeils.

**samiel** 'sæ-mi-əl *n.* the simoom.

**sand-bag** 'sænd,bæg *n.* a bag used for containing sand-ballast; a ballast-bag.

**sand-ballast** 'sænd,bæləst *n.* ballast in the form of sand; sand used as ballast.

**sand-column** 'sænd,kələm *n.* a column-like cloud of sand sometimes formed by a windstorm in the desert.

**sand-pillar** 'sænd,piləz *n.* a pillar or column-like mass of sand raised by a whirlwind; a sandspout.

**sand-pipe** 'sænd,paip *n.* a pipe-like or cylindrical sandspout formed in an upward rotary air-current.

**sand-wind** 'sænd,wind *n.* a sand-laden wind, as a simoom.

**scale** skeel *n.* a graded series of values or terms; a gradation.

*Beaufort scale*, a scale of estimated wind-velocities represented by the numbers 1 to 12, and by a corresponding series of names, introduced into the British Navy by Admiral Beaufort about 1805.

**scale** skeel *v.*

1. *intr.* skim or glide thru the air.

2. *tr.* skim or glide in or thru: as, to \*scale the air.

**scape** skeep *n.* the shaft, stem, or rachis of a feather; a scapus.

**scapular** 'skæpçu-ləz *n.* one of a bundle of feathers which spring from the pteryla humeralis, humeral tract, or upper arm of a bird, at or near the shoulder, and lie along the side of the back; a shoulder-feather; a scapulary.

**scapulary** 'skæpçu,ləzi *n.* same meaning as *scapular*.

**scareship** 'ske:z,ʃip *n.* (*jocular*) an airship, real or imaginary, which creates a scare or fright, as by mysterious flights at night; a scare airship.

**scepter** 'septəz *n.*

*broken scepter*, the shadow of a person seen on a fog, as from a mountain-top.

**school-balloon** 'skul-bə,lu:n *n.* a balloon used for schooling or teaching novices in balloon-work.

**scintillation** ,sintri'læe-ʃən *n.* the twinkling, flickering, or tremulous motion of the light of the larger first stars or of



the edges of the sun, moon, and planets, often including changes of color when the stars are near the horizon or when the observer shakes his head, and due to the irregular refraction by the warm and cold currents of the atmosphere.

**scintillometer** ,sɪntɪ'ləmɪ-təz *n.* an instrument devised by Montigny for measuring the scintillation of the stars.

**sirocco** sɪ'zəkə *n.* same meaning as *sirocco*.

**scout** skaʊt *intr.* observe or explore as a scout; watch the enemy's movements.

**scout-airship** 'skaʊt,ɛ:z-ʃɪp *n.* an airship which is used for scouting-purposes; an aerial scouting-craft.

**scouting-craft** 'skaʊ-tɪŋ,ksɑ:ft *n.* an air-craft used for scouting; a scouting-airship.

**scouting-machine** 'skaʊ-tɪŋ-mə,ʃɪn *n.* a flying-machine designed for military scouting or reconnoitering; an aerial scouting-craft; a scouting-airship.

**screw** sksəʊ *n.* a cylinder of wood, metal, or other material, having a spiral ridge or thread winding round it, used for fastening things together or for imparting motion; also, a rotary, bladed propeller or flyer constructed on the same principle.

*aerial screw*, a screw propeller designed for use in the air; an air-screw.

*double-bladed screw*, a propelling-screw with two blades or vanes; a double-vaned screw.

*double-vaned screw*, same meaning as *double-bladed screw*.

*flying screw*, see *flying-screw*.

*screw propeller*, see under *propeller*.

*tractor screw*, a screw propeller which is placed in the front or fore part of an air-craft, thus acting as a tractor drawing the machine forward; a tractor propeller; a front propeller.

**screw-blade** 'skʃəʊ,blæd *n.* one of the blades or vanes of an aerial screw, screw propeller, or lifting-screw.

**screw-plane** 'skʃəʊ,plæn *n.* an aeroplane or aerofœil in the form of a screw; an air-screw; an aerial screw propeller.

**screw-propeller** 'skʃəʊ-psə,peləz *n.* same meaning as *screw propeller*. see under *propeller*.

**screw-slip** 'skʃəʊ,slɪp *n.* the slip of a screw propeller; the drag of an air-screw.

**screw-vane** 'skʃəʊ,veən *n.* the vane of an aerial screw; a screw-blade.

**scud** skʌd *n.* irregular fragments or patches of cloud torn from, or floating below, a nimbus or rain-cloud; small de-

tacht clouds moving rapidly under a mass of storm-cloud; fracto-nimbus cloud.

**scull** skʌl *intr.* make movements similar to those of one who sculls a boat; make strokes with the outer portion of the wings, turning these parts of the wings at each stroke.

**sea-anchor** 'si:æŋkəz *n.* a water-anchor attached to an aircraft, for use at sea.

**sea-bird** 'si:bɜ:zd *n.* a bird that lives habitually over or near the sea; a marine or pelagic web-footed bird; a sea-fowl. compare *land-bird*.

**seaboard** 'si:bɔ:zd *n.* the sea-shore or sea-coast; the coast-line of the sea or ocean.

**sea-breeze** 'si:bzi:z *n.* a breeze blowing from the sea toward the land; a diurnal breeze occurring near the sea-coast, commonly lasting from about 10 o'clock in the forenoon till sunset. compare *land-breeze*.

**sea-dust** 'si:dast *n.* dust, usually of brick-red color, borne from deserts far out to sea where it appears as red fog or sirocco-dust, or in blood-rain.

**sea-edge** 'si:edʒ *n.* the edge of the open sea or ocean next to the ice-field; the boundary-line between the open and the frozen arctic sea.

**sea-horizon** 'si:hɔ:zɔ:n *n.* the horizon or circle which bounds the view of the observer at sea; the sensible or visible horizon of one who is upon the open ocean.

**sea-gull** 'si:gʌl *n.* any bird of the subfamily Larinae most of which fly over the sea and inland waters; also, one of certain of the larger terns; a gull.

**sea-horse** 'si:hɔ:z *n.*

*flying sea-horse*, one of a family of fishes, the Pegasidae, typified by the genus Pegasus.

**seam** si:m *n.* one of the lines joining the sewd or stitch edges of the silk or other gores of the envelop of the gasbag of a balloon; the line of union between two contiguous gores.

**sea-plane** 'si:ple:n *n.* the plane or level constituting the surface of the sea; the two-dimensional surface of the ocean or sea.

**searchlight** 'sɜ:ztʃ,laɪt *n.* a powerful light or lamp with a parabolic reflector or lens used, as on an airship, for searching out or illuminating distant objects.

**seasickness** 'si:sɪknɪs *n.* the state or condition of being seasick; nausea.

**seat-back** 'si:t,bæk *n.* the movable back of the seat or chair occupied by the driver, as in a Curtiss aeroplane, by which

the lateral motions of the driver's body are communicated to the balancing-planes. compare *body-cradle* and *shoulder-yoke*.

**secondary** 'sekən,dɛzɪ *n.* a secondary remex or flight-fether of a bird's wing; one of the large quill-fethers of a bird's wing which are seated upon the forearm, between the primaries and tertiaries.

**section** 'sekʃən *n.* a cutting or division; a representation, as of an aerofœil or airship as it would appear if cut by an intersecting plane: as, a longitudinal \*section, a transverse \*section.

*fish section*, a section, as of a streamline body, which resembles the longitudinal section of a fish, being blunt at one end and tapering at the other end.

**sectional** 'sekʃə-nl̩ *adj.* characterized by the presence of sections, divisions, or compartments: as, the \*sectional construction of a Zeppelin airship.

**self-raising** ,self'zæ-zɪŋ *adj.* capable of raising or lifting itself into the air: as, a \*self-raising, self-sustaining, and self-propelling flying-machine.

**self-register** ,self'zɛdʒɪ-stəz *n.* an automatic register or self-registering device, as for an anemometer.

**self-registering** ,self'zɛdʒɪ-stɪŋ *adj.* registering automatically; self-recording: as, \*self-registering instruments; a \*self-registering balloon.

**self-righting** ,self'zɑɪ-tɪŋ *adj.* capable of righting itself, as a gliding-machine, when capsized or disturbed in its motion or balance.

**self-sustained** ,self-sə'steɪnd *adj.* [also spelt *self-sustained*] sustained or held up in the air by its own power or movement, altho heavier than air, as an aeroplane flying-machine.

**self-sustaining** ,self-sə'steɪ-nɪŋ *adj.* capable of sustaining or holding itself up in the air, as a flying-machine.

**semirigid** ,semɪ'zɪdʒɪd *adj.* [also spelt *semi-rigid*] partly rigid: said of balloons, airships, or gas-vessels which are neither wholly rigid nor wholly non-rigid.

**sennit** 'senɪt *n.* [also spelt *sennet*] flat braided cordage, sometimes used as belting for transmitting power from the motor to the propeller in airships.

**settle** 'setl̩ *intr.* descend gradually; sink.

**sextant** 'sekstnt̩ *n.* an instrument consisting of a graduated arc of a sixth part of a circle, used for measuring the angular distance of two stars or other distant objects in the sky, or the altitude of a star above the horizon.

**shaft** ʃɑ:ft *n.*

1. the main stem or stock of a bird's feather including both the calamus and rachis; the scape.

2. an axle, commonly an elongated cylinder or bar in shape, as that connecting the motor of an airship with the propeller; also, any bar revolved by power and communicating its motion to various working-parts or separate machines, as by drums and belts, or by cog-wheels.

**sharpshooter** ʃɑ:zɪp,ʃou-təz *n.* one skilful in shooting with firearms, especially with the rifle; a skirmisher.

**shear** ʃɪ:z *n.* a deflection or deviation from the normal path; movement to one side.

**shelter-belt** ʃeltəz,belt *n.* a forest maintained as a protection against wind or snow; a shelter-wood; a wind-mantle. compare *wind-break*.

**ship** ʃɪp *n.* an aerial vessel; an airship; a dirigible balloon.

**shock-absorber** ʃək-əb,sə:z-bəz *n.* a device for absorbing or deadening the shock or concussion experienced by an airship when it lands or comes into contact with any obstacle; a buffer.

**shooting-star** ʃou-tɪŋ,stɑ:z *n.* same meaning as *falling-star*.

**short-winged** ʃø:zt,wɪŋd *adj.* [also spelt *short-winged*] having wings that are short; furnished with short wings.

**shoulder** ʃoʊl-dəz *n.* the part of an aerofoil or streamline body just behind the head; the hinder portion of the entrance of a streamline body.

**shoulder-feather** ʃoʊl-dəz,fedəz *n.* same meaning as *scapular*.

**shoulder-fork** ʃoʊl-dəz,fɔ:zk *n.* the fork or yoke-like part of the movable seat-back, as of a Curtiss aeroplane, embracing the operator's shoulders; the shoulder-yoke: as, \*shoulder-fork control.

**shoulder-yoke** ʃoʊl-dəz,jɔ:k *n.* the yoke or fork-like part of the movable seat-back, as of a Curtiss aeroplane, embracing the operator's shoulders; the shoulder-fork.

**shoulder-link** ʃoʊl-dəz,lɪŋk *n.* the shoulder-joint of a bird, in the region of which the tertiary feathers are attached.

**shower-cloud** ʃau-əz,klaʊd *n.* a cumulo-nimbus cloud from whose base a shower of rain, hail, or sleet generally falls; a thunder-cloud

**side-plane** ʃaɪd,plæn *n.* a plane placed at either side, or near the lateral extremities, of a flying-machine, as for stability.

**side-pocket** ʃaɪd,pəkɪt *n.* a wind-pocket or windbag on the side of a Japanese kite, for aiding stability.

**side-rope** 'saɪd,rɒp *n.* one of two ropes attached one to each side of a kite, manipulated from the ground so as to restrain the side oscillations of the kite.

**side-string** 'saɪd,stɪŋ *n.* one of the strings at the side of a kite, attached to the outer ends of the frame-sticks.

**side-to-side** 'saɪd-tə,sɑɪd *adj.*

1. from one side to the other; from right to left, or vice versa; lateral: as, \*side-to-side motion: distinguished from *up-and-down*.

2. related to, or controlling the side-to-side movements of an aircraft; having to do with horizontal steering; right-and-left: as, a \*side-to-side rudder: distinguished from *up-and-down*.

**side-van** 'saɪd,væn *n.* a van, vane, or wing located at one side of an airship; a side-vane; a side-plane; a side-wing.

**side-wind** 'saɪd,wɪnd *n.* a wind blowing laterally or toward the side; a wind or air-current coming from the side; also, at sea, a beam-wind.

**side-wing** 'saɪd,wɪŋ *n.* a wing or aeroplane located on one side of a flying-machine; a lateral wing; a side-plane.

**signal** 'sɪɡnəl *n.* a sign or indication; some conventional object, as a flag, a sound, or a light, displayed so as to communicate information regarding weather-conditions, etc.: as, a hot-wind \*signal.

*ball signal*, same meaning as *staff-and-ball signal*.

*bomb signal*, a colored-light weather-signal made by means of an explosive bomb thrown to a great height.

*cautionary signal*, specifically, one of the wind-signals formerly (1871-91) used by the United States government in place of the present storm-warnings.

*drum-and-cone signal*, a wind-signal consisting of a pendant drum or short vertical cylinder and a cone, displayed in different combinations at European and Colonial stations.

*information signal*, a triangular red-flag signal formerly used by the United States government (in place of the present storm-warnings) to notify seamen of the advisability of applying for information as to probable storms.

*staff-and-ball signal*, a weather-signal consisting of three balls arranged vertically above one another upon a staff in different combinations.

**signal-corps** 'sɪɡnəl,kɔ:z *n.* a corps of the United States army charged with signal-work such as telegraphing; an army-corps concerned with signal-services.

**signal-flag** 'sɪɡnəl,fɪæg *n.* a flag used as a signal or sign, as by the Weather-Bureau; one of a set of flags of different colors, shapes, and markings used for signaling.

**signaling-balloon** 'sɪgnl-ɪŋ-bə,lʊn *n.* a balloon used for making signals, as in war.

**signal-service** 'sɪgnl,sɪ:z-vɪs *n.* the service or business of transmitting signals; the occupation of signaling, especially in the army: as, to be assigned to \*signal-service; also, an organization for the business of signaling, such as the signal-corps.

**silencer** 'saɪ-lən-səz *n.* a device for silencing or muffling the exhaust of an internal-combustion engine; an exhaust-muffler.

**silk** sɪlk *n.* cloth made from the fine soft threads of the cocoons of the larvae of bombycid worms called silkworms, used in making balloon-envelops and other aerial apparatus.

*oiled silk*, same meaning as *oil-silk*.

**simoom** sɪ'mʊm *n.* a hot, dry sand-wind occurring in the African and Asiatic deserts in spring and summer.

**sine-curve** 'saɪn,kɜ:v *n.* [also spelt *sine curve*, *sine=curv*] a curve in which the abscissa is proportionate to the angle and the ordinate proportionate to the sine of the angle; a curve of sines; a sinusoid.

**single-celled** ,sɪŋgəl'seld *adj.* [also spelt *single=celd*] having but one cell; as a cellular kite.

**single-surface** ,sɪŋgəl'sɜ:fɪs *adj.* having a single sustaining-surface or aerofoil; having but one aeroplane supporting-surface: compare *double-surface*.

**sink** sɪŋk *n.* a hypothetic point or system of points at which a fluid is being destroyed or absorbed: opposed to *source*: as, a source-and-\*sink system.

**sink** sɪŋk *intr.* [past participle *sunk*, *sunken*; preterit *sank*, *sunk*] fall or settle downward, as thru the air, by force of gravity; descend.

**sirocco** sɪ'zɔkɔ *n.* [also spelt *scirocco*] a hot, dry, often dust-laden southeast spring and summer wind originating in the high lands of Africa and blowing over Malta, Sicily, and Italy: the same as the wind called in Northern Africa the "leste," and in Spain "la veche."

**sirocco-dust** sɪ'zɔkɔ,dast *n.* a sea-dust borne in a sirocco wind.

**skid** skɪd *n.* a sled-like runner attached to the under surface of an aeroplane or flying-machine as an aid in landing; a landing-skid; a runner.

**skid** skɪd *intr.*

1. slide along after the manner of an automobile the wheels of which are not revolving; slip obliquely thru the

air, as an aeroplane flyer does, or seems to do, when not wholly under the control of the operator.

2. move along on a skid or on skids, as a flying-machine does in landing; slide on the landing-skids or runners.

**skid-strut** 'skɪd, strʌt *n.* one of the struts or braces of the landing-skid of a flying-machine.

**skid-wheel** 'skɪd, wi:l *n.* one of the landing-wheels attached to or taking the place of a skid in a flying-machine.

**skim** skim *v.*

1. glide along upon; soar close to.

2. glide or dart along in a smooth even course thru the air; soar.

**skimmer** 'skɪməz *n.* a bird that skims or shears the water, as any member of the genus rhyncops; a cutwater, shear-water, or scissorbill.

**skin-area** 'skɪn, e:-zi-ə *n.* the area of the portion of the surface of a solid body which is immerst in a fluid.

**skin-fold** 'skɪn, fo:ld *n.* the fold or fly in the skin forming the patagium or flying-membrane of a flying animal: as, the \*skin-fold of the flying-squirrel.

**skin-friction** 'skɪn, fʁɪkʃən *n.* [also spelt *skin friction*] the friction between the skin or immerst surface of a solid body and a fluid, such as the air, in which the solid body is immerst and thru which it is moving; skin-resistance.

**skin-frictional** 'skɪn, fʁɪkʃə-nl *adj.* of or related to, skin-friction: as, the influence of \*skin-frictional error.

**skin-resistance** 'skɪn-ɹɪ,zɪstəns *n.* the resistance offered to the air or other fluid by the skin or surface of a moving aerofoil; skin-friction.

**sky** skaɪ *n.* [plural *skies*] the region of clouds; cloudland; the heavens; the firmament: often used in the plural: as, to sail the \*skies.

*clear sky*, a sky marked by the absence of clouds; the sky characteristic of a clear day; specifically, in the United States Weather-Bureau, a sky in which the obscuration is about 3 on a scale of 10.

*green sky*, a sky which is green in color, usually occurring at sunset.

*lamb's-wool sky*, a sky characterized by white fleecy patches of cloud against the blue.

*livid sky*, a sky overspread by clouds of a livid hue; a blackish-blue or leaden sky.

*mackerel sky*, same meaning as *mackerel-sky*.

*red sky*, a sky which is red in color, usually occurring at sunset.

- sky-aspect** 'skai,æ-spekt *n.* the aspect of the sky. see under *aspect*.
- sky-battle** 'skai,bætfl *n.* a battle fought in the sky; a battle or combat in the air.
- sky-boat** 'skai,boot *n.* a boat or ship for sailing the sky; an air=boat; an airship; a flying=machine.
- sky-climber** 'skai,kləi-məz *n.* an air=craft designed for climbing high into the sky; an altitude=machine; a height=machine.
- sky-craft** 'skai,ksɑ:ft *n.* a craft for sailing the sky; a sky=boat; an airship.
- sky-cycler** 'skai,sai-kləz *n.* one who practises mechanical flight, or, as it were, cycles about in the sky or air; an aviator.
- skyey** 'skai-i *adj.* like the sky; of or situated in the sky or upper air.
- sky-flight** 'skai,flait *n.* the art of flight in the sky; aerial flight; air=flight; aviation.
- sky-flyer** 'skai,flai-əz *n.* [also spelt *sky-flier*] one who flies in the sky; an air=sailor; an aviator.
- sky-gazing** 'skai,gæ-zɪŋ *n.* given to gazing or looking expectantly into the sky; prone to look skyward for airships. compare *airship=gazer*.
- sky-glow** 'skai,glɔo *n.* a peculiar glow recently observed in the sky at Copenhagen and other places.
- sky-gun** 'skai,gan *n.* a gun for shooting into the sky; a gun or cannon for firing at airships.
- sky-high** ,skar'har, (*assumptively*) 'skai,har *adj.* as high as the sky; very high.
- sky-journey** 'skai,dʒɜ:ni *n.* [also spelt *sky journey*] a journey in the sky; a trip thru the skies; an air=trip.
- skylight** 'skai,lait *n.* the light of the sky; sunlight as it comes from the sky.
- sky-line** 'skai,lain *n.*
1. the line where the sky and the earth or objects on the earth appear to meet; the horizon=line; the horizon.
  2. a line or route of travel or transport in the sky, or thru the air; the sky=way; an air=way, an air=line (*sense 2*).
- sky-man** 'skai,mæn *n.* [plural *sky=men*] a man of the sky; an airman; a sky=pilot; an aviator.
- sky-pilot** 'skai,pai-lət *n.* a pilot of the sky; a guide who works in the sky; the steersman of a sky=craft; an air=pilot; an aviator.
- sky-road** 'skai,rɔod *n.* a road or way in or thru the sky; a highway thru the air or atmosphere; a sky=way; an air=road.



- sky-sailing** 'skai,see-lɪŋ *n.* the art, occupation, or sport of sailing the skies; air-sailing; aeronautics, aviation.
- sky-sailor** 'skai,see-ləz *n.* a sailor of the sky; an air-sailor; an airman; an aeronaut; an aviator.
- skyscape** 'skai,skæp *n.* a view of the sky; a part of the sky within the observer's range of vision at any moment.
- skyscraper** 'skai,skʒee-pəz *n.* anything which extends or is projected far into the sky or air, as a ball or missile; especially, a very tall steel building.
- skyscraper-top** 'skai-skʒee-pəz,tɒp *n.* the top or roof of a skyscraper or very tall building.
- skyscraping** 'skai,skʒee-pɪŋ *n.* the occupation or sport of high flying, or, as it were, scraping or sweeping the sky in flying-machines; sky-sailing; air-flight; aviation.
- sky-skimmer** 'skai,skiməz *n.* one who is habitually occupied in skimming or gliding in the sky; a sky-sailor; an expert aviator.
- sky-skipper** 'skai,skipəz *intr.* proceed or fly in the manner of a sky-pilot or aerial skipper; skip along in a flying-machine.
- sky-slide** 'skai,sleɪd *n.* a slide or inclined way in the sky or air; an aerial chute.
- sky-traffic** 'skai,tʒæfɪk *n.* the traffic of the sky or air; aerial trade, commerce, or travel; air-traffic.
- sky-voyage** 'skai,vɔi-ɪdʒ *n.* a voyage in the sky; an aerial voyage; an air-trip.
- skyward** 'skai-wəɪd *adv.* toward the sky or upper air; skywards; heavenward.
- skywards** 'skai-wəɪdz *adv.* same meaning as *skyward*.
- sky-way** 'skai,wɛe *n.* the way or highway of the sky; the atmosphere considered as a road or path of travel; a sky-road: as, to travel a thousand miles of \*sky-ways.
- slack** slæk *n.* the part of a line, cord, or rope that hangs loose or appears to do so; the sag of a kite-string; the slackage.
- sleet** sli:t *n.* hail or snow mingled with rain, usually in fine particles and often driven by the wind.
- slider** 'slai-dəz *n.* a gliding-machine; a glider.
- slip** slɪp *n.* the difference between the amount of translatory motion which a screw propeller would have if it were revolving in a solid nut and the amount of translatory motion which it actually has when revolving in the air or other fluid while propelling a vehicle; screw-slip; drag.  
*apparent slip*, the slip in reference to the main body of the surrounding fluid (regarded as stationary) rather than with that portion of the fluid which is just in front of, or

actually in contact with, the propeller, and which has a certain forward motion; the difference between the translatory speed which a propeller would have if it were revolving in a solid nut and the translatory speed which it actually has when revolving in the air or other fluid while propelling a vehicle: distinguished from *true slip*.

*coefficient of slip*, see under *coefficient*.

*negative slip*, apparent slip whose numerical value is less than zero; apparent slip in which the speed of translatory motion which a propeller actually has with reference to the main body of the surrounding air or other fluid is greater than the speed of translatory motion which the propeller would have if it were revolving in a solid nut; apparent slip in which the speed of the ship is greater than the speed which the screw propeller would have if it were traveling in a solid nut.

*true slip*, the slip in reference to that portion of the surrounding fluid which is immediately in front of, or actually in contact with, the propeller, regardless of the forward motion which this portion of the fluid has relatively to the main body of the fluid: distinguished from *apparent slip*.

**slip** *slip* *intr.* move in continuous contact with a surface, without rolling; slide, glide.

**slip-angle** 'slɪp,æŋɡəl *n.* the angle of slip; the angle between the curve which would be described by a point on a propeller-blade if the propeller were revolving in a solid nut and the curve which is actually described by the same point when the propeller is revolving in the air or other fluid while propelling a vehicle.

**slope** sloʊp *n.*

*revolving slope*, a revolving sloping structure devised by Merrill to afford a starting-place for gliders or flying-machines.

**smoke-balloon** 'smʊk-bə,lʊn *n.* a balloon whose inflating-gas is warm air mixed with smoke and other products of combustion of a fire placed underneath; a fire-balloon.

**smoke-cloud** 'smʊk,klaʊd *n.* a mass or cloud of smoke.

**smoke-principle** 'smʊk,pɪnsɪpəl *n.* the principle or natural law by which smoke rises or remains suspended in the air or atmosphere.

**smoke-reek** 'smʊk,zɪk *n.* reek or exhalation consisting of smoke; smoke-filled air.

**smuggle** 'smʌɡəl *v.* import or export secretly or in a manner forbidden by law.

**smuggler** smʌɡləz *n.*

1. one who smuggles.

2. an air-craft specially adapted to, or engaged in, smuggling.

**snow** SNŌO *n.* the white, crystallin precipitate falling from the atmosfere in cold wether, fōrmd by the condensation and freezing of the water-vapor in the air and aggregation of the ice-crystals so fōrmd; also, a fall of this matter; a snowfall; a snow-storm.

*diamond snow*, fine particles of snow suspended in the air and glistening in the sunshine, occurring in Russia.

**snow-banner** 'SNŌO,bænəz *n.* a long divergent beam or streamer from the top of a mountain, sometimes visible at a distance of 30 or 40 miles, and due to the sunlight on fine particles of snow in the air-currents diverted upward by the mountain when strōng winds prevail.

**snow-blink** 'SNŌO,blɪŋk *n.* the peculiar reflection that arises from fields of ice or snow; ice-blink; snow-light. compare *water-blink*.

**snow-craft** 'SNŌO,kʁɑ:ft *n.* craft or knowledge about snow and the best methods of combatting it, as in mountaineering.

**snow-crystal** 'SNŌO,kʁɪstl̩ *n.* a crystal of snow; one of the minute crystals in a snowflake.

**snow-dust** 'SNŌO,dʌst *n.* dust composed of particles of snow; fine snow such as that driven along in the porga; snow-dust.

**snowfall** 'SNŌO,fc:l̩ *n.* the falling of snow; a quiet fall of snow; also, the amount of snow falling in a given time, mesured by its depth either actually as it has fallen or as melted into water.

**snow-field** 'SNŌO,fi:ld *n.* a field or wide expanse of snow, especially when permanent, as in the polar regions.

**snowflake** SNŌO,flæk *n.* a flake or small fethery mass of falling snow.

**snow-gage** 'SNŌO,geɪdʒ *n.* [also spelt *snow-gauge*] a receptacle, commonly a galvanized iron cylinder, used for catching falling snow and gaging or mesuring the snowfall.

**snow-ice** 'SNŌO,ais *n.* ice fōrmd by the freezing of slush or compacted or half-melted snow, especially as occurring in ponds, etc.: distinguisht from *black ice*.

**snow-light** 'SNŌO,lait *n.* same meaning as *snow-blink*.

**snow-line** 'SNŌO,lain *n.* the line above which there is perpetual snow; the limit, on a mountain-slope, above which there is continual snow all the year round.

**snow-sand** 'SNŌO,sænd *n.* sand-like snow raised by the wind, as in the porga; snow-dust.

**snow-spectacles** 'snɔː,spɛktə-kælz *n. pl.* a kind of spectacles or shield with narrow slits, designed to protect the eyes from the glare of the snow.

**soar** sɔːz *intr.* mount on wings, or as on wings, thru the air; rise aloft and remain on the wing without visible movements of the pinions; fly easily to a great height with but little advance in any direction; sail on the air; glide.

**soar** sɔːz *n.* height attained in soaring; the range of one that soars.

**soarer** 'sɔː-zɔːz *n.* a bird which habitually soars.

**soaring** 'sɔː-zɪŋ *n.* the action of the verb *soar*; the act or process of flying easily and lightly upward with or without wing-movement; the action of sailing on the air.

*automatic soaring*, soaring performed by an aircraft by automatic means; soaring by means of self-acting mechanism.

*dynamic soaring*, soaring which depends upon want of uniformity of the wind, in distinction from soaring in a wind which is uniform and has an upward velocity-component.

**soaring-energy** 'sɔː-zɪŋ,ɛnəz-dʒɪ *n.* energy of soaring.

**soaringly** 'sɔː-zɪŋ-ɪ *adv.* as if soaring; so as to soar; with an upward motion or direction.

**soaring-machine** 'sɔː-zɪŋ-mə,ʃɪn *n.* a machine designed for soaring or practising soaring flight; a gliding-machine; a glider.

**soaring-velocity** 'sɔː-zɪŋ-vɪ,ləsi-tɪ *n.* velocity or speed of soaring or gliding.

**solano** sə'lɑː-nɔː *n.* an easterly or southerly wind occurring in Spain or on the northern coast of the Mediterranean Sea.

**somersault** 'sʌməz,scɪlt *n.* [also spelt *sommersault*] a complete turn in the air; a revolution or rotation in the air, usually about a transverse axis.

**sonora** sə'nɔː-zə *n.* a storm occurring in parts of southern California; also, an immense thunder-cloud.

**soul** sʊl *n.* the loose dry pith, in the form of a series of caps or thimbles, in the calamus, tube, barrel or quill of a bird's feather.

**sound** saʊnd *v.*

1. *tr.* measure the depth of; fathom: as, \*sounding the ocean of air.

2. *intr.* use sounding-apparatus, as in finding the depth of the air below an aircraft: as, \*sounding for the bottom or terrain.

**sounding-balloon** 'saʊnd-dɪŋ-bə,lʊn *n.*

1. a balloon used for sounding or investigating the air

or atmosphere, as a small secondary balloon used by aeronauts for detecting air-currents at some distance from the main balloon.

2. a small unmanned hydrogen-filled balloon, now usually made of thin rubber, carrying meteorological instruments and dispatched to great altitudes where the gasbag usually explodes allowing the instruments to descend slowly by the aid of a parachute; a balloon sœnde.

**source** so:z s *n.* a hypothetic point or system of points at which fluid is being continually generated or produced: the opposit of *sink*.

*line source*, a source in the form of a line; a linear source.

*point source*, a source consisting of a single point.

*source-and-sink system*, a hypothetic system in which fluid is being produced (at a source) and made to disappear (at a sink).

**span** spæn *n.* the transverse dimension of an aeroplane or other aerofoil; tip-to-tip measurement; extent of stretch; expanse; spread (*sense* 3).

**spar** spa:z *n.* a stick or piece of wood of considerable length as compared with its thickness, forming some part of an airship, as a strut, mast, or brace; a round stick of timber; a pole.

**spark-break** 'spa:zk,bzeek *n.* the break or breaking of the electric circuit at the spark-gap of an internal-combustion engine, in the make-and-break system of ignition.

**spark-gap** 'spa:zk,gæp *n.* the gap or open space between the electric terminals where the sparks are formed which are used in the make-and-break system of ignition.

**speaking-trumpet** 'spii-kin,tʁæmpit *n.* a trumpet-like instrument used for speaking at a distance; a megafone.

**spear-kite** 'spii:z,kait *n.* a kite whose frame consists of two sticks of unequal length crost at right angles, and which therefore resembles in shape the hed of a spear.

**specter** 'spektəz *n.* [also spelt *spectre*] a startling cloud-effect in which the observer sees his own shadow cast upon the clouds or on thin fog (with a circle of glory around the hed).

**speculum** 'spekçu-ləm *n.* [plural *specula*, *speculums*] an ocellus or eye-spot, as of a peacock's tail; also, the mirror of a wing, a specially colored, often iridescent area on some of the flight-fethers; the mirror.

**speed** spiid *n.* rapidity of movement; swiftness; velocity.

*air speed*, the speed of a flying-machine relatrly to the air thru which it is passing: distinguisht from *land speed*.

*land speed*, the speed of a flying-machine relativ to the land-surface or earth beneath: distinguished from *air speed*.

*law of corresponding speeds*, the law that when the speed of a given air-craft or model is to that of another similar craft as the square roots of their linear measurements, their resistances are as to their respectiv masses, or as the cubes of their linear measurements.

**speed** *spri:d intr.* [past participle and preterit *sped, speeded*] make progress; fly along: as, the machine \**sped rapidly on*.

**speed-circle** 'spri:d,sɜ:kəl *n.* a circular flight made at special speed; a circular speed-flight.

**speed-flight** 'spri:d,fla:ɪt *n.* a flight made at special speed, as by balloon or aeroplane; a swift flight; a speed-test.

**speeding** 'spri:-dɪŋ *n.* the action of putting on speed or going at a rapid gait in an airship; the practis of making speed-flights.

**speed-prize** 'spri:d,praɪz *n.* a prize, premium, or trophy offered for or won by making a speed-record in a flying-machine; a speed-trophy.

**speed-test** 'spri:d,tɛst *n.* a test or trial of the speed of a flying-machine; a speed-trial.

**speed-trial** 'spri:d,tɹai-əl *n.* a trial of the speed of an airship; a flight or race in which speed is tested; a trial speed-flight; a speed-test.

**speed-trophy** 'spri:d,tɹɒ:-fɪ *n.* [also spelt *speed-trophy*] a trophy or prize offered for or won by making a speed-record in a flying-machine; a speed-prize.

**sphere** sfi:z *n.* [also spelt *sphere*] the gasbag (of a spherical balloon).

**spherical** 'sfɛ:ɪ-kəl *adj.* [also spelt *spherical*] having the form of a sphere, ball, or globe, as a balloon; globular, round, spheric.

**spherical** 'sfɛ:ɪ-kəl *n.* [also spelt *spherical*] a spherical balloon.

**spheroidal** sfi:'zɔɪ-dɪ *adj.* [also spelt *spheroidal*] having the the shape or character of a spheroid; resembling a sphere in form, but not quite spherical, as an ellipsoid of revolution; nearly sphere-shaped: as, a balloon of \*spheroidal shape.

**spider-web** 'spai:-dɜ:z,web *n.* a device used for holding a balloon in place during inflation, consisting of a stout rope encircling the netting (and fastend and readjusted to the netting from time to time by snap-hooks), with lateral ropes extending radially from it to timbers sunk in the ground at intervals around and at some distance from the balloon.

**spindle-shaped** 'spɪndl,ʃeɪpt *adj.* shaped or formed like a spindle used in hand-spinning; circular in cross-section and tapering from the middle toward each end; fusiform: as, a \*spindle-shaped balloon.

**spinning-screw** 'spɪnɪŋ,skɹəʊ *n.* a toy flyer of cardboard or metal, consisting of an aerial screw with two or more blades, attached to a spindle around which a string is wound, and which is set moving or spinning by briskly pulling and unwinding the cord.

**spiracle** 'spɑɪ-zə-kəl *n.* an aperture or orifice; one of the breathing-holes or external orifices of the tracheae or windpipes of an insect's body.

**spiral** 'spɑɪ-zəl *adj.* of or resembling a spire, coil, helix, or whorl; winding or circling and at the same time advancing, rising, or falling; proceeding or formed like a screw-thread; helical, helicoid: as, a \*spiral flight.

**sprag** spɹæɡ *n.* a short wooden prop.

**spray-shield** 'spɹeɪ,ʃi:ld *n.* a shield, as that just back of the elevating-hydroplane of a Curtiss hydro-aeroplane, for protecting the craft from the spray rising from the water beneath.

**spread** spɹed *n.* [also spelt *spred*]

1. expansion; the state, or the capability of being outspread: as, the peacock's tail has an imposing \*spread.

2. the expanse or area of surface; the extent or amount of supporting-surface presented by a wing, tail, or aerofoil: as, the \*spread of a peacock's tail; full \*spread of tail; the altitude-machine will have an immense \*spread.

3. the distance or measurement, from tip-to-tip, of the spread wings or aerofoils of a bird, bat, insect, or flying-machine; expanse or extent of wing; wing-spread (*sense 1*).

**spreader** 'spɹedəz *n.* [also spelt *spreader*] a device made of wood and twine used for spreading or booming the pennant-line of a secondary kite away from the main-line or string of a kite, thus preventing the twirling main-line from weaving the pennant-line around itself.

**spur** spɹ:z *n.* a horny outgrowth on the pinion-bone of the wing in certain geese, plovers, pigeons, and other birds.

**spuriae** 'spɹɹ:zɪ:i: *n. pl.* the packet of feathers growing on the spurious or bastard wing, that is, on the winglet or alula of a bird; one of the bastard quills of the alula.

**spur-winged** 'spɹ:z,wɪŋd *adj.* [also spelt *spur-winged*] having a horny spur on the pinion of the wing, as certain geese, plovers, and other birds.

**squall** skwɹ:l *n.* a sudden or violent gust of wind or a succession of such gusts often accompanied by rain, snow, or sleet.

*archt squall*, a squall marked by peculiar dense archt masses of dark cloud, furious gusts of wind, and torrents of rain, occurring in tropical regions; a tornado.

**squall-cloud** 'skwɔ:ɪ,kləʊd *n.* the roll-cloud in front of and above a squall of wind or in front of a thunderstorm cloud.

**squall-wind** 'skwɔ:ɪ,wɪnd *n.* a squally wind, such as the outblowing wind due to the kick of a thundercloud.

**squally** 'skwɔ:ɪ *adv.* abounding with squalls or strong gusts of wind; having the nature of a squall; gusty.

**stability** stə'biɪlɪ-tɪ *n.* the state, condition, or property of being stable, steady, or habitually well balanced in the air; the character of equilibrium; equipose, balance, stableness, steadiness.

*automatic stability*, stability or steadiness maintained in an aircraft by automatic means; balance by means of self-acting mechanism; automatic equilibrium or balance.

*directional stability*, stability or steadiness of an aerodone or aircraft in respect of its direction or translatory motion, or of the course of its flight; directional equilibrium.

*dynamic stability*, stability of an aerodone or aircraft due to the forces acting upon it so as to keep it in motion; dynamic equilibrium: distinguished from *static stability*.

*equation of stability*, the equation which expresses the mutual relations of the factors concerned in the stability of an aerodone or aircraft.

*fore-and-aft stability*, longitudinal stability.

*horizontal stability*, the stability or steadiness of an aerodone or aircraft in the right-and-left or transverse direction; lateral stability: distinguished from *longitudinal stability*.

*lateral stability*, stability or steadiness in a side-to-side direction; transverse balance or equipose; the quality or condition of not tipping sidewise or rolling from side to side during travel; lateral equilibrium: distinguished from *longitudinal stability*.

*longitudinal stability*, stability or steadiness in the longitudinal or fore-and-aft direction; fore-and-aft stability; longitudinal equilibrium: distinguished from *lateral stability*.

*pendular stability*, stability or equilibrium resembling that of a pendulum or free-swinging hanging body: as, the \*pendular stability of a helicopter.

*rotative stability*, stability of an aerodone or aircraft in respect of its rotative or rotary motion around a vertical axis, or an axis perpendicular to its flight-path, and resulting from the interaction of the motions involved in the maintenance of lateral and directional stability.

*static stability*, stability of a material object which is stationary or motionless; static equilibrium: distinguished from *dynamic stability*.



- stability-control** stə'bilɪtɪ-kən,tʃəʊl *n.* the control or controlling-mechanism of the stability or equilibrium of an aircraft.
- stabilize** 'stee-bɪ,ləɪz *v.* [also spelt *stabilise*] render stable or steady; equilibrate; balance.
- stabilizer** 'stee-bɪ,ləɪ-zəz *n.* [also spelt *stabiliser*] a device which stabilizes or balances an aircraft, either laterally or longitudinally; specifically, a stabilizing-plane; a balancer; an equilibrator; also, one of the pear-shaped protuberances at the end of the gasbag of a dirigible balloon, as the Clement-Bayard, serving to steady the craft in flight.
- stabilizing-fin** 'stee-bɪ-ləɪ-zɪŋ,fɪn *n.* a fin or fin-like aerofoil used for stabilizing or balancing an aircraft; a vertical stabilizing-plane.
- stabilizing-plane** 'stee-bɪ-ləɪ-zɪŋ,pleɪn *n.* an aeroplane used for stabilizing or balancing an aircraft, as an aileron, fin, or rudder; a balancing-plane.
- stabilizing-rudder** 'stee-bɪ-ləɪ-zɪŋ,rʌdəz *n.* a rudder or rudder-like plane used in stabilizing or balancing an aircraft; a balancing-rudder; an aileron.
- stabilizing-surface** 'stee-bɪ-ləɪ-zɪŋ,sʌɪfɪs *n.* a surface or aerofoil used in stabilizing or balancing an aircraft; a balancing-surface.
- stable** 'stee-bəl *adj.* firm, steadfast; not easily overthrown or thrown out of balance in the air; well equilibrated during flight; steady.
- stagger** 'stægəz *v.* arrange (or arrange the parts of) in zig-zag or steep order or series: as, \*staggerd surfaces; a \*staggerd biplane; a \*staggerd-tooth gear.
- stake-balloon** 'steek-bə,loun *n.* a small captiv balloon used as a stake, mark, or limit in a flying-course.
- standard** 'stændəd *n.* the two vanes, webs, or vexilla of a bird's feather, taken together.
- star** stɑ:z *n.* any celestial body which appears regularly and constantly as a point of light; especially, one of the so-called fixt stars. (see below.)  
*fixed star*, one of the self-luminous stars at a great distance from the earth, which remains practically fixt in its position relativ to the other stars of the same class: distinguisht from the planets, the sun, moon, comets, and the like.
- starboard** 'stɑ:z,bɔ:zd, 'stɑ:z-bəzd *adj.* on that side of an aircraft which is on the right as one faces the bow: as, his \*starboard wing: the opposit of *larboard* and *port*.
- star-chart** 'stɑ:z,tʃɑ:zt *n.* a chart of the stars; a map of the heavens; an astografic chart.

- start** sta:zt *intr.* begin to move or fly; set out on an air=trip; get off.
- start** sta:zt *n.* the action of the verb *start*; a starting or departure from the earth; a get=away or get=off.  
*running start*, a start (of a flying=machine) which is preceded by a run along the ground; a get=off accomplisht by means of running, as on starting=wheels: as, the \*running= start system.
- starter** 'stɑ:təz *n.* an aeronaut or a balloon that starts out for a trip or voyage, especially among others, as in an air= race; a competitor in a balloon=race.
- starting-area** 'stɑ:tɪŋ,ɛ:-zi-ə *n.* an area of tract used for starting or launching air=craft; a starting=field; a starting= ground.
- starting-catapult** 'stɑ:tɪŋ,kætə-pɑlt *n.* a catapult=like device used for starting or launching an air=craft; a starting= derrick; a pylon.
- starting-crank** 'stɑ:tɪŋ,ksæŋk *n.* the crank by which the shaft of an internal=combustion engine is turnd, by hand, in order to start it or set it in motion.
- starting-derrick** 'stɑ:tɪŋ,dɛzɪk *n.* a derrick or frame for raising and dropping the weight used in starting or launching a flying=machine; a launching=derrick; a catapult; a pylon.
- starting-device** 'stɑ:tɪŋ-dɪ,vɪs *n.* a device for starting an air=craft in flight; a starting=mechanism; a launching=device.
- starting-field** 'stɑ:tɪŋ,fi:ld *n.* a field or tract of ground used for starting or launching air=craft; a starting=area; a starting=ground.
- starting-gear** 'stɑ:tɪŋ,ɡɪ:z *n.* the gear or apparatus in an air=craft which is used in starting the machine in flight: as, a wheeld \*starting=gear.
- starting-ground** 'stɑ:tɪŋ,ɡɹɑ:nd *n.* a tract of ground used for starting or launching air=craft; a starting=area; a starting=field.
- starting-impulse** 'stɑ:tɪŋ,ɪm-pʌls *n.* the impulse of starting; the impulsiv or compelling force by which a craft is started; the initial thrust by which a flying=machine is launcht into the air.
- starting-line** 'stɑ:tɪŋ,lɑɪn *n.* the line (on the ground) from which an airship starts, as when making a test flight.
- starting-mechanism** 'stɑ:tɪŋ,mekə-nɪzəm *n.* any mechanism used in starting or launching an air=craft; a starting=device; a launching=apparatus.
- starting-place** 'stɑ:tɪŋ,plɛs *n.* a place on the earth from

which an airship starts or ascends into the air; a starting-point.

**starting-point** 'stɑ:ʔɪŋ,pɔɪnt *n.* a point or place on the earth from which an airship starts or ascends into the air; the opposite of *finishing-point*; also, a starting-place: as, a raised \*starting-point.

**starting-rail** 'stɑ:ʔɪŋ,rɛɪl *n.* the monorail used in starting or launching some flying-machines; a launching-rail.

**starting-system** 'stɑ:ʔɪŋ,sɪstəm *n.* a system or method of starting or launching air-craft.

**starting-track** 'stɑ:ʔɪŋ,træk *n.* a track used in starting an aeroplane or other craft in flight; a launching-rail.

**starting-truck** 'stɑ:ʔɪŋ,tʁæk *n.* a truck or small wheeled vehicle used for starting or launching air-craft; a truck used as a launching-vehicle.

**starting-weight** 'stɑ:ʔɪŋ,weɪt *n.* a weight such as in a catapult or pylon, which is allowed to fall and thus furnish an impulse used in starting or launching an air-craft.

**static** 'stætɪk *adj.* of or pertaining to bodies at rest, or to forces in equilibrium; statical. compare *kinetic*, *dynamic*, *kinematic*.

*static stability*, see under *stability*.

**statoscope** 'stætə,skop *n.* a form of aneroid barometer which shows at a glance any change in the elevation, or rise and fall, of an airship.

**stay** steɪ *n.* a prop or support, as of rope, wire, or wood; a supporting-rope; a guy. compare *brace*, *sprag*.

**stay-rope** 'steɪ,rəʊp *n.* a stay which is made of rope; one of two long cords attached to the outside of the frame of the upper valv of a balloon, used to steady the position of the balloon during inflation and deflation, to prevent the craft from rolling to the ground.

**steady** 'stedɪ *tr.* make steady; hold or keep from shaking, reeling, or falling; support; balance; keep firm or stable.

**steading-bag** 'stedɪ-ɪŋ,bæg *n.* [also spelt *stedying-bag*] an air-bag or air-sack inflated by the wind, forming the rear end of a kite-balloon, and aiding in steadying or keeping it stable in the air.

**steading-fin** 'stedɪ-ɪŋ,fɪn *n.* [also spelt *stedying-fin*] a fin-like aerofœil placed at the stern of a dirigible balloon for the purpose of steadying or maintaining the stability of the craft; a fin-like stabilizing-plane or balancing-surface.

**steading-plane** 'stedɪ-ɪŋ,pleɪn *n.* [also spelt *stedying-plane*] an aeroplane or aerofœil used for steadying an air-craft; a stabilizing-plane; a balancing-plane.

**steam-bird** 'stri:m,bɜ:zd *n.* an artificial bird, or bird-like

flyer, using steam as a moti<sup>v</sup> power; a mechanical bird driven by steam=power.

**steam-engine** 'stri:m,ɛndʒɪn *n.* [also spelt *steam engine*, *steam=engin*] any engin in which the motory power is steam; a motor driven by steam.

**steer** stri:z *v.*

1. *tr.* guide by the movements of a rudder or helm; govern the movements of (an airship) in flight; direct.

2. *intr.* direct, guide; govern the movement of an airship in flight.

**steerable** 'stri:-zə-bəl *adj.* capable of being steerd or guided in its course; dirigible.

**steerage** 'stri:-zɪdʒ *n.* the process or action of steering; guidance, direction, control.

**steerage-control** 'stri:-zɪdʒ-kən,tʁoʊl *n.* the control of the steerage of an airship; the management of an air=craft in so far as it consists in steering, guiding, or directing flight; the steering=control.

**steerageway** 'stri:-zɪdʒ,weɪ *n.* [also spelt *steerage way*] that degree of headway of an airship which renders steerage possible; forward movement of an air=machine sufficient to make the craft dirigible or subject to control by the helm.

**steerer** 'stri:-zəz *n.* one who steers an airship; a steersman or pilot.

**steering** 'stri:-zɪŋ *n.* the action of guiding or controlling the direction of an air=craft in flight; steerage.

*lateral steering*, sidewise steering, as by means of a vertical rudder; steerage to the right or left as distinguished from steerage up and down; horizontal steering.

*vertical steering*, up=and=down steering, as by means of a horizontal rudder; steerage vertically as distinguished from steerage up and down; the practice of height=control.

**steering-aeroplane** 'stri:-zɪŋ,æ-əzə-plæn *n.* an aeroplane used for steering; a steering=plane; a rudder=plane.

**steering-bag** 'stri:-zɪŋ,bæg *n.* a bag in the lower part of a kite=balloon connected by a valv with the air=bag, used in steering the kite=balloon so that the long axis is always in the direction of the wind.

**steering-balloon** 'stri:-zɪŋ-bə,lʊn *n.* a balloon capable of being steerd; a steerable balloon; a dirigible.

**steering-bar** 'stri:-zɪŋ,bɑ:z *n.* a bar or rod used in steering a flying=machine; a cross=bar pedal for steering: as, a foot \*steering=bar.

**steering-control** 'stri:-zɪŋ-kən,tʁoʊl *n.* the control or management of the steering of an airship; the steerage=control.

- steering-device** 'stri:-ziŋ-dɪ,vəɪs *n.* a device or apparatus for steering an airship or flyer; a steering-mechanism.
- steering-gear** 'stri:-ziŋ,ɡi:z *n.* the gear or apparatus for steering, guiding, or directing the course of an airship or flyer; the steering-mechanism.
- steering-lever** 'stri:-ziŋ,lɪ-vəz *n.* a hand-lever used for working a steering-mechanism; a lever in an aeroplane flying-machine by the manipulation of which the craft is steered.
- steering-mechanism** 'stri:-ziŋ,mekə-nɪzəm *n.* the mechanism or apparatus for steering an airship; the steering-gear.
- steering-organ** 'stri:-ziŋ,ɔ:z-ɡən *n.* an organ or part, as of an aeroplane, which is used in steering; a steering-mechanism.
- steering-plane** 'stri:-ziŋ,pleɪn *n.* a plane or aeroplane used for steering; a rudder-plane.
- steering-rudder** 'stri:-ziŋ,rʌdəz *n.* a rudder used for steering, as at the rear of an Antoinette monoplane.
- steering-wheel** 'stri:-ziŋ,wɪl *n.* a wheel by which the steersman controls the steering-gear of an airship; the helm-wheel; the wheel.
- steering-wire** 'stri:-ziŋ,wɪəz *n.* a wire connecting the steering-gear of a flyer with the controlling-lever or other device at the hand of the operator.
- steersman** 'stri:z-mən *n.* [plural *steersmen*] the man who steers an airship; a steerer, helmsman, or pilot.
- stem**<sup>1</sup> stem *n.* the forward part of an airship; the bow.
- stem**<sup>2</sup> stem *n.* the shaft or scape of a bird's feather.
- stem**<sup>3</sup> stem *tr.* make headway against by flying or sailing.
- stepped** stept *adj.* [also spelt *stept*] arranged in step-like order, as aeroplane surfaces on the hull of a dirigible balloon; placed like steps; staggered.
- stern** stɜ:zn *n.* the hinder part of an airship; the part furthest from the stem or prow.
- stern-rope** 'stɜ:zn,rɔ:p *n.* a rope at the stern of a Phillips flyer, used for mooring the craft.
- stern-rudder** 'stɜ:zn,rʌdəz *n.* a rudder located at the stern or hinder end of an airship; a rear rudder.
- sternward** 'stɜ:zn-wəd *adv.* directed or proceeding toward the stern or rear; rearward.
- stick** strɪk *n.* one of the wooden rods forming the frame of a kite.
- stiffener** 'stɪfə-nəz *n.* a straight bar or rod used to stiffen a plain aerofoil or flat supporting-surface. compare *rib*.
- stoop** stɔ:p *intr.* come down; descend; swoop upon prey or quarry, as a hawk does; swoop; pounce.

**storm** stə:zm *n.* a disturbance of the normal condition of the atmosphere characterized by winds of unusual direction or force, or by rain, snow, hail, or otherwise; a tempest; specifically, a wind (numbered 11 in Beaufort's wind-scale) having a velocity of about 30 meters per second; also, an area of low barometric pressure; a cyclone.

*cyclonic storm*, a storm that accompanies, or is caused by, a cyclone; a low-area storm.

*electrical storm*, a condition of the weather or atmosphere occurring in regions of dry air, as at high altitudes in the western United States, when light shocks and tingling sensations are felt, and brushes and sheets of light are seen on various objects; a violent disturbance of the electrical condition of the earth characterized by strong earth-currents, as thru telegraph-lines, occurring oftenest when auroras and sun-spots are frequent; an electric storm.

*electric storm*, same meaning as *electrical storm*.

*Espy's theory of storms*, the theory advanced by Espy that storms are due to the evolution of heat by the condensation of the moisture of ascending air.

*eye of a storm*, the calm region or part at the center of a violent cyclonic storm, where the clouds clear away and blue sky appears, to be observed chiefly in the tropics.

*high-area storm*, a storm associated with an area of high barometric pressure.

*land storm*, a storm which occurs on or over the land: distinguished from *ocean storm*.

*law of storms*, the law that the center of a storm or hurricane from any given point may be roughly calculated (according to a certain formula) from the average rate at which the barometric pressure is falling; the law of hurricane-distance.

*low-area storm*, a storm associated with an area of low barometric pressure; a cyclonic storm.

*magnetic storm*, an abrupt and usually widespread disturbance of the equilibrium of the magnetic phenomena of the earth causing the magnetic needle to oscillate and become displaced, and often accompanied by electric earth-currents and sun-spot frequency.

*ocean storm*, a storm which occurs on or over the ocean; a storm at sea: distinguished from *land storm*.

*revolving storm*, a cyclone.

**storm-approach** 'stə:zm-ə,pʁəʊtʃ *n.* the approach or coming of a storm or of storms.

**storm-area** 'stə:zm,ɛ:-zi-ə *n.* the area covered by a storm or

cyclone; the region lying within the closed isobars which surround a center of low pressure.

**storm-belt** 'stø:zm,belt *n.* a belt or zone of maximum storm-frequency; a storm-zone.

**storm-bird** 'stø:zm,bæ:zd *n.*

1. a petrel; a storm-petrel.

2. a bird, as the storm-cock, which seems to foretell bad weather by its cries, etc. compare *rain-bird*.

**storm-bound** 'stø:zm,bæund *adj.* [also spelt *stormbound*] bound or held in by a storm; confined or delayed by storms.

**storm-breeder** 'stø:zm,bæri-dæz *n.* a day or a weather-condition which is likely to breed or produce a storm.

**storm-card** 'stø:zm,kæ:zd *n.* a transparent card containing lines to represent the wind-directions in all quarters of a cyclonic storm, devised by Reid to be used on a chart as an aid to seamen in avoiding dangerous storms; a storm-circle; a storm-compass.

**storm-center** 'stø:zm,sentæz *n.* the center of a storm; the position of lowest barometric pressure in a cyclonic storm.

**storm-circle** 'stø:zm,sæ:kəl *n.* same meaning as *storm-card*.

**storm-clock** 'stø:zm,klək *n.* a clock-like apparatus for recording or indicating storms; a meteorograf, especially the one devised and named by Francis Ronalds.

**storm-cloud** 'stø:zm,kləud *n.* a cloud that brings or threatens storm.

**storm-compass** 'stø:zm,kæmpəs *n.* same meaning as *storm-card*.

**storm-cone** 'stø:zm,køn *n.* a cone covered with tarp canvas hoisted alone or along with a storm-drum, as a storm-signal.

**storm-current** 'stø:zm,kæzænt *n.* an atmospheric current which accompanies or is related in some way to a storm.

**storm-drum** 'stø:zm,dræm *n.* a cylinder covered with tarp canvas hoisted along with a storm-cone, as a storm-signal.

**storm-energy** 'stø:zm,ænæz-dʒi *n.* the energy within a storm; the internal energy of a cyclone.

**storm-flag** 'stø:zm,flæg *n.* a flag used as a storm-signal.

**storm-formation** 'stø:zm-føz,mæe-fæn *n.* the formation of a storm; the genesis of cyclones.

**storm-front** 'stø:zm,fsænt *n.* the front of a storm.

**storm-glass** 'stø:zm,glæ:s *n.* a sealed glass tube containing an alcoholic solution of camfor, together with crystals of nitrate of potash and ammonium chloride: supposed to indicate (by increase of the precipitate) the approach of storm, but really being nothing but a chemical thermoscope.

**storm-kite** 'stø:zm,kæit *n.* a kite or kite-like device for

carrying a rope from a ship to the shore in a storm; a rope-bearing kite.

**storm-like** 'stɔ:zm,lʌɪk *adj.* [also spelt *storm like*] like a storm; resembling or associated with stormy weather: as, to outride the \*storm-like eagle.

**storm-motion** 'stɔ:zm,mɔʊ-ʃən *n.* the motion characteristic of storms; the mode of movement peculiar to cyclones.

**storm-path** 'stɔ:zm,pɑ:θ *n.* the path, track, or route of a storm; the course of the translatory movement of the center of a cyclone.

**storm-proof** 'stɔ:zm,pʊv *adj.* proof against storms or stress of weather.

**storm-signal** 'stɔ:zm,sɪgnl̩ *n.* a signal or sign displayed on sea-coast and lake-shores for indicating the expected prevalence of storms or high winds: as, a British or a Canadian \*storm-signal.

**storm-track** 'stɔ:zm,tɹæk *n.* the track, course, or route of a storm; the course of the translatory movement of the center of a cyclone; a storm-path.

**stormward** 'stɔ:zm-wɔ:d *adj.* turned or directed toward a storm; facing a storm; stormwards.

**stormward** 'stɔ:zm,wɔ:d *adv.* toward a storm; facing the storm; stormwards.

**storm-warning** 'stɔ:zm,wɔ:z-nɪŋ *n.* a warning or admonitory notice regarding an approaching storm.

**storm-wave** 'stɔ:zm,wɛv *n.* a great wave of the ocean accompanying a storm or cyclone.

**storm-wind** 'stɔ:zm,wɪnd *n.* the wind which accompanies, precedes, or forms part of a storm; a severe wind of a minimum velocity of 30 miles an hour on land and 40 to 50 on the sea; a hurricane.

**storm-zone** 'stɔ:zm,zɔ:n *n.* same meaning as *storm-belt*.

**straightaway** 'stɹeɪ-tə,wɛɪ *adj.* extending forward in a straight line; having a straight course, without turn or curve; straight-line: as, a \*straightaway flight.

**straightaway** 'stɹeɪ-tə,wɛɪ *n.* a straightaway flight.

**straight-line** 'stɹeɪ,tʰaɪn *adj.* being or occurring in a straight line; in a bee-line; straightaway.

**strainer** 'stɹeɪ-nɛz *n.* a screw-device for straining or tightening a wire; a turnbuckle.

**strata** 'stɹeɪ-tə *n. pl.* see *stratum*.

**stratiform** 'stɹɛɪ,fɔ:zm *adj.* having the form of a stratus, layer, or lamella; stratified.

**strato-cirrus** ,stɹeɪ-tɔ'sɪzəs *n.* a cloud similar to cirro-stratus but more compact and formed at a lower altitude.

**strato-cumulus** ,stɹeɪ-tɔ'kʌmjʊ-ləs *n.* a stratum or layer



of low cloud consisting of separate irregular masses: not sufficiently uniform to be pure stratus; cumulo-stratus.

**strato-nimbus** 'strē-tō'nimbəs *n.* stratus cloud causing rain; stratus rain-cloud.

**stratum** 'strē-təm *n.* [plural *strata*] a layer of any material, as air or cloud; an air-layer.

*reactive stratum*, a stratum or layer of air which is compressed by and reacts against an aerofœil, as the atmospheric stratum beneath a flying aeroplane or behind a revolving propeller.

**stratus** 'strē-təs *n.* [plural *strati*] a continuous horizontal sheet or layer of fine-weather cloud, the lowest of all forms of cloud, increasing from beneath and characteristic of areas of high pressure; stratiform cloud; fall-cloud; cloud of night.

*stratus maculosus*, mackerel-cloud, mackerel-sky.

**stream** strīm *n.* a steady current, as of water or air; a flow; a drift.

*Gulf Stream*, the part of the equatorial current in the waters of the Atlantic Ocean which, having entered the Caribbean Sea, and past thru it and between Yucatan and Cuba into the Gulf of Mexico and thence thru the straits of Florida, emerges into the Atlantic Ocean, thru which it flows parallel to the American coast as far as Newfoundland, and thence toward Europe.

*live stream*, the lively or actively moving stream of air or other fluid flowing definitely about a streamline body or other obstacle: distinguished from *dead-water*.

**stream-area** 'strīm,ε:-zi-ə *n.* area of fluid stream; the tract of flow, as of air along the surface of a streamline body.

**streamer-cloud** 'strī-məz,kləəd *n.* a cloud in the form of a steamer or banner, as the steamer of false cirrus from a thunder-head; a banner-cloud.

**streamline** 'strīm,lain *n.* a line of motion in a fluid, as air, which is moving in a steady stream or stream system; one of the lines of direction in which the particles of a fluid are streaming.

*streamline body*, a body of streamline or ichthyoid form; a fish-shaped body.

*streamline form*, a form characteristic of streamline bodies; ichthyoid or fishlike form.

*streamline motion*, the motion of a steady-moving fluid, considered as made up of particles streaming or coursing along certain lines.

*streamline surface*, the surface of a streamline body.

- strepsiptera** ,strɛp'siptə-zə *n. pl.* an order of parasitic insects (including the genus *Stylops*) the wings of the male members of which are mere twisted filaments or pseudelytra, the females having no wings.
- stretch** strɛtʃ *n.* reach or extent; wing=spread. see phrases under *wing*.
- string** strɪŋ *n.* the line or cord attached to a kite and extending to the hand of the person flying it; a kite=string; a kite=line.
- stroke** stru:k *n.* a sweeping movement, as of a wing; one of the two motions of a flapping wing or other reciprocating part. see *down=stroke* and *up=stroke*.
- strut** strʌt *n.* a brace, as in the frame of an air=craft, designed to receive a direct thrust; a support, as of wood or metal, which resists a pressure acting in the direction of its length.
- strut-socket** 'strʌt,sɒkɪt *n.* a socket into which a strut fits; a hollow piece of metal or other material into which the end of a brace or support rests or is fastened.
- subalary** ,sʌb'æ-lə-zɪ *adj.* situated below the wings.
- subtorrid** ,sʌb'tɔ:ɪd *adj.* same meaning as *subtropical*.
- subtropic** ,sʌb'trɒpɪk *adj.* same meaning as *subtropical*.
- subtropic** ,sʌb'trɒpɪk *n.* a subtropical region.
- subtropical** ,sʌb'trɒpɪ-kəl *adj.* having a climate or character between tropical and temperate; quasitorrid; subtropic.
- suction-anemometer** 'sʌkʃən-ænɪ,mə-mɪ-təz *n.* an anemometer for measuring the velocity of the wind by means of the suction or decrease of barometric pressure produced in a tube by the passage of the wind across the open end of the tube.
- sulphur-rain** 'sʌlfəz,rɛn *n.* [also spelt *sulfur=rain*] same meaning as *yellow rain*. see under *rain*.
- summer-cloud** 'sʌməz,klaʊd *n.* cumulus cloud; day=cloud.
- summer-lightning** 'sʌməz,lʌɪt-nɪŋ *n.* sheet lightning without thunder, the result of a storm at a great distance; heat=lightning.
- sun-dog** 'sʌn,dɔ:g *n.* a mock=sun; a parhelion.
- sunset** 'sʌn,set *n.* the descent of (the upper limb of) the sun below the horizon at evening; also, the cloud=effect or other atmospheric phenomena accompanying the setting of the sun; and, the time when the sun sets; sundown; evening.  
*double sunset*, a sunset in which the sun is seen to set twice by the same observer who, just after witnessing the first sunset, rises in an air=craft beyond the limits of the earth's shadow, or above the twilight=curve, whence he sees

the sun rise again (in the west), and subsequently set for the second time.

*red sunset*, a sunset in which the sky is red; specifically, one of a series of remarkable sunsets, such as those of the years 1883-84, in which the red sky is due to the reflection of the sunlight by dust-particles carried to great heights as the result of volcanic eruptions.

**sunshine** 'sʌn,ʃaɪn *n.*

*bright sunshine*, specifically, sunshine which is sufficiently bright to be recorded by a Campbell-Stokes sunshine-recorder.

**sunshine-recorder** 'sʌn-ʃaɪn-rɪkɔːdər *n.* an instrument for recording the length of time the sun has been shining: as, Callendar's \*sunshine-recorder.

**sun-shower** 'sʌn,ʃaʊ-əz *n.* a shower of rain falling (on a warm summer day) from a passing cumulus cloud during a time and in a region otherwise sunny.

**sun-stricken** 'sʌn,stri:kən *adj.* stricken by the sun; affected with sunstroke; sunstruck.

**sunstroke** 'sʌn,stri:k *n.* acute prostration from excessive heat of the sunshine or weather.

**sunstruck** 'sʌn,stri:k *adj.* overcome by the heat of the sun; affected with sunstroke.

**sunward** 'sʌnwərd *adv.* toward the sun; sunwards.

**superaeroplane** ,sʊpə'ree-əzə,plæn *n.* (*fanciful*) one of the upper aeroplanes of an airship.

**superimpose** ,sʊpəz-ɪm'pəʊz *tr.* impose or lay on, over, or above something else, as one aeroplane above another; superpose.

**superpose** ,sʊpəz'pəʊz *tr.* lay or place upon or over something else, as one aeroplane above another; superimpose.

**superposition** ,sʊpəz-pə'zɪʃən *n.* the act or process of superposing; the placing upon, above, or over; a laying or being situated upon, above, or over something else.

**supersurface** 'sʊpəz,sɜːfɪs *adj.* [also spelt *super-surface*] carried on or occurring above the surface of the earth: as, \*supersurface traffic.

**support** sə'pɔːt *tr.* bear up, uphold, sustain, especially in the air; keep or prevent from falling.

**support** sə'pɔːt *n.* the action of supporting, upholding, or sustaining, especially in the air; sustaining-power, sustaining-effect; also, that which upholds, sustains, or keeps from falling; a prop, a base.

**supporting-device** sə'pɔːz-tɪŋ-dɪvɪs *n.* a device for supporting, upholding, or sustaining something in the air; the sustaining-device or sustaining-apparatus of an airship.

**supporting-plane** sə'pɔ:z-tɪŋ,plæn *n.* a plane or aeroplane designed to support an aerial machine of any kind.

**supporting-power** sə'pɔ:z-tɪŋ,pau-əz *n.* power to support or uphold in the air; capacity to sustain in the atmosphere; ability to keep or prevent from falling.

**supporting-reaction** sə'pɔ:z-tɪŋ-zi,æksjən *n.* a reaction which tends toward, or effects, support; sustaining-reaction; supporting-effect.

**supporting-rope** sə'pɔ:z-tɪŋ,zɒp *n.* one of the ropes which support the basket or car of a balloon, or connect it with the gasbag above.

**supporting-surface** sə'pɔ:z-tɪŋ,sʌzɪs *n.* a surface which supports, upholds, or sustains something in the air; a sustaining-surface.

**surf** sɜ:zɪ *n.* the disturbed portion of the air or atmosphere next the surface of the earth, likened to that of the sea as its waves break upon the shore.

**surface** 'sʌzɪs *n.* the bounding or limiting parts of a body; the parts of a body which are next to the air; the superficies; the outside.

*advancing surface*, a surface or aerofoil which advances or precedes another, as the front sustaining-surface of a tandem monoplane: the opposite of *following surface*.

*alternating surface*, a surface which is alternated or moved back and forth, up and down, or from side to side; a surface or plane having a reciprocating motion.

*following surface*, a surface or aerofoil which follows or comes after another, as the rear sustaining-surface of a tandem monoplane: the opposite of *advancing surface*.

*land surface*, the surface of the land or ground. compare *land-surface* and *water surface*.

*main surface*, one of the principal supporting-surfaces, as in an aeroplane flying-machine; a main-plane.

*streamline surface*, the surface of a streamline body.

*supplementary surface*, a relatively small surface or aerofoil which is supplementary to the main surfaces of a flying-machine, as an aileron or rudder; an auxiliary plane.

*surface in presentation*, the surface which an aerofoil presents to an opposing or sustaining fluid, as the atmosphere.

*water surface*, the surface of the water, as of a lake, river, or sea. compare *water-surface* and *land surface*.

**surface-wind** 'sʌzɪs,wɪnd *n.* a wind near or next the surface of the earth; a ground-current.

**surfacing** 'sʌzɪ-sɪŋ *n.* the mode of application of the surface fabric to a wing or aerofoil.

*double surfacing*, surfacing, as of the main-planes of a flyer, in which there are two layers of fabric applied, with an air-space between them.

**surrounding-cord** sə'zəʊn-dɪŋ,kə:zd *n.* the cord which surrounds the frame of a kite; the string which is fastened to or past around the ends of the sticks of a kite-frame and to which the covering is pasted.

**survey** səz'vee *tr.* overlook, view at large, as from a balloon; inspect or examine, as a landscape or position; also, determine the boundaries, extent, and position of, by special means.

**survey** səz'vee, 'sɜ:z,ve *n.* a general view; a comprehensive prospect; also, a particular view; an examination or measurement in detail, as of a piece of land.

**surveying** səz'vee-ɪŋ *n.* the art or process of determining the form, boundaries, area, contour, and position of a portion of the earth's surface from actual measurement or in some kindred way.

*military surveying*, an examination of a territory or of an enemy's position, for the purpose of directing military operations; a reconnaissance.

*photographic surveying*, surveying carried on by means of photography from above, as from an airship.

**suspend** sə'spend *tr.* cause to hang; hang from something: as, a car \*suspended beneath a balloon.

**suspended** sə'spendɪd *adj.*

1. hanging from something; pendent: as, the balloon had no \*suspended car.

2. hanging self-sustained, as a balloon in the air; floating in the atmosphere.

**suspender** sə'spendəz *n.* a rope or line by which something is suspended or hung; one of the cords by which the car of a balloon is attached to the netting above; a suspender-cord.

**suspender-cord** sə'spendəz,kə:zd *n.* a cord which acts as a suspender; one of the ropes in a balloon by which the car or basket is suspended or hung from the gasbag or keel above; a suspender.

**suspending-net** sə'spendɪŋ,net *n.* the net of a balloon from which is suspended the car.

**suspending-rope** sə'spendɪŋ,zəʊp *n.* a rope from which something is suspended; the rope from which a flying-machine is suspended during tests, as in the elevated railway proposed by A. Goupil; the rope or line by which a kite is flown or kept suspended or aloft in the air; a rope kite-line.

**suspension** sə'spensən *n.* the act of suspending or the state

of being suspended; the act or state of hanging from a support; the condition of being held up or kept afloat, as in the air; sustentation.

*flexible suspension*, suspension by means of flexible supports or suspenders, as of the basket or car of an ordinary balloon.

**suspension-cord** sə'spenʃən,kə:zd *n.* same meaning as *suspension-line*.

**suspension-line** sə'spenʃən,lain *n.* a line by which the car of a balloon is suspended or hung to the gas-vessel; a suspension-cord; a suspender-cord.

**sustain** sə'steɪn *tr.* hold up; bear up; uphold, support; hold suspended; keep from falling or sinking.

**sustainable** sə'steɪ-nə-bəl *adj.* capable of being sustained or held up, as a moving aerofœil by the air.

**sustainer** sə'steɪ-nəz *n.* a structure or apparatus which sustains or holds up, as a gasbag or aerofœil; a supporting-device; one of the numerous narrow aerocurvs, cross-blades, or slats designed to sustain or support the flying-machine patented by H. P. Phillips of Harrow, England, in 1890.

**sustaining-area** sə'steɪ-nɪŋ,ɛ:zi-ə *n.* the area of a sustaining-surface; the amount of supporting-surface utilized in a flying-machine.

**sustaining-chamber** sə'steɪ-nɪŋ,tʃeɪm-bəz *n.* a gas-chamber for sustaining an airship; a vessel or compartment forming part of a dirigible balloon and filled with hydrogen or other gas in order to support the craft or cause it to float in the air.

**sustaining-plane** sə'steɪ-nɪŋ,pleɪn *n.* an aeroplane which forms part of a flying-machine used for sustaining the craft in the air; a supporting-plane; a supporting-surface; a carrying-surface.

**sustaining-power** sə'steɪ-nɪŋ,pəu-əz *n.* power or capacity to sustain or hold up; supporting-power; buoyancy: as, the \*sustaining-power of the air.

**sustaining-screw** sə'steɪ-nɪŋ,skru: *n.* a screw designed to sustain, support, or lift an air-craft such as a helicopter.

**sustaining-surface** sə'steɪ-nɪŋ,səʊfɪs *n.* a surface or aerofœil which forms part of a flying-machine and is used for sustaining the craft in the air; a supporting-surface; a carrying-surface; a sustaining-plane.

**sustentation** ,sastən'teɪ-ʃən *n.* the action of sustaining or state of being sustained or held suspended, as in the air; support.

**sustention** sə'stənʃən *n.* the act of sustaining or holding up; sustainment; sustentation; suspension.

**swallow-like** 'swəʊl,laɪk *adj.* like that of a swallow: as, \*swallow-like swiftness.

**sweep** swi:p *intr.* [past participle and preterit *swept*] move, or glide along with a swift waving or surging movement, as a bird or a machine in flight: as, to \*sweep upward.

**sweep** swi:p *n.*

1. the action of the verb *sweep*; the direction of any non-rectilinear motion; the reach or range of a motion or stroke; a turn, bend, or curve; a rapid survey, as of the earth's surface, or of the heavens: as, a wide \*sweep to the left; the \*sweep of a wing; beyond the \*sweep of the telescope; a grand \*sweep of mountain country.

2. the area of the vertical cross-section of the moving stratum or layer of air or other fluid which is assumed to be that to whose inertia the supporting-reaction upon an aeroplane or other aerofoil is due: as, the \*sweep of an aeroplane; the hypothesis of constant \*sweep.

**sweep-area** 'swi:p,ε:-zi-ə *n.* the area of the cross-section of the stratum or layer of air or other fluid which is assumed to be that to whose inertia the supporting-reaction upon an aerofoil is due; the sweep of an aeroplane.

**sweeping** 'swi:p-iŋ *adj.* characterizing the motion of, or described by a body which sweeps along: as, the aeroplane rose in a \*sweeping curve.

**swell** swel *intr.* [past participle *swelled*; *sweld*, *swollen*; preterit *swelled*, *sweld*] grow in bulk; bulge, dilate, expand, belly; also, increase in intensity or force, as the wind does.

**swell** swel *n.* the action of the verb *swell*; a rise, surging, or bulging, as of the air, the water, or the land-surface; a wave or billow; a surge; a bulge: as, the surging landscape's \*swell; a heavy \*swell of the sea.

**swerve** swɜ:v *intr.* [past participle and preterit *swerved*, *swervd*] turn aside suddenly, as an aeroplane sometimes does from its course.

**swerve** swɜ:v *n.* a sudden turning aside, as of an aeroplane from its course.

**swing** swiŋ *intr.* [past participle *swung*; preterit *swung*, *swang*] move to and fro; oscillate; glide or fly with a free swaying motion: as, twice he \*swung round the field.

*yearly swing of the atmosphere*, the yearly to-and-fro movement of portions of the earth's atmosphere; the annual oscillatory motion of the aerial ocean resulting in accumulation of air over the land in winter and over the sea in summer, as shown by changes in barometric pressure.

**swirl** swɜ:zl *n.* a whirling motion; an eddy of air; a gyration; a whirl.

**swirl** swɜ:zl *tr.* [past participle and preterit *swirled, swirled*] whirl thru the air; send whirling.

**switchback** 'switʃ,bæk *adj.* characterized by back-and-forth or alternate motion thru the air; zigzag: as, \*switchback hoverings; the \*switchback theory; a \*switchback flight path.

**switchback** 'switʃ,bæk *n.* a switchback flight; an aerial zigzag.

**swoop** swu:p *v.* [past participle and preterit *swooped, swooped*]

1. *intr.* rush or sweep downward; as a hawk or other bird of prey does upon its quarry or victim; descend swiftly and at a sharp incline thru the air; stoop.

2. *tr.* descend upon suddenly and swiftly and seize while on the wing; take or capture with a downward sweep.

**swoop** swu:p *n.* a sudden pouncing or downward sweeping movement in flight: as, the \*swoop as a feature in aerial warfare.

**sympiesometer** ,simpi-i'səmi-təz *n.* an instrument for measuring the pressure of a current; also, a form of barometer.

**tack** tæk *n.* a temporary change of a few points in the direction of sailing, as in order to take advantage of a side wind; one of a series of movements of a water-ship to starboard and port alternately out of the general line of her course.

**tack** tæk *intr.* change the course of a ship, as by turning her head toward the wind, etc.; shift one's course, veer.

**tacking** 'tækiŋ *n.* the action of the verb *tack*; veering.

**tail** teɪl *n.*

1. the posterior extremity of an animal, especially when consisting of an appendage prolonged beyond the rest of the body; the caudal appendage; the cauda; also, in birds, the tail-feathers, collectively; any appendage resembling the tail of an animal or bird, or placed in a similar relative position; a rear extremity.

*tail of the wing*, see under *wing*<sup>1</sup> (*sense 1*).

2. the cord or strip with pieces of paper or other material knotted to it at intervals, attached to the lower part of a kite; a balancing-tail.

3. an aerofoil or other part attached to and extending out behind a flying-machine and used as an aid in balancing or steering, or as a support for some balancing or steering-device; sometimes, specifically, a rear horizontal plane



attach to or intersecting the rear rudder; a rear directiv organ or balancer; a trailer: as, a cellular \*tail.

*negative tail*, a tail, in an air=craft, which is conceivd as acting in a negativ manner. distinguisht from *positive tail*.

*positive tail*, a tail, in an air=craft, which is conceivd as acting in a positiv manner. distinguisht from *negative tail*.

4. the neck of the gasbag of a balloon.

5. the part of a streamline body behind the buttock; the posterior extremity of a streamline body.

**tail-area** 'teɛl,ɛ:zi-ə *n.* the area of the tail of a bird, as at maximum or minimum spread.

**tail-boom** 'teɛl,boum *n.* the boom, spar, or pole which extends rearward behind a flying=machine and constitutes or carries the tail: as, the upper and lower \*tail=booms converge to a point.

**tail-cord** 'teɛl,kɔ:zd *n.* a cord serving as, or attach to, the tail of a kite.

**tail-covert** 'teɛl,kʌvəzt *n.* one of the covert=fethers of a bird's tail.

**tailed** teɛld *adj.* [also spelt *taild*] furnisht with a tail: as, a \*tailed monoplane.

**tail-feather** 'teɛl,fɛðəz *n.* [also spelt *tail=fether*] one of the main fethers of a bird's tail; a rectrix, a rudder.

**tail-length** 'teɛl,lɛŋθ *n.* the length of the tail of an aerodone: as, positiv, neutgal, or negativ \*tail=length.

**tail-like** 'teɛl,lʌik *adj.* like a tail; resembling a tail in form or position.

**tail-piece** 'teɛl,pɪs *n.* the piece or part in a flying=machine which occupies the position of, or acts as, a tail; the tail of an airship.

**tail-plane** 'teɛl,pleɪn *n.* a plane or aerofœl which forms the tail of a glider or flying=machine; a posterior directiv organ or stabilizer.

**tail-plumage** 'teɛl,p'lʌu-mɪdʒ *n.* the plumage of a bird's tail.

**tail-skid** 'teɛl,skɪd *n.* a small skid or runner attacht under the tail or hinder extremity of a flying=machine in order to keep the tail off the ground or facilitate its motion along the ground, as in landing. compare *wing=skid*.

**tail-steerage** 'teɛl,stri:zɪdʒ *n.* steerage or steering by means of a tail.

**tail-wheel** 'teɛl,wɪɪl *n.* a wheel attacht under the tail of a flying=machine to support it, or keep it off the ground.

**tandem** 'tændəm *adv.* one behind the other; in single file: as, two aerofœils placed \*tandem.

- tandem** 'tændəm *n.* a series in which one is placed behind another; single file: as, a string of five kites flying in \*tandem.
- tandem** 'tændəm *adj.* having units, or a series of similar parts or aeroförls, placed tandem, or one behind the other: as, a \*tandem system of fins; a \*tandem monoplane; a \*tandem biplane.
- target-balloon** 'tɑ:z-gɪt-bə,lʊn *n.* a small balloon, commonly captiv, used as a target, as in firing explosiv shells.
- tariff** 'tærɪf *n.* a duty or tax, or such taxes collectivly, imposed according to a list, table, or scale, upon goods imported into, or exported from, a country or place; also, a table or scale of charges of any kind.
- tectrices** ,tek'tɪrɪsɪz *n. pl.* see *tectrix*.
- tectrix** 'tektɪks *n.* [plural *tectrices*] a covering=fether of a bird's wing or tail; a covert; a wing=covert or a tail=covert.
- tegmen** 'tegmən *n.* [plural *tegmina*] the covering of the posterior wing of some insects; the fore=wing of any orthopter, corresponding to the elytron or wing=case of a beetle; also, rarely, a tectrix or covert of a bird's wing or tail.
- tegmina** 'tegmɪ-nə *n. pl.* see *tegmen*.
- telebarometer** ,telɪ-bə'zɔmɪ-təz *n.* a barometer which is located at, or furnishes reports from a distance; one of a series of barometers separated from each other by a certain horizontal or vertical distance.
- telehydrograph** ,telə'hɑɪ-drə,gzɑ:f *n.* [also spelt *telehydrograf*] a hydtoGRAF which is located at, or furnishes reports from, a distance.
- telescope** 'telɪ,skɒp *n.* an instrument consisting essentially of a hollow cylinder containing a system of lenses, for looking at or examining distant objects.
- telethermograph** ,telɪ'θɜ:z-mə,gzɑ:f *n.* [also spelt *telethermograf*] a thermograf which is located at, or furnishes reports from, a distance.
- temperature** 'tempəzə,tʃʊz *n.* state or condition with regard to heat; the degree or intensrty of the sensible heat of a body.
- temperature-gradient** 'tempəzə-tʃʊz,gzæe-di-ənt *n.* the gradient of temperature; the rate at which the temperature of the air changes in value, as with change of altitude.
- temperature-signal** 'tempəzə-tʃʊz,sɪgnl *n.* a signal, sign, or notice regarding the probabilities or the condition of atmospheric temperature.
- template** 'templət *n.* [also spelt *templet*] a pattern used to indicate the shape which any piece of work is to assume when finisht; a guide; a model.

**tenderwing** 'tendəz,wɪŋ *n.* a newcomer or beginner in the art of flight; an aerial novice or amateur; a fledgling.

**tense** tens *adj.* being in a state of tension; stretched until tight; rigid; not lax; taut, as the envelop of a balloon.

**tension-buffer** 'tensən,bʌfəz *n.* a buffer, as of rubber, as on the axle of a skid-wheel, for providing or regulating tension or strain.

**tension-wire** 'tensən,wʌɪz *n.* a wire, as in an aeroplane flying-machine, by which a strain of tension is applied; a wire which regulates or provides tensile strain.

**terra firma** ,tɛzə'fɜ:z-mə *n.*

1. firm or solid earth; dry land, as distinguished from water; the land.

2. the earth or land, as distinguished from the air or atmosphere; the ground.

**terrain** ,tɛ'zɛən *n.* the ground, or any portion of the land-surface.

**terrestrial** tɜ'zɛstri-əl *adj.* of or pertaining to the earth; earthly: opposed to *celestial*; also, pertaining to the land-area as distinguished from the water-area of the globe, or to the land or earth as distinguished from, or as contemplated from, the air or atmosphere.

**tertial** 'tɜ:ʃəl *n.* a tertiary flight-feather; one of the penna or large feathers of a bird's wing of the third set, which grows on the elbow or upper arm; a tertiary.

**tertiary** 'tɜ:ʃi,ɛzi *n.* a tertiary flight-feather; one of the remiges or wing-feathers seated upon the upper arm or humerus of a bird; a specialized inner secondary; one of the innermost remiges of the pteryla alaris; a tertial.

**test-balloon** 'tɛst-bə,lʊn *n.* a small balloon or inflated bladder let fly in the air to test the direction or velocity of the wind.

**tetrahedral** ,tɛtrə'hri-drəl *adj.* pertaining to a tetrahedron or to a system of forms to which the tetrahedron belongs: as, Bell's \*tetrahedral kites.

**tetrahedron** ,tɛtrə'hri-drən *n.* [plural *tetrahedra*, *tetrahedrons*] a solid figure or form comprehended under, or bounded by, four planes; also, the regular tetrahedron whose sides are four equilateral triangles; the triangular pyramid.

**thermogram** 'θɜ:z-mə,gzəm *n.* the sheet record of a self-registering thermometer.

**thermometer** θɛz,mɒmɪ-tɛz *n.* an instrument for measuring temperature, as of the atmosphere.

*black-bulb thermometer in vacuo*, a form of solar-radiation thermometer originated by John Herschel; a mercurial

thermometer having the bulb and a portion of the stem covered with lampblack, the whole being placed in a glass vacuum-tube to prevent loss of heat by convection. It is often used along with a bright-bulb thermometer similarly encased.

*Celsius thermometer*, a thermometer introduced by Celsius in 1736, in which the zero is at the boiling-point of water, and the 100-degree-mark at the melting-point of ice. This thermometer, by whose use plus and minus degrees in ordinary atmospheric temperatures are avoided, has never been extensively used.

*centigrade thermometer*, a thermometer introduced by Linnaeus, in which the zero is at the freezing-point of water and the 100-degree-mark at the boiling-point of water. This thermometer is in common use in many countries of the continent of Europe, and is there and elsewhere extensively employed in scientific work.

*Fahrenheit thermometer*, a thermometer devised by Fahrenheit, in which the zero is at 32 degrees below the melting-point of ice, and the 212-degree-mark at the boiling-point of water. This thermometer is in common use in English-speaking countries and in Holland.

*maximum thermometer*, a thermometer which registers the maximum temperature to which it is exposed, as those of Rutherford, Phillips, and Negretti.

*minimum thermometer*, a thermometer which registers the minimum temperature to which it is exposed, as the alcohol minimum thermometer devised by Rutherford in 1794.

*Réaumur's thermometer*, a thermometer in which the zero is at the freezing-point of water and the 80-degree-mark at the boiling-point of water. This thermometer was formerly extensively used in Germany and Russia.

**thermoscope** 'θB:z-mə,skop *n.* an instrument for indicating minute variations in temperature without measuring their amount.

**thread-feather** 'θsəd,fedəz *n.* one of the thread-like or hair-like feathers usually closely associated with the contour feathers of birds; a filoplume.

**throttle** 'θsətθ *n.* a valve, as in the induction-pipe of a steam engine, for controlling the flow of steam; a throttle-valve.

**thrust** θsast *n.* a push or shove; also, the horizontal component of a positive pressure of the air, as upon an aeroplane or other aerofoil; positive drift.

**thunder** 'θandəz *n.* the loud noise which follows a flash of lightning, due to the same discharge of electricity in the air to which the lightning is due, but occurring a little later

than the lightning on account of the velocity of the sound-waves being much less than the velocity of the light-waves.

**thunder-cloud** 'θAndəz,kləud *n.* a cloud that produces lightning and thunder, usually dense, dark, towering masses of cumulus or strato-cumulus, with a cirro-stratus overflow; a cumulo-nimbus cloud; a turreted cloud; a shower-cloud.

*kick of the thunder-cloud*, the kick-like, or sudden outward and downward thrust or push of a thunder-cloud, due to the expansion of the rising air within the cloud, and producing a jump in barometric pressure and giving rise to squall-winds.

**thunder-gust** 'θAndəz,gəst *n.* [also spelt *thundergust*] a gust accompanied by thunder; a thunder-squall; a thunder-storm.

**thunder-head** 'θAndəz,hed *n.* one of the round, compact, swelling cumulus clouds which frequently develop into thunder-clouds.

**thunder-headed** 'θAndəz,hedɪd *adj.* [also spelt *thunderheded*] pertaining to, or like, a thunder-head: as, a \*thunderheded cloud.

**thunder-shower** 'θAndəz,ʃəu-əz *n.* a shower of rain accompanied by thunder and lightning.

**thunder-squall** 'θAndəz,skwɔ:ɪ *n.* a squall of wind accompanied by thunder; a thunder-gust.

**thunder-storm** 'θAndəz,stɔ:zm *n.* [also spelt *thunderstorm*] a storm accompanied by lightning and thunder, due to a state of unstable atmospheric equilibrium and high relative humidity.

*cyclonic thunder-storm*, a thunder-storm associated with a cyclone or region of low barometric pressure, and having a progressive movement which may, however, be quite different from the cyclonic movement of which it is a part.

*heat thunder-storm*, a thunder-storm having little or no progressive motion, characteristic of the hot equatorial regions of the earth, and occurring in summer in temperate latitudes.

*line thunder-storm*, a thunder-storm accompanying V-shaped isobaric depressions.

*thunder-storm belt*, a belt, zone, or long narrow area within which thunder-storms occur simultaneously or continuously, and which moves steadily in an easterly direction.

**thysanoptera** ,θɪsə'neptə-zə *n. pl.* an order of insects including only the family Thripidae or Thripsidae, with long, narrow, often veinless wings furnished with a long fringe.

**tie** taɪ *n.* something which fastens or binds; a bond which withstands stress of pull; a wire or other tension-member

connecting or holding together two points or parts, as in an aeroplane flying-machine or other air-craft.

**tie-rope** 'taɪ,ʒoʊp *n.* a stay-rope or stay of a balloon.

**tightener** 'taɪ-tɪ-əz *n.* any device for tightening a wire stay or the like; a wire-tightener. compare *turnbuckle*.

**tiller-rope** 'tɪləz,ʒoʊp *n.* a rope connected with the tiller or steering-gear of an airship.

**tilt** tɪlt *intr.* heel or lean, as a balloon; assume a sloping position, as an aeroplane.

**tilt** tɪlt *n.* a sloping position; an inclination.

**tilting-angle** 'tɪltɪŋ,æŋɡəl *n.* the angle or degree of inclination which is safe or allowable in driving an aeroplane flying-machine.

**time** taɪm *n.*

*apparent time*, time as reckoned from, or measured by, the apparent position of the sun; solar time.

*central time*, the standard time or hour used in the central or third American time-section; the time of the 90th meridian west of Greenwich. It is 6 hours earlier than Greenwich time.

*civil time*, time as reckoned for civil uses, and divided into days, months, years, etc.

*colonial time*, the standard time or hour used in the colonial or first American time-section; the time of the 60th meridian west of Greenwich. It is 4 hours earlier than Greenwich time.

*eastern time*, the standard time or hour used in the eastern or second American time-section; the time of the 75th meridian west of Greenwich. It is 5 hours earlier than Greenwich time.

*international time*, the system of reckoning time, now adopted by many nations, which takes the time of Greenwich, England, as the basis and divides the world into sections in each of which the time is taken as varying exactly one hour from that of the next section; standard time as applied or adopted internationally: distinguished from *local time*.

*local time*, the time as recorded or kept at any given locality or place, and determined by the passage of the mean sun over the meridian of that place: distinguished from *standard time* and *international time*.

*mean solar time*, time as reckoned from, or measured by, the motions of the mean sun, such as indicated by chronometers at sea; mean-sun time.

*mountain time*, the standard time or hour used in the Rocky Mountain or fourth American time-section; the time

of the 105th meridian west of Greenwich. It is 7 hours earlier than Greenwich time.

*Pacific time*, the standard time or hour used in the Pacific or fifth American time-section; the time of the 120th meridian west of Greenwich. It is 8 hours earlier than Greenwich time.

*solar time*, time as reckoned from, or measured by, the apparent position of the sun; apparent time.

*standard time*, the system of reckoning time (in conformity with the international time system) adopted by the railroads, etc., of the United States and Canada on November 18th, 1883, and now in general use in those and many other countries, which takes the time of Greenwich, England, as the basis and divides the world into sections in each of which the time is taken as varying exactly one hour from that of the next section: distinguished from *local time*.

**tip** *tip* *n.* the extremity or end, as of a wing; the outer part or lateral termination, whether flexible or rigid, movable or fixed, of a main plane or aerofoil of a flying-machine; also, a small supplementary plane or end-piece at or near either extremity of a sustaining-plane, such as an aileron or winglet, or a rear flap, used for balancing: as, the \*tip of a wing; the left \*tip of the machine.

*from tip to tip*, from the tip or outer extremity of one of the wings of a bird or flying-machine to the tip of the other and opposite wing, when the wings are extended.

**tip** *tip* *v.* [past participle and preterit *tipped*, *tipt*]

1. *tr.* turn from an upright position, as a flying-machine; cause to slant or lean, as a horizontal aeroplane; incline downward; tilt; cant.

2. *intr.* lean from the normal or usual position; slant over.

**tip-control** 'tip-kən,tʃəʊl *n.* a device or apparatus for controlling or regulating the movements or position of the tip or extremity of the plane, wing, or sustaining-surface of an aeroplane or flying-machine.

**tip-feather** 'tip,fedəʒ *n.* [also spelt *tip-fether*] one of the feathers at the tip or outer end of a bird's wing: as, the finger-like \*tip-feathers of the wings of many soaring birds.

**tip-rudder** 'tip,rʌdəʒ *n.* a rudder or rudder-like aerofoil located at the tip or outer end of a main sustaining-plane in a flying-machine; an aileron.

**tip-speed** 'tip,spi:əd *n.* the oscillatory speed of the tip of a reciprocating wing; the up-and-down velocity of a wing-tip in flapping flight.

- tonnage** 'tʌnɪdʒ *n.* the weight of goods or load which an airship is capable of carrying; the carrying-capacity of an aircraft.
- top-light** 'tɒp,lʌɪt *n.* a signal-light placed at the top of an airship while in flight.
- topography** tɒ'pɒɡrə'fi *n.* [also spelt *topografy*] the detailed description of a particular region, place, or tract of land; a graphic representation of a certain land-area; also, the features of a region or land-area.
- torch-bomb** 'tɔ:ʒtʃ,bɒm *n.* [also spelt *torch-bom*] a bom or bom-like missile which is used as, or which carries or serves as a torch, as for illuminating the terrain, and showing the position of the enemy.
- tornado** ,tɔz'neɪ-dɔ *n.* [plural *tornadoes*] a violent squall or whirlwind of small extent; an archt squall, occurring in tropical regions; in the United States, a violent and rapidly progressive whirlwind of small radius usually seen as a whirling funnel hanging from a mass of black cloud.
- tornado-funnel** ,tɔz'neɪ-dɔ,fʌnɪ *n.* a funnel-shaped formation observed during a tornado; a windspout.
- torque** tɔ:zk *n.* the moment of twisting-force; a function serving as a measure of a turning-force such as that applied to the shaft which drives a propeller; turning-moment; twisting-effect; twist.
- tourbillion** ,tʊz'bɪli-ən *n.* a device likend to or producing an effect similar to a whirlwind.  
*aerial tourbillion*, a device consisting of a rotor of segmental section turning on an axis, so made that, if given a sufficient initial rotation and then held in a current of air with its plane face fronting the wind, it will have its speed accelerated and rotate with extreme rapidity.
- touring-balloon** 'tʊ:-zɪŋ-bə,lʊn *n.* a balloon designed for touring or traveling about.
- touring-plane** 'tʊ:-zɪŋ,plæn *n.* an aeroplane flying-machine designed for touring or traveling about; an aeroplane used for making journeys or trips.
- tourniquet** 'tʊ:-zɪ-ket *n.* [synonymous cognate *torniquet*] a twisting-device sometimes used to steer flight-models.
- tower** 'tau-əz *intr.* soar aloft thru the air, as a bird; rise in vertical or orthogonal flight; mount straight up in flight, as some birds do when wounded or flushed; rocket.
- towering** 'tau-ə-zɪŋ *n.* the action of the verb *tower*; the process of rising vertically in flight; rocketing: as, the \*towering of hard-hit birds.
- tractor** 'træktɔz *n.* that which draws; a device for drawing or polling.



*tractor screw*, an air-screw which draws or pulls; an aerial propeller which is attached to the front of the craft and which thus pulls or draws the machine along thru the air, instead of pushing or thrusting it along, as rear propellers do; a front propeller; a tractor propeller.

**trade** *tred* *n.* same meaning as *tradewind*.

**trade-cumulus** 'tred,kumju-ləs *n.* [also spelt *trade cumulus*] small detached cumulus cloud occurring by day in the region of the tradewind and usually developing no rain.

**tradewind** 'tred,wind *n.* [also spelt *trade-wind*, *trade wind*] a wind that blows in a regular trade, path, or course, that is, continually in the same direction; one of a system of air-currents or winds prevailing over the oceans of the equatorial regions, blowing in each hemisphere toward the thermal equator.

**trail** *trel* *n.* the action of the verb *trail*; a drawing along behind; also, something which trails; a streak; a train.

*angle of trail*, see under *angle*.

**trailer** 'tree-ləz *n.*

1. a structure which forms part of, and trails along behind, a flying-machine, as a balancing-tail; a tail.

2. a rope or other device which is attached to and allowed to trail or drag along behind a balloon or airship; a trail-rope; a drag-rope.

**trailing-angle** 'tree-lɪŋ,æŋgəl *n.* the angle of a wing or other aerofoil which is in trailing or rear position; the angle at which the rear part or following edge of an advancing aeroplane trails or is drawn along thru the air as it leaves it behind; the angle of the trailing edge; the angle of trail; the opposite of *leading-angle* and *angle of entry*.

**trailing-rope** 'tree-lɪŋ,zɒp *n.* a trail-rope; a trailer.

**trail-rope** 'trel,zɒp *n.* a rope of definite length which is attached to a balloon and is sometimes allowed to trail along on the earth in order to lighten the load and thus make the craft tend to rise or glide along at a uniform height; a trailing-rope; a trailer; a drag-rope; a guide-rope.

**train** *treen* *n.* a part which is drawn along behind; a trailing structure; the tail of a bird, especially when long, large, or conspicuous, and whether ornamental or serving as a steering-organ: as, a peacock's \*train.

**trajectory** trə'dʒektə-rɪ *n.* the curved path along which a projectile or other body moves in its flight thru the air: as, the \*trajectory of a flying-model.

**tramontana** ,trəmən'tɑ:nə *n.* the north wind, as that coming from beyond the Alps mountains into Italy and the Mediterranean region.

- transaquatic** ,træns-ə'kwætɪk *adj.* [also spelt *trans-aquatic*] occurring or carried on over an aqueous surface; over water: as, \*transaquatic journeys.
- translation** ,træns'leɪ-ʃən *n.* the process or condition of being translated, conveyed, transported, or removed.  
*motion of translation*, motion in which rotation is absent or not considered; motion in which all parts of a body are considered as moving in the same direction.
- translational** ,træns'leɪ-ʃə-nəl *adj.* pertaining to or having the character of translation; of motion of translation: as, the \*translational efficiency of a helicopter.
- transportation** ,træns'pɔ:t-ʃən *n.* the act of transporting or conveying goods or passengers from one place to another; transport; carriage, conveyance.
- trapeze** ,træ'pi:z *n.* a swing consisting of one or more cross-bars each suspended by two cords at some distance from the ground, on which feats of strength and agility are performed; also, such an apparatus as attached to a parachute, glider, or other air-machine.
- traveling-speed** 'trævlɪŋ,spi:d *n.* the speed or velocity at which an aeroplane or other aircraft travels or is capable of traveling thru the air; the rapidity of flight characterizing a given airship.
- tree-top** 'tri,tɒp *n.* the top or uppermost part of a tree: as, to rise to the height of the \*tree-tops.
- trend** trænd *n.* general course or direction; directional tendency: as, the wind has an ascending \*trend.
- triangulation** ,traɪ-æŋgju'leɪ-ʃən *n.* measurement by means of triangles conceived as existing upon the earth's surface or elsewhere; the operation of determining altitude, distance, or position, as of an airship, by calculations from observations made with a theodolite upon points taken as the apexes of triangles referred to a certain base-line.
- trim** trɪm *n.* the state or condition of an airship or of her cargo, ballast, or spars, with reference to her fitness for sailing or flying; adjustment, arrangement: as, the lateral \*trim of an aircraft.
- triplane** 'traɪ,plæ:n *n.* a flying-machine of the aeroplane type having three sustaining-planes or supporting-surfaces: compare *monoplane*, *biplane*, *multiplane*.
- tripping-rope** 'trɪpɪŋ,rɔ:p *n.* a rope used in connection with the tripping-device or release by which a balloon water-anchor may be relieved of its contents.
- trochoid** 'trɔ:kɔɪd *n.* a prolate or curtate cycloid; a curve described by a point fixed to a wheel which rolls on a straight line.

**trochoidal** 'trɔ'kɔɪ-dɪ, 'trɔɔ,kɔɪ-dɪ *adj.* pertaining to or having the nature of a trochoid: as, \*trochoidal curv, a \*trochoidal wave.

*trochoidal plane*, see under *plane*.

**truss** trʌs *tr.* tie, bind, fasten; adjust, draw, make fast or stiffen as with a truss.

**truss** trʌs *n.* a stiff frame; a combination of beams, posts, and struts of wood, steel, or other material, constituting a rigid or unyielding frame, as that of the planes or wings of a double-deck aeroplane flying-machine.

**truss-wire** 'trʌs,wɑɪz *n.* one of the wires of a truss, as in an aeroplane flying-machine.

**tryout** 'trʌɪ,aut *n.* the action or process of trying out, as of a flying-machine; a trial or test.

**tube-whistle** 'tʃub,wɪsəl *n.* a light wind-blown whistle made of bamboo tubes placed side by side, such as the Chinese sometimes attach to the tail of a flying pigeon.

**turbulence** 'tɜzbʝʊ-ləns *n.* the state or condition of being turbulent; disturbed state; agitation, commotion, as of the air.

*energy of turbulence*, the energy of the turbulence, agitation, or commotion of a fluid, as the air; energy of wind-fluctuation; turbulence=energy.

*motion of turbulence*, the motion of a fluid, as the air, when in a state of turbulence or agitation; the movement of a fluid in commotion; motion of wind-fluctuation.

*velocity of turbulence*, the velocity of the motion of turbulence of a fluid, as the air; turbulence=velocity.

**turbulence-energy** 'tɜzbʝʊləns,ɛnɛz-dʒɪ *n.* the energy of the turbulence, agitation, or commotion of a fluid, as the air; energy of turbulence; energy of wind-fluctuation.

**turbulence-velocity** 'tɜzbʝʊləns-vɪləsɪ-tɪ *n.* the velocity of a fluid in a state of turbulence or agitation; velocity of turbulence; velocity of wind-fluctuation.

**turnbuckle** 'tɜ:zn,bakəl *n.* a screw device for connecting or drawing together two parts of a wire or metal rod; a wire-tightener consisting of a right-hand and a left-hand screw, used for keeping taut the wire stays of air-craft; a strainer: as, an open \*turnbuckle.

**turning-point** 'tɜznɪŋ,pɔɪnt *n.* the point or place in the air or atmosphere at which an airship turns, or changes or reverses its course, as in order to return to its starting-point.

**turtle** 'tɜ:tl̩ *n.*

*turn turtle*, turn upside down; capsized: said of an airship.

**twilight** 'twaɪ,lajt *n.* the light from the sky when the sun is below the horizon at morning and evening; the illumina-

- tion after sunset (or before sunrise) produced by the reflection of sunlight from the upper air. compare *gloaming*, *glooming*, *dusk*.
- twilight-arc** 'twai-lait,ɑ:zk *n.* same meaning as *twilight curve*.
- twilight-curve** 'twai-lait,kɜ:zv *n.* [also spelt *twilight-curve*] the curve or arc, sometimes very sharply defined, constituting the visible part of the circular outline or boundary of the projection of the earth's shadow upon the sky, which rises in the east just after the sun has set and, as it passes to the zenith and thence to the western horizon, gradually cuts off the twilight-glow; the twilight-arc.
- twilight-glow** 'twai-lait,glɔʊ *n.* the glow or luster of the twilight.
- twisting-action** 'twɪstɪŋ,ækʃən *n.* an action of twisting or spirally turning.
- twisting-effect** 'twɪstɪŋ-ɪ,fekt *n.* an effect having the nature of a twist or spiral turn.
- two-bladed** ,tu'blee-dɪd, (*assumptively*) 'tu,blee-dɪd *adj.* having two blades, as a screw propeller.
- two-winged** ,tu'wɪŋd, (*assumptively*) 'tu,wɪŋd *adj.* [also spelt *two-winged*] having two wings or winglike sustaining surfaces.
- tying-point** 'tɪɪ-ɪŋ,pɔɪnt *n.* the point at which the guy-line or string of a kite is attached, as to the hanger or bridle; the tying-on point.
- typhoon** ,tɪ'fɔʊn *n.* [also spelt *typhoon*] a violent hurricane occurring in the China seas and thereabouts, mostly from July to October.
- unclouded** ,ʌn'kɫəʊ-dɪd *adj.* not clouded: as, an \*unclouded but misty, sky.
- underbody** 'ʌndəz,bɔdɪ *n.* the body or framework forming the under part of an airship; the rigid understructure attached or suspended beneath the float-vessel; the fuselage.
- underplane** 'ʌndəz,pɫeɪn *n.* a stationary plane situated just under a moving or soaring plane; a plane surface, such as a level piece of land or a water-surface, lying close beneath an aeroplane or flyer, in flight.
- underrun** ,ʌndə'zʌn *tr.* run or pass under or underneath: as, the thunder-squall \*underruns humid air-currents.
- understructure** 'ʌndəz,strʌktʃəz *n.* a structure under another; the lower part or parts of an airship, underneath the gasbag; the underbody; the underwork,

**under-wind** 'Andəz,wɪnd *n.* a wind blowing in the under or lower airs; an atmospheric undercurrent: distinguished from *upper-wind*.

**underwork** 'Andəz,wɜːk *n.* the framework or other contrivances situated under or beneath the main part of an airship; the lower parts of a dirigible balloon, located underneath the gasbag; the understructure; the underbody.

**unmanned** ,An'mænd, (*assumptively*) 'An,mænd *adj.* [also spelt *unmand*] not carrying a man or operator; having no aeronaut or aviator aboard: as, an \*unmand balloon.

**untoggle** ,An'təgəl *tr.* unfasten, disconnect: as, to \*untoggle the car.

**up-and-down** ,Apən'daʊn *adj.*

1. characterized by upward movement followed by downward movement; going first up and then down: as, a sensational \*up-and-down flight.

2. related to, or controlling up-and-down movement; having to do with vertical steering: as, the \*up-and-down and the stabilizing planes: distinguished from *side-to-side*.

**up-current** 'Ap,kʌzənt *n.* a current or stream of air coming or going up; a rising or ascending atmospheric current; an up-wind.

**upper-wind** 'Apəz,wɪnd *n.* a wind blowing in the upper or higher airs; an upper wind or atmospheric current: distinguished from *under-wind*.

**upright** 'Ap,zɑɪt *n.* an upright or vertical stick or piece, as in a kite-frame: as, the cross-sticks and \*uprights.

**uprush** 'Ap,zʌʃ *n.* a rush, or sudden and forceful movement, upward or skyward, as of air.

**up-stroke** 'Ap,stɹʊk *n.* the upward stroke or sweep of a reciprocating part such as a flapping wing; a stroke or beat in an upward direction: the opposite of *down-stroke*.

**up-thrust** 'Ap,θɹʌst *n.* a thrust or push in an upward direction; lift: as, the \*upthrust of the wind upon a wing.

**vacuum** 'vækʉ-əm *n.* empty space; an enclosed space from which the air or other gas has been removed, by means of a pump or otherwise.

*forced vacuum*, a partial vacuum, or decrease of pressure or density which is forced upon the air or other fluid adjacent to an aerofœil or other surface which is acting upon it. compare *forced pressure*, under *pressure*.

**valve** vælv *n.* [also spelt *valv*] a device or appliance designed to control the flow of a fluid, as gas or air, thru a pipe,

outlet, or inlet, as the one inserted at the top of a balloon, for letting out inflating-gas.

*emergency valve*, a balloon-valv which works automatically in case of an emergency.

**valve-line** 'vælv,laɪn *n.* [also spelt *valv=line*] a line controlling the valv of a balloon.

**valve-rim** 'vælv,zɪm *n.* [also spelt *valv=rim*] the rim or marginal part of a balloon-valv.

**valve-ring** 'vælv,zɪŋ *n.* [also spelt *valv=ring*] a ring which is connected with or encircles a balloon-valv.

**valve-rope** 'vælv,zəʊp *n.* [also spelt *valv=rope*] a rope controlling a balloon-valv; a valv=line.

**valve-tender** 'vælv,tender *n.* [also spelt *valv=tender*] one who tends or operates a balloon-valv.

**valve-string** 'vælv,stɪŋ *n.* [also spelt *valv=string*] the string controlling a balloon-valv; a valv=line or valv=rope.

**van** væn *n.*

1. a vane or web of a bird's feather on either side of the shaft; the vexillum; the pogonium.

2. a wing or wing-like organ or structure; a sail.

**vane** veən *n.*

1. a wethercock or wethervane; also, a similar device, as in an anemometer.

2. a sail-like or winglike supporting-, propelling-, or guiding-structure, as one of the blades of an aerial wheel, one of the plates or floats of a windmill, or one of the pieces of feather attached to either side of the neck=end of an arrow.

3. the web or vexillum of a bird's feather on either side of the shaft; the pogonium; the van.

**vane-wheel** 'veən,wɪl *n.* an aerial wheel fitted with vanes or blades; a screw=vane.

**vapor** 'væe-pəz *n.* [also spelt *vapour*] any visible diffused substance, especially fog, mist, cloud, or condensed steam, floating in or obscuring the air or atmosphere; water=vapor; (in *physics*) the gaseous form of a substance which is usually solid or liquid: as, mercury \*vapor.

**vapor-condition** 'væe-pəz-kən,dɪʃən *n.* the condition of, or as to, atmospheric vapor or vapors.

**vapor-dust** 'væe-pəz,dast *n.* atmospheric dust consisting of minute globules of water condensed from aqueous vapor, appreciable by certain optical effects but not visible as fog or haze; dust=vapor.

**vapor-laden** 'væe-pəz,læe-dn *adj.* laden or loaded with vapor, as air.

**vaporous** 'væe-pə-zəs *adj.* having the form or nature of vapor; vapory.

- vapor-plane** 'væ-pæz,plæen *n.* the plane or level at which vapor forms; the level of condensation; the plane of the altitudes or elevations at which ascending currents of moist air are cooled to the dew-point and begin to condense into visible vapor.
- vapor-pressure** 'væ-pæz,pʁeʃəz *n.* the elastic pressure exerted by any invisible or gaseous vapor, especially that of the water-vapor in the air or atmosphere; vapor-tension.
- vaporspout** 'væ-pæz,spaut *n.* same meaning as *waterspout*.
- vapor-tension** 'væ-pæz,tensən *n.* same meaning as *vapor-pressure*.
- vapor-value** 'væ-pæz,væliu *n.* the value of the water-vapor in the atmosphere; the vapor-condition, considered quantitatively, of the aqueous vapor in the air, as at different elevations.
- vapory** 'væ-pə-zɪ *adj.* [also spelt *vapoury*] composed of or characterized by, vapor; vaporous.
- varnish** 'vɑ:z-nɪʃ *n.* a solution of resinous or elastic material in alcohol or other limpid liquid, capable of hardening into an elastic waterproof and gasproof coating, applied to balloon-envelops to render them impermeable and weather-proof.
- veer** vi:z *intr.* turn; shift or change direction; change; also, in meteorology, shift in the same direction as the course of the sun: as, in the northern hemisphere, from east by way of south to west: said of the wind.
- vehicle-speed** 'vi-i-kəl,spi:d *n.* the speed or velocity of the translatory motion of a vehicle; the rapidity with which a craft moves thru the air. compare *propellers-speed*.
- velocity** vi'lesɪ-tɪ *n.* rapidity of motion; speed or quickness in movement; swiftness.  
*natural velocity*, the velocity at which an aeroplane or plane aerofoil naturally continues to glide indefinitely. compare *natural gliding-angle*, under *gliding-angle*.
- velocity-potential** vi'lesɪ-tɪ-pə,tensəl *n.* a potential, or scalar quantity, whose slope is everywhere equal to the velocity of a mass of fluid in irrotational motion.
- venation** vi'næ-ʃən *n.* the mode of distribution of the veins or nervures of an insect's wings; also, these veins collectively, considered as to their arrangement.
- Venetian-blind** vi'nɪ-ʃən,blaɪnd *adj.* resembling a certain type of window-blind made of slats of wood: said of a mode of aeroplane-construction: as, the Phillips \*Venetian-blind method.
- vent-feather** 'vent,fedəz *n.* [also spelt *vent-fether*] a feather located under the tail, behind the vent or anus of a bird;

one of the under tail-coverts; a feather of the crissum; a crissal feather.

**vertex** 'vɛ:z,tekz *n.* [plural *vertices, vertexes*] the point in the heavens directly overhead; the zenith.

**vertical** 'vɛ:tri-kəl *adj.* of or relating to the vertex or zenith; perpendicular to the plane of the horizon; straight up in the air: that is, not diagonal, slanting, or oblique.

*angle of the vertical*, the angle between the astronomical zenith and the geocentric zenith. see under *zenith*. This angle reaches its maximum value in latitude 45 degrees, where it is about 11 minutes.

**vertically** 'vɛ:trikə-lɪ *adv.* in a vertical manner or direction; straight up in the air.

**vertices** 'vɛ:tri,siz *n. pl.* see *vertex*.

**vessel** 'vesəl *n.* an airship; an aircraft; a ship, a craft.  
*aerial vessel*, an airship.

**vexilla** ,vek'sɪlə *n. pl.* see *vexillum*.

**vexillum** ,vek'sɪləm *n.* [plural *vexilla*] the vane or web of a bird's feather on either side of the shaft or stem; the pogonium; the van.

**viscosity** ,vɪs'kəsi-tɪ *n.* the state or property of being viscous; the quality of flowing slowly; also, in *physics*, internal friction; resistance to the motion of the molecules of a fluid among themselves: the opposite of *mobility*.

**viscous** 'vɪskəs *adj.* having the property of viscosity or internal molecular friction; characterized by resistance to internal motion; not mobile.

**volant** 'vɒ-lənt *adj.* passing thru the air; flying; able to fly; capable of flight; volant.

**volation** ,vo'teɪ-ʃən *n.* flight, as of a bird; the power or faculty of flight; volitation.

**volational** ,vo'teɪ-ʃə-nəl *adj.* of volation or flight; volitational.

**volator** ,vo'teɪ-təz *n.* that which flies; specifically, a flying-fish.

**volitant** 'vɒl-tənt *adj.* flying; capable of flight; volant: as, a bat is a volitant mammal.

**volitation** ,vɒl'teɪ-ʃən *n.* the act of flying; the power or capacity to fly; the habitual practice of flight; volation; flight.

**volitational** ,vɒl'teɪ-ʃə-nəl *adj.* of volitation; volational.

**volplane** 'vɒl,pleɪn *intr.* fly in, or by means of, an aeroplane flying-machine; plane, glide, coast: as, while he was \*volplaning down to earth.

**volplane** 'vɒl,pleɪn *n.* the action of the verb *volplane*: as, his \*volplane of a mile from the clouds to the ground.



**vortex** 'və:z,teks *n.* [plural *vortices, vortexes*] a whirl of fluid, as the air in a smoke-ring; also, a whirling or gyratory motion; a gyre; an eddy.

**vortex-core** 'və:z-tekz,kə:z *n.* the core or innermost central nuclear part of a verteks or whirl of air.

**vortex-cylinder** 'və:z-tekz,sɪlɪn-dəz *n.* the cylinder-shaped part of a vertex; a cylindrical vertex.

**vortex-filament** 'və:z-tekz,fɪlə-mənt *n.* the portion of fluid included within a vertex-tube.

**vortex-fringe** 'və:z-tekz,fɪndʒ *n.* the upward circulatory fringe, or system of vertical currents produced at the edges of a horizontal plane falling thru the air or other fluid.

**vortex-knot** 'və:z-tekz,nət *n.* a knot-like vertex; a complicated gyre or eddy, as in an air-stream.

**vortex-hoop** 'və:z-tekz,houp *n.* an imaginary uncreatable and undestructible vertex in an inviscid gas, shaped like a hoop or half-ring.

**vortex-motion** 'və:z-tekz,məʊ-ʃən *n.* the motion characteristic of a vertex; a rotational motion of a fluid in which there is circulation about certain vertex-filaments, and no circulation except about them.

**vortex-ring** 'və:z-tekz,zɪŋ *n.* a vertical molecular filament or column returning into itself so as to form a ring composed of a number of small rotating circles arranged like beads on a string, as the air in a smoke-ring.

*vortex roller*, a series of vertex-filaments following each other in rapid succession and acting as rollers between the live fluid and the dead-water.

**vortex-train** 'və:z-tekz,tɹeɪn *n.* a train of vertices, as the vertex-cylinders of air, collectively, left trailing behind an aerofeil in flight.

**vortex-trunk** 'və:z-tekz,tɹʌŋk *n.* a trunk, twisted column, or helicoid cloud composed of vertex-filaments wound round each other like the strands of a rope.

**vortex-tube** 'və:z-tekz,tʃu:b *n.* an imaginary tube, within a fluid, whose surface is the locus of vertex-lines thru a small closed curv drawn arbitrarily.

**vortical** 'və:z-tɪ-kəl *adj.* of or like a vertex or gyre: as, a \*vertical system of air-currents.

**vortices** 'və:z-tɪ,sɪz *n. pl.* see *vortex*.

**vulture** 'vʌltʃəz *n.* any one of various large birds of prey of the order Raptores, having the head and neck more or less bare of feathers, and furnished with powerful beak and claws.

- wader** 'wee-dəz *n.* a bird which wades, as a crane, a stork, or a sandpiper; any bird of the order Grallae or Grallatores.
- waft** wa:ft *n.* a form of aerial propeller.
- waft** wa:ft *tr.* bear thru a fluid or buoyant medium, as air; convey thru the atmosphere.
- wake** we:k *n.* the track left by a streamline or other solid body moving thru a fluid; the track or stream of agitated air left trailing behind an aerofoil, aeroplane, or airship in flight thru the atmosphere; also, a track, a course. compare *wash*.
- wake-current** 'we:k,kəʒənt *n.* a current of, or of the nature of, a wake.
- war-balloon** 'we:z-bə,loun *n.* a balloon used in war; a dirigible or other balloon designed for use in warfare; a military balloon.
- war-car** 'we:z,kɑ:z *n.* an aerial car or vessel designed for use in warfare; a warship of the air.
- war-kite** 'we:z,kɑ:it *n.* a kite used in warfare; a man-lifting kite used for military reconnaissance or observation; a military kite; an observation-kite.
- warning** 'we:z-nɪŋ *n.* a signal, such as a flag or pennant, displayed as a warning or cautionary notice of approaching winds, storms, hurricanes, etc.
- warp** we:z *tr.*
1. twist out of shape, as a wing or other aerofoil; turn or bend out of a condition of straightness, as the outer portions or lateral extremities of the sustaining-surfaces of an aeroplane flying-machine; contort.
  2. move into some desired place or position by means of a warp or rope secured to something fixed; kedge: as, to \*warp a dirigible into her deck or shed.
- warping-device** 'we:z-pɪŋ-dɪ,vaɪs *n.* a device or apparatus used in warping or contorting one or more of the aerofoils in a flying-machine; a wing-warping device; a warping-mechanism.
- warping-mechanism** 'we:z-pɪŋ,mekə-nɪzəm *n.* a mechanism for warping the planes or wings of a flying-machine; a warping-device.
- warping-rope** 'we:z-pɪŋ,zɒp *n.* a rope used in warping or flexing the wing or wings of an aeroplane flying-machine; the cord by which an aerofoil is warped by the driver of a flying-machine.
- war-plane** 'we:z,plæn *n.* an aeroplane flying-machine designed for use in warfare; an aerial warship of the aeroplane type.

- wash** wə:ʃ *n.* the broken or eddying air which is left behind by a flying aircraft or by its propeller; the dead-water or eddy-air in the rear of a moving aerofoil or streamline body. compare *wake*.
- waste-valve** 'weest,vælv *n.* [also spelt *waste=valu*] a valv, as in the gasbag of a balloon, thru which gas may be allowd to escape or go to waste; an escape=valv.
- water-anchor** 'wc:-təz,æŋkəz *n.* a special form of anchor adapted for retardng the speed or influencing or arrestng the motion of a balloon passing over the sea or other body of water.
- water-area** 'wc:-təz,ɛ:-zi-ə *n.* [also spelt *water area*] the area, surface, or region of the water as distinguisht from the land or air; also, an area or tract of water. compare *land=area*.
- water-ballast** 'wc:-təz,bæləst *n.* (*sea-term*) ballast which consists of water; water used for ballast in a ship.
- water-blink** 'wc:-təz,blɪŋk *n.* a spot of cloud hanging in arctic regions over open water, the presence of which it servs to indicate. compare *snow=blink*.
- water-cloud** 'wc:-təz,kləʊd *n.* any one of the class of clouds comprizing all but the highest (cirrus) clouds and the cirro=nebulæ, whose component particles are minute drøplets of water: distinguisht from *ice=cloud*.
- water-drag** 'wc:-təz,dræg *n.* a drag or device attacht to a balloon by a rope and designed for trailing along in the water beneath, as an aid in controllng the motions of the craft.
- water-dropper** 'wc:-təz,drɒpəz *n.* a cylndric water=container from whose nozzle the water is allowd to drøp freely into the atmosfere. The device was invented by Sir William Thomson and is used, as in a balloon, in mesuring the electric potential of the air.
- water-flight** 'wc:-təz,flaɪt *n.* a flight over the water; a flight thru the air above a water=surface; an over=water or transaquatic flight. compare *land=flight*.
- water-foot** 'wc:-təz,fʊt *n.* a foot or foot=like understructure in a flying=machine designed to enable the craft to rest or alight upon a water=surface; a water=float attacht to the base of a flying=machine; a water=skid.
- water-haze** 'wc:-təz,hæz *n.* atmospheric haze which is made up of particles or minute drøplets of water, with or without an admixture of dust or smoke; aqueous haze. compare *dust=haze*.
- water-particle** 'wc:-təz,pɑ:ti-kəl *n.* one of the particles or

droplets of water such as water-clouds and mist are composed of; a minute globule of water.

**water-ship** 'wc:-təz,ʃɪp *n.* a ship that sails on the water; a vessel used for navigating the seas or other bodies of water: distinguished from *aerial ship* and *airship*.

**water-skid** 'wc:-təz,skɪd *n.* a skid or runner-like understructure in a flying-machine designed to enable the craft to alight and rest upon or to launch itself from, a water-surface; a skid-like water-float or water-foot attached to the base of a flying-machine.

**water-sky** 'wc:-təz,skɑɪ *n.* a popular reflection in the sky, common in arctic regions, indicating the presence of open water beneath.

**water-smoke** 'wc:-təz,smʊk *n.* smoke-like or steam-like fog or mist formed over a body of water whose surface-temperature is above the dew-point of the air, which is already saturated with water-vapor.

**waterspout** 'wc:-təz,spɔʊt *n.* a whirlwind characterized by a huge funnel-shaped mass of mist descending to the surface of a body of water, as the sea, where, picking up water, it forms a column reaching to the clouds; a vaporspout; a windspout.

**water-surface** 'wc:-təz,sɜːfɪs *n.* the upper or free surface of a body of water; a surface which is of water rather than land: distinguished from *land-surface*. compare *water surface*, under *surface*.

**water-tight** 'wc:-təz,tɑɪt *adj.* so tight as to resist the passage of water; impermeable to water.

**wave** weev *n.*

1. a continually propagated form which is assumed by parts of a body, as the air, when out of equilibrium.

2. a progressive oscillation of atmospheric pressure or temperature; also, an advancing movement of large extent in which these are considerably above or below the normal: as, a barometric \*wave, a cold \*wave.

*cold wave*, a wave of cold weather; an advancing atmospheric area which is characterized by a temperature which in any part is at least as low as 36 degrees Fahrenheit.

*hot wave*, a wave of hot weather; a heat-wave.

**wave** weev *v.*

1. *intr.* move up or down or two and fro; undulate; sway: as, \*waving wings.

2. *tr.* move up and down, as a wing; cause to sway.

**wave-action** 'weev,ækʃən *adj.* actuated by wave motion; moved by an undulating aerofoil or wave-surface. see under *aeroplane*.

**wave-line** 'wæv,laɪn *adj.* having the form of, or related to, the lines or outlines of the waves in a fluid; undulating; wavy: as, a body molded in \*wave-line curv; a flying-machine moving in an undulating or \*wave-line course. compare *streamline*.

**wave-surface** 'wæv,sɜːfɪs *n.*

1. the surface of a wave or undulation in a fluid.

2. a flexible surface or aerofoil which forms part of a flying-machine, and in which a rapid undulatory or wave motion is produced for the purpose of causing the surface to propel or sustain the craft in the air.

**wave-train** 'wæv,treen *n.* a train or series of waves in a fluid; a trailing succession of undulations.

**weather** 'wədəz *n.* [also spelt *wether*] the state of the air or atmosphere with respect to its cloudiness, humidity, motions, temperature, pressure, electrical condition, or other characteristics.

*broken weather*, unsettled wether.

*clerk of the weather*, a humorous personification of the influences controlling the wether; Old Prob; also, the director of the British Meteorological Office or the meteorological department of the Signal-Service of the United States.

*falling weather*, wether in which there is, or is liable to be, a precipitation or fall of rain, snow, or hail; rainy or snowy wether.

*radiation weather*, wether in which radiation of heat from the earth's surface is especially noticeable; the clear dry atmospheric condition which prevails within areas of high barometric pressure or descending air when terrestrial radiation of heat is at its maximum.

**Weather-Bureau** 'wədəz,bjuː-zə *n.* a bureau of the Department of Agriculture of the United States government having charge of the forecasting of the wether, issuance of of wether-warnings, display of wether-signals, etc.

**weather-card** 'wədəz,kɑːrd *n.* a card on which is a diagram showing the average or typical wether-conditions on each side of moving areas of high or low barometric pressure.

**weather-case** 'wədəz,kæes *n.* a case holding instruments for observing the wether; a cupboard containing meteorological apparatus.

**weather-change** 'wədəz,tʃeɪndʒ *n.* a change in the wether; an alteration of general atmospheric conditions.

**weather-chart** 'wədəz,tʃɑːrt *n.* a wether-map.

*synoptic weather-chart*, a synoptic chart of the wether;

a wether=map which affords a synopsis or general view of the meteorological conditions; a synoptic wether=map.

**weather-condition** 'wədəz-kən,dɪʃən *n.* one of the conditions, circumstances, or characteristics of the wether: commonly used in the plural.

**weather-cycle** 'wədəz,sai-kəl *n.* a cycle or round of wether-conditions; one of a series of recurrent periods of time, of equal length, in each of which a certain succession of atmospheric phenomena, or course of meteorologic events, is observed or believed to complete itself. compare *weather=period*.

**weather-flag** 'wədəz,flæg *n.* a flag which is used as a wether=signal; one of the special signal=flags used by the United States Wether=Bureau since the year 1891 to indicate the character of the atmospheric conditions expected to occur at a given locality within thirty=six hours.

**weather-forecast** 'wədəz,fɔ:z-kɑ:st *n.* a forecast of wether=conditions; specifically, one of the daily wether=predictions, or statements of wether=probabilities, published by the United States Wether=Bureau.

**weather-forecaster** 'wədəz-fɔz,kɑ:-stəz *n.* a forecaster of the wether; one whose occupation is to foretell or predict wether=conditions.

**weather-lights** 'wədəz,lɑ:ts *n. pl.* lights such as the auroral lights or heat=lightning, considered as being related to the wether.

**weather-man** 'wədəz,mæn *n.* a man whose occupation is the observation or prediction of wether=conditions; a wether=forecaster; a meteorologist.

**weather-map** 'wədəz,mæp *n.* a map showing the state of the wether or atmospheric conditions, as of temperature, pressure, and wind, thruout a country or region by conventional lines, shading, or other symbols; a wether=chart.

**weather-notation** ,wədəz-nɔ'tee-ʃən *n.* a notation or system of abbreviation of terms descriptive of the principal wether=phenomena, as the alphabetic notation of Beaufort used in Great Britain, in which (c) signifies *cloud*, (f), *fog*, etc.

**weather-period** 'wədəz,pri:zi-əd *n.* a wether=cycle or other period of time in which certain uniformities are observable in recurring wether=phenomena. compare *weather=cycle*.

**weather-prediction** 'wədəz-psɪ,dɪkʃən *n.* the prediction of wether=conditions; the art of forecasting the wether.

**wether-prevision** 'wədəz-psɪ,vɪʒən *n.* the prevision or foreseeing of wether=conditions.

**weather-prophet** 'wədəz,pʁəfɪt *n.* [also spelt *wether=profet*] one who makes profesies as to the wether; a forecaster.

**weather-register** 'wɛðəz,ʒɛdʒɪ-stəz *n.* a register or record of wether=conditions; an hourly or daily meteorologic record at any station, especially such a record kept by the observers themselves, as distinguished from one kept by self-recording instruments.

**weather-report** 'wɛðəz-rɪ, pɔ:zɪt *n.* a report of the wether=conditions, especially as issued daily by a wether=servis.

**weather-service** 'wɛðəz,sɜ:vɪs *n.* [also spelt *wether=servis*] a servis or organization for studying, reporting upon, and forecasting the wether; a meteorological servis, such as maintained by each of the principal governments of the world.

**weather-sharp** 'wɛðəz,ʃɑ:zɪp *n.* an expert on the wether; a skild forecaster or meteorologist.

**weather-sign** 'wɛðəz,səɪn *n.* a sign or indication of wether=conditions; a fenomenon or sensation indicating state or change of wether or atmospheric conditions.

**weather-signal** 'wɛðəz,sɪgnl̩ *n.* a signal, such as a special flag, displayd so as to give notice of, or information regarding, approaching wether=conditions.

*Buys Ballot's system of weather=signals*, a system of wether=signals, the first in modern times, adopted in Holland in 1860, and employing a form of semafore similar in design to the French, consisting of a movable horizontal bar or wind=vane and an arm hinged to the vane and carrying a disk at its free end.

**weather-situation** 'wɛðəz-sɪtʃu, ɛɛ-ʃən *n.* the situation as to wether; the state of things as far as the wether goes; the wether=conditions.

**weather-station** 'wɛðəz,steɪ-ʃən *n.* a station where observations are made upon the wether and reported to a central effis; one of the branch stations of a wether=servis; a meteorologic observng=station.

**weather-symbol** 'wɛðəz,sɪmbəl̩ *n.* a symbol or conventional sign used in recording wether=conditions or making wether=maps, as one of those adopted by the International Meteorological Congress to represent hydrometeors, etc.

**weather-type** 'wɛðəz,təɪp *n.* a type or distinctiv kind of wether observable at a given station under given distances=relations to centers of high and low barometric pressure. compare *wind=type*.

**weather-warning** 'wɛðəz,wɛ:z-nɪŋ *n.* warning regarding approaching bad wether; an admonitory wether=signal. compare *storm=warning*.

**weather-whistle** 'wɛðəz,wɪsəl̩ *n.* a whistle used as a

wether=signal; a signal consisting of steam=whistle blasts, long and short, in various combinations.

**web** web *n.*

1. a sheet of woven fabric covering an aeroplane=wing; the cloth which forms the surface of an aerofoil.

2. the vane or vexillum of a bird's feather on either side of the shaft or stem; the pogonium or van.

3. one of the wooden blocks acting as distance=pieces between the ribs of the sustaining=plane of a flying=machine.

**webbing** 'webɪŋ *n.* the woven fabric which is stretcht over the frame of an aerofoil or wing; the cloth surfacing of an aeroplane.

**web-cloth** 'web,klə:θ *n.* the cloth used in or constituting the web of an air=craft.

**webby** 'webɪ *adj.* of a web; web=like; membranous: as, the \*webby plumage of certain birds; the \*webby wings of bats.

**web-sprit** 'web,spsɪt *n.* a sprit or spar connected with the web or webbing of a air=craft.

**weight** weɪt *n.*

*shifting weight*, one of the weights or heavy bodies which in some airships are made to shift longitudinally along the understructure to aid in maintaining equilibrium.

**weight-carrier** 'weɪt,kæzi-əz *n.* a flying=machine especially designed to carry weight; an air=craft for transporting heavy goods; an aerial freighter.

**westerly** 'westəz-ɪ *n.* [plural *westerlies*] a westerly wind: as, a prevailing \*westerly.

**wheel** wi:l *n.* the circular, rotating handle by the manipulation of which the driver or pilot operates the rudder or control of an air=craft; the hand=wheel used for steering; the steering=wheel; the helm=wheel: as, at the airship's \*wheel; the \*wheel of the aeroplane.

**wheel-kite** 'wi:l,kɑ:t *n.* a heavy Chinese tailed kite consisting of two connected disks in each of whose faces is a windmill=wheel which is revolv'd by the wind.

**whip** wɪp *n.* one of the radii, arms, or sail=frames of an old=style four=vaned vertical windmill.

**whip-line** 'wɪp,lɑɪn *n.* a line or piece of strong cord which is attacht at one end to the bridle of a kite and which has at its other end a long loop to which the flying=cord or kite=line may be tied.

**whir** wɜ:z *v.*

1. *intr.* fly, dart, revolv or otherwise move quickly with a whizzing or buzzing sound, or swish, like that made by a stick or a projectil moving rapidly thru the air; whizz.



2. *tr.* move quickly with a whizzing or buzzing sound: as, the humming-bird \*whirs its wings.

**whir** wɜːz *n.* a swishing or buzzing sound, as of the wings of certain birds when in flight, or of the blades of a revolving propeller.

**whirl** wɜːzl *v.*

1. *tr.* swing or turn rapidly round; rotate; revolve.

2. *intr.* turn swiftly round, as in a helixoid course; rotate rapidly.

**whirl** wɜːzl *n.*

1. a rapid turning or circling movement; a swift or rotary motion or gyration: as, his spiral \*whirl thru the air.

2. a mass of air or other matter having such a circling or helixoid motion, as an air-eddy or whirlwind.

**whirlblast** ˈwɜːzl,blɑːst *n.* a whirling blast of wind; a whirlwind.

**whirling-fan** ˈwɜːz-lɪŋ,fæn *n.* a fan which by whirling imparts motion to an air-craft; a fan-propeller; an air-screw.

**whirling-machine** ˈwɜːz-lɪŋ-məˌʃɪn *n.* a primitive form of whirling-table, said to have been first used by Robbins in 1761.

**whirling-table** ˈwɜːz-lɪŋ,tæ-bəl *n.* a machine consisting of a horizontal arm turning upon a vertical axis used for whirling or revolving planes or aerofoils in order to determine the resistance offered by the air, or for determining the constants of anemometers, or for similar purposes; a whirling-machine of modern construction.

**whirlwind** ˈwɜːzl,wɪnd *n.* a wind moving in a whirl, eddy, or circumscribed circular path; a mass of air, as in a tornado, waterspout, or sand-pillar, of which the height is usually great in proportion to the width, rotating rapidly on a vertical or slightly inclined axis and having at the same time a translatory motion over the land or sea.

**wicker** ˈwɪkəz *n.* a small pliant twig; an osier; a withe; also, wickerwork.

**wickerwork** ˈwɪkəz,wɜːzk *n.* [also spelt *wickers-work*] basketwork of any sort, as that of a balloon-car; anything plated, woven, or wattled of flexible and tough material, as osier, rattan, or thin strips of wood.

**winch** wɪntʃ *n.* a machine in which an axis is rotated by means of a crank-handle, used for winding up or letting out the holding-rope of a captive balloon, or a kite-line; a windlass.

**winch-house** ˈwɪntʃ,haʊs *n.* a house or building from which a kite-winch is worked.

**wind** wɪnd *n.* air in natural motion at or above the earth's

surface, or, especially, relatively to the earth's surface; an atmospheric current; a current of air as coming from a particular direction; a movement or rush of air relative to the observer, as when flying thru still air; also, air artificially put in motion, as by bellows or a blower, or by a projectile; an air-current or blast, natural or artificial.

*against the wind*, in an opposite direction to the wind; in a direction opposite to that in which the wind is blowing; so as to meet the wind.

*backing wind*, a wind the changing direction of which shifts around the dial of the compass anti-clockwise, or against the sun: the opposite of *hauling wind*.

*beating wind*, (*sea-term*) a head-wind which beats against a vessel and forces it to tack.

*before the wind*, (*sea-term*) in the direction in which the wind blows.

*Cape-Town wind*, a violent vapor-laden wind which blows down from Table Mountain, opposite Cape Town, South Africa.

*cardinal wind*, a wind which blows from one of the four cardinal points; a north, south, east, or west wind.

*chinook wind*, a warm, dry, westerly or northerly wind blowing at intervals on the eastern slopes of the Rocky Mountains, similar to the föhn winds of Switzerland; a chinook.

*coastal wind*, same meaning as *coast-wind*.

*diurnal inversion of the wind*, the inversion or reversal of the relations of the velocities of the winds every twenty-four hours discovered by Espy in 1840; the law that the wind next the surface of the earth is feeblest at night and strongest at midday, whereas the reverse is true at a certain altitude above the surface.

*Dove's law of the rotation of the winds*, the law or rule, known already by Aristotle to be true (for the Mediterranean region) but given wider extension by Dove in 1827, that, in the north temperate zone, the wind-directions at any given place pass thru a cycle of changes lasting only a few days, the order usually being east, south, west, north: that is (on a compass-dial), clockwise, or with the sun.

*down the wind*, in the same direction as the wind is blowing or moving; with the wind: as, birds fly quickly \*down the wind.

*etesian wind*, the regular north and northeast wind blowing over the Mediterranean Sea from southern Europe in the summertime, especially in July and August, and apparently due to an indraft of air toward the Sahara.

*eye of the wind*, the precise point from which the wind is blowing.

*face of a wind*, the front or forepart of a wind conceived as a mass of advancing air; the aspect presented by a headwind: as, to struggle in the \*face of a wind.

*fish-tail wind*, a fluctuating or gusty wind.

*ground-surface wind*, a wind along the surface of the ground; a wind just above the land-surface.

*hauling wind*, a wind the changing direction of which shifts around the dial of the compass clockwise, or with the sun: the opposite of *backing wind*.

*head wind*, same meaning as *headwind*.

*high wind*, a wind of great velocity or force; a strong wind.

*hot wind*, any wind made up of hot or very warm air; specifically, in Australia, a north wind lasting two or three days, and being at times excessively hot.

*hurricane wind*, a wind which is characteristic of a hurricane, revolving anti-clockwise in the northern hemisphere, clockwise in the southern.

*mean wind*, a wind which has the mean or average velocity or force.

*moderate wind*, same meaning as *moderate breeze*. see under *breeze*.

*planetary wind*, a wind which forms part of or is due to the planetary circulation of the earth's atmosphere; a planetary air-current. see under *circulation*.

*polar wind*, one of the winds characteristic of the polar regions of the earth; one of the general atmospheric currents in the neighborhood of the north or south pole.

*relative wind*, the wind or motion of the air relative to a moving body or object such as an aeroföil, airship, or flyer, in flight.

*spiraling wind*, same meaning as *spiral wind*.

*spiral wind*, a wind which has a spiral or helicoid course; an atmospheric current moving spirally, as in a cyclone, or around the globe; a cyclonic or anticyclonic wind; a spiraling wind.

*stiff wind*, a wind of considerable strength or velocity; a strong wind; a stiff breeze.

*with the wind*, in the direction in which the wind is blowing or moving; down the wind.

**windage** 'windɪdʒ n.

1. the disturbance set up in the atmosphere by a body moving thru it or revolving in it.

2. the air-friction of a moving mechanism or part.

**wind-area** 'wind,ε:-zi-ə *n.* the area presented to the wind, as of the wheel of a wind=motor.

**wind-bag** 'wind,bæg *n.* a bag fild with wind or designed to be fild by the wind.

**wind-band** 'wind,bænd *n.* (*provincial, in England*) a long band-like cloud supposed to indicate winds or stormy wether.

**wind-base** 'wind,bæes *n.* the base or surface of an aeroplane flying=machine which is acted upøn, or resists the pressure of, the wind or air during flight.

**wind-blown** 'wind,blo:n *adj.*

1. blown or wafted by the wind or air; wind=borne; wind=driven: as, \*wind=blown thistledown.

2. blown by the wind or air, as a Chinese whistle attacht to a flying pigeon.

**wind-borne** 'wind,bɔ:zn *adj.* borne along by the wind or air; wind=blown; wind=driven.

**wind-break** 'wind,bzæk *n.* some øbject which breaks the force of the wind, as a fence, a belt of trees, or a cliff; a barrier øn the earth's surface which breaks or interrupts winds; a narrow shelter=belt. compare *wind=mantle, shelter=wood, snow=break.*

**wind-chart** 'wind,tʃɑ:zt *n.* a chart or map showing the wind=directions at a given time or season over any region of the earth.

**wind-check** 'wind,tʃæk *n.* a check or ticket=stub with which spectators of an airship=tøst or flying=exhibition are sometimes provided, good for admıssion a second time, as øn some other day, if unfavorable wind or wether=conditions prevent flight at the first trial.

**wind-chest** 'wind,tʃest *n.* a chest, as the gourd=like body of certain whistles, designed to receiv or contain wind.

**wind-current** 'wind,kʌrənt *n.* a current of wind or air; an air=current.

**wind-direction** 'wind-dır,zækʃən *n.* a direction of the wind; the pøint or quarter from which the wind blows.

**wind-dog** 'wind,dæg *n.* a fragment, piece, or portion of a rainbow seen øn detachd clouds; a wind=gall.

**wind-drift** 'wind,drıft *n.* the drift or general movement of the wind; the trønd of the air=currents as shown by the drift of clouds, storms, etc.

**wind-driven** 'wind,drıven *n.* driven along by the wind; wind=blown; wind=borne.

**wind-eddy** 'wind,ɛdı *n.* an eddy or whirl of wind; a little whirlwind: as, trecherous \*wind=eddies.

- winder** 'waɪn-dəz *n.* a device for winding a cord, as in a rubber-band driven flyer.
- wind-firm** 'wind,fɜ:zm *adj.* firm against the wind; capable of withstanding heavy winds.
- wind-fluctuation** 'wind-flʌktʃu,ɛe-ʃən *n.* the fluctuation or wave-like movement in the wind, in different directions; turbulence, commotion, or disturbance of the wind.
- wind-friction** 'wind,fɜ:ɪkʃən *n.* the friction or surface-resistance of the wind, as upon a kite; air-friction.
- wind-gage** 'wind,gædʒ *n.* [also spelt *wind-gauge*] an instrument for gaging or measuring the velocity, force, or pressure of the wind; an anemometer.
- wind-gall** 'wind,gɔ:l *n.* a fragment, piece, or portion of a rainbow seen on detached clouds; a wind-dog.
- wind-gap** 'wind,gæp *n.* a sloping ravine, notch, or cleft indenting the upper part of a mountain-ridge.
- wind-guard** 'wind,gɑ:zd *n.* [also spelt *wind-guard*] a guard, as on the nose of a balloon, for protection against the wind; a wind-screen.
- wind-gust** 'wind,gʌst *n.* a gust or flaw of wind.
- wind-gyration** 'wind-dʒaɪ,zɛe-ʃən *n.* a gyration or rotary mass of wind; an atmospheric eddy.
- windily** 'wɪndɪ-lɪ *adv.* with high wind; in a way that betokens wind.
- windiness** 'wɪndɪ-nɪs *n.* the state of being windy or tempestuous.
- winding-drum** 'waɪn-dɪŋ,dɾʌm *n.* a drum or windlass on a flying-machine by means of which to wind the starting-rope by which the craft is launched; a winch.
- windlass** 'wɪndləs *n.* a wheel-and-axle device, such as a winch, used for controlling the ropes or lines connected with captive balloons or kites, or the guide-ropes of balloons.
- wind-mantle** 'wɪnd,mæntl *n.* a natural or artificial forest maintained as a mantle for protection against the wind; a shelter-belt or shelter-wood.
- wind-meter** 'wɪnd,mɪ-təz *n.* a meter or measuring-device for gaging the force, pressure, or velocity of the wind; an anemometer.
- windmill** 'wɪnd,mɪl, 'wɪn,mɪl *n.* a wind-motor.
- windmill-sail** 'wɪnd-mɪl,sɛɪl *n.* one of the sails, vanes, or whips of a windmill.
- wind-motion** 'wɪnd,mʊʊ-ʃən *n.* the motion of the wind; the movement of the air: as, the motive power of \*wind-motion.
- wind-motor** 'wɪnd,mʊʊ-təz *n.* a motor driven by the force of the wind; a windmill.

**wind-object** 'wind,əbdʒɪkt *n.* an object designed to act in or against the wind; an aerofœil or the like.

**wind-pocket** 'wind,pəkɪt *n.* a pocket or receptacle in a kite or aeroplane, designed to catch the wind or air and aid in preserving the equilibrium of the craft; a small windbag.

**wind-pressure** 'wind,pʁɛʃəz *n.* the pressure of the wind upon any object in its path.

*coefficient of wind-pressure*, the coefficient or numerical constant used as a measure of the pressure of the wind against a stationary object, or of the resistance of the air to a moving object.

**wind-pulsation** 'wind-paɪ,ʃee-ʃən *n.* a pulsation, throeb, or beat of the wind; the pulsation or throebbing of the wind, a wind-pulse: as, harmœnic \*wind-pulsation.

**wind-pulse** 'wind,pals *n.* a pulse or throeb of the wind; a wind-pulsation.

**wind-rate** 'wind,zæet *n.* the rate of wind-movement; the comparativ degree of rapidity of a wind; wind-velocity; wind-speed.

**wind-record** 'wind,zɛkərd *n.* a record of wind velocities or directions, as by an anemograf; an anemogram.

**wind-register** 'wind,zɛdʒɪ-stəz *n.* an instrument for registering or recording the direction and force of the wind; an anemograf.

**wind-river** 'wind,zɪvəz *n.* a river or definitely defined current of wind; a long, stedy atmospheric stream or current flowing between certain points: as, the mighty \*wind-river formd by the Rhine valley.

**wind-rose** 'wind,zooz *n.* a table, diagram, or grafic device of radial or rosette-like form indicating the relativ frequency of winds blowing from different points of the compass or the relativ amount of total wind-movement in each direction; a wind-star; also, a similar table or diagram showing the connection between the wind-direction and any other wether-condition, as cloudiness, rainfall, or temperature.

*baric wind-rose*, a wind-rose whose radii are proportional to, or show, for a given place, the average barometric pressure of the atmosphere during the prevalence of wind from each point of the compass; a barometric wind-rose.

*barometric wind-rose*, same meaning as *baric wind-rose*.

*humidity wind-rose*, a wind-rose whose radii are proportional to, or show, for a given place, the average relativ or absolute humidity or the relativ dew-point of the atmosphere during the prevalence of wind from each point of the compass.

*hyetal wind=rose*, same meaning as *rain wind=rose*.

*rain wind=rose*, a wind=rose whose radii are proportional to, or show, for a given place, the average rainfall during the prevalence of wind from each point of the compass; a *hyetal wind=rose*.

*temperature wind=rose*, a wind=rose whose radii are proportional to, or show, for a given place, the average temperature during the prevalence of wind from each point of the compass.

**wind-sail** 'wind,seɪl *n.*

1. (*sea=term*) a wide tube or funnel of canvas serving to convey wind or a current of fresh air into the lower parts of a ship.

2. one of the vanes or sails of a windmill.

**wind-scale** 'wind,skeɪl *n.* a number of words or terms systematically arranged for use in describing the force of the wind, as the 12=term scale introduced by Beaufort into the British navy in 1805. see under *scale*.

*international wind=scale*, same meaning as *Smithsonian wind=scale*.

*Smithsonian wind=scale*, a wind=scale consisting of ten numerical terms: 0, calm, 1, light air, 2, light wind, etc., introduced by the Smithsonian Institution of Washington, D. C.; the *international wind=scale*.

**wind-scoop** 'wind,skəʊp *n.* a device resembling a scoop or funnel, as on the deck of a water=ship, so arranged that the motion of the craft will cause it to take in and transmit fresh air to the interior of the vessel, for ventilation.

**wind-shaft** 'wind,ʃɑ:ft *n.* the horizontal shaft of a windmill or wind=motor.

**wind-shield** 'wind,ʃi:ld *n.* a shield or screen for protection against the wind; a wind=gard.

**wind-signal** 'wind,sɪgnl̩ *n.* a signal having reference to approaching wind or storm; a sign, such as a special flag, for publicly announcing wind=velocities or storms.

**wind-speed** 'wind,spi:ɪd *n.* the speed or rapidity of movement of the wind; wind=velocity; wind=rate.

**windspout** 'wind,spəʊt *n.* [also spelt *wind=spout*] a water-spout, tornado=funnel, or other form of whirlwind; a vapor-spout.

**wind-star** 'wind,sta:z *n.* a star-shaped diagram whose radii are proportional to, or show, for a given place, the average velocities of the winds blowing from each point of the compass; a wind=rose.

**wind-storm** 'wind,ste:zm *n.* [also spelt *windstorm*, *wind*

*storm*] a storm with heavy wind, without rain or other precipitation.

**wind-strong** 'wind,stre:ŋ *n.* having strong winds; characterized by the presence of atmospheric currents of relatively great strength or velocity: said of regions: the opposite of *wind=weak*.

**wind-support** 'wind-sə,pə:zɪ *n.* the support or supporting-power of the wind; the sustaining-power or buoyancy of the air.

**wind-swift** 'wind,swɪft *adj.* swift as the wind: as, the \*wind=swift Cupid.

**wind-table** 'wind,tæe-bəl *n.* a table, as in print, presenting data regarding winds; a tabular view of statistics of wind-speeds, etc.

**wind-term** 'wind,tɜ:zm *n.* a term, word, or phrase used to describe a wind, as in a wind-scale.

**wind-tight** 'wind,tʌɪt *adj.* so tight as to prevent the passage of wind or air.

**wind-type** 'wind,tʌɪp *n.* a type or distinctive kind of wind: as, the southerly \*wind-type at a given station. compare *weather-type*.

**wind-umbrella** 'wind-ʌm,bʒelə *n.* a parachute.

**wind-vane** 'wind,veɪn *n.* a vane operated by the wind, such as an arrow free to revolve on an upright rod, used for indicating the direction of the wind; also, a device resembling a fish-kite; a fly; sometimes called by sailors *duff-bag*.

**wind-velocity** 'wind-vɪ,ləsɪ-tɪ *n.* the velocity of the wind; the rate or speed at which a wind blows or an air-current moves; wind-speed; wind-rate.

**wind-wagon** 'wind,wægən *n.* a wagon or land-vehicle which is driven by means of an aerial propeller.

**windward** 'windwəd *adj.* toward the wind; nearest the point from which the wind blows: the opposite of *leeward*.

**windward** 'windwəd *n.* the point from which the wind blows.

**windward** 'windwəd *adv.* toward the wind; opposed to *leeward*.

**wind-warning** 'wind,wə:z-nɪŋ *n.* a warning or admonitory notice regarding approaching wind-conditions; a cautionary wind-signal.

**wind-weak** 'wind,wɪk *adj.* having weak winds; characterized by the presence of relatively feeble atmospheric currents: said of regions: the opposite of *wind=strong*.

**wind-wheel** 'wind,wɪl *n.* a wheel moved by the wind and used as a propeller in an airship, or as a source of power as in a windmill.



**windy** 'windɪ *adj.* consisting of, next to, characterized by, or resembling wind.

**windy-weep** 'windɪ,wɪp *n.* a gentle evening breeze which issues with a weeping or sighing sound from a forest or ravine upon a broad quiet river.

**wind-zone** 'wind,zoʊn *n.* a zone, belt, or region in which a certain type of wind prevails; the region of the underwinds, or of the upperwinds.

**wing** wɪŋ *n.*

1. the forelimb of a bird, bat, or other vertebrate animal (homologous with the human arm), fitted in any way for flight or aerial locomotion, or even, sometimes, when not so fitted; also, a similar appendage in insects, having a similar function: sometimes used figuratively.

*ample wing*, see *ample*.

*angle of the wing*, the carpal angle of a bird's wing; the bend of the wing; the bend; the flexure.

*anterior wing*, (in *entomology*) one of the front upper wings of an insect which has two pairs of wings; a forewing; a mesothoracic wing; a superior wing.

*archt wing*, a wing having an archt form; a bow-shaped wing.

*bastard wing*, the winglet or alula of a bird's wing; the spurious wing; the ala spuria.

*convoluted wings*, (in *entomology*) wings which in repose embrace the body of the insect from above downward, inclosing it as in a tube.

*deflexed wings*, (in *entomology*) wings which in repose cover the body of the insect like a roof, the internal edges of the primaries meeting, and the surfaces sloping down on both sides, as in many meths and homopters.

*dentate wing*, a wing with dentate or tootht margin; a wing with a notcht edge.

*digitate wing*, (in *entomology*) a wing divided into finger-like radii, as in many pteroforidae, by incisions extending from the margin of the wing, between the veins or nervures, toward the base.

*divergent wings*, (in *entomology*) wings which in repose are horizontal but spread apart receding from the abdomen, as in many flies.

*erect wings* (in *entomology*) wings which in repose are held erect or upright over the body when the insect rests, as in most butterflies; vertical wings.

*expanse of wing*, the expanse, extent, or spread of wing; the tip-to-tip measurement of the extended wings; stretch of wing; alar expanse; alar extent; wingspread (*sense 1*).

*extent of wing*, the extent or expanse of wing; wingspread.

*false wing*, the alula of a bird's wing; the bastard wing; the ala spuria.

*fixing of the wing*, a fixing or rigidity of the wing or wings of a wounded bird, due to nervous shock.

*flexure of the wing*, the carpal angle of a bird's wing; the bend of the wing; the flexure or bend.

*folded wings*, same meaning as *plicate wings*.

*inferior wing*, (in *entomology*) a posterior or hind wing of an insect: so called because it folds under the anterior wing.

*length of wing*, the shortest distance from the flexure or carpal angle of a bird's wing to the wingtip or point of the wing.

*lining of the wing*, the under set of wingcoverts, which lines the wing of a bird; the inferior tectrices.

*little wing*, the small parcel of feathers which grow upon a bird's thumb.

*make wing*, take wing, take flight; fly; depart.

*mesothoracic wing*, (in *entomology*) one of the pair of wings borne on the mesothorax or middle division of the thorax of an insect; one of the first pair of wings; an anterior or upper wing; a forewing; a superior wing.

*metathoracic wing*, (in *entomology*) one of the pair of wings borne on the metathorax or third division of the thorax of an insect; one of the second pair of wings; a posterior or lower wing; a hindwing; an inferior wing.

*mirror of a wing*, a specially colored area on some of the flightfeathers of a bird's wing; the speculum.

*on the wing*, (*adjectivally*) being upon the wing or in flight; traveling: as, a hunter of birds \*on the wing; (*adverbially*) while upon the wing or in flight; while moving or traveling thru the air.

*on the wings of the wind*, aloft, or in the air, borne along by the wind considered as a winged creature in flight.

*petiolate wing*, (in *entomology*) an insectwing with a petiolelike stalk or base; a wing in which the base is very narrow and has parallel sides, suddenly enlarging to the body of the wing, as in the genus *Agrion*.

*plane wings*, (in *entomology*) wings which in repose are extended horizontally, or in a horizontal plane.

*plicate wings*, (in *entomology*) wings which in repose are doubled or folded lengthwise one or more times; folded wings.

*point of the wing*, the extreme end of a bird's wing; the

apex or tip=end of the longest primary of the wing; the wing=tip.

*posterior wing*, (in *entomology*) one of the hinder or under pair of wings of an insect which has two pairs of wings; a hind-wing; a metathoracic wing; an inferior wing.

*reversed wings*, (in *entomology*) wings which in repose are deflexed, the upper wings lying closer to the body of the insect than the lower ones, which project beyond their anterior margins, as in certain lepidoptera.

*root of the wing*, the part or end of the wing toward the bird's shoulder.

*spurious wing*, the winglet or alula of a bird's wing; the bastard wing; the ala spuria.

*stretch of the wings*, same meaning as *stretch of wing*.

*stretch of wing*, the distance or measurement from tip to tip of the outspread wings of a bird or insect; expanse or extent of wing; alar expanse; alar extent; wing=spread (*sense 1*).

*superior wing*, (in *entomology*) one of the anterior wings of an insect which overlie or fold over the posterior ones; an upper or fore wing.

*tail of the wing*, (in *entomology*) one of the long slender backward prolongations of the wing of an insect, as a butterfly or moth.

*take wing*, take flight; make wing; depart.

*tectiform wings*, (in *entomology*) roof-shaped wings; wings which are held sloping like the roof of a house when the insect rests.

*thoracic wing*, (in *entomology*) a wing borne upon the thorax of an insect; a metathoracic or mesothoracic wing.

*tumid wing*, (in *entomology*) a wing in which the membrane of every cell is larger than the cell itself, so that the membrane projects slightly, as in the saw-flies.

*under wing*, (in *entomology*) one of the inferior wings of an insect; a posterior wing.

*unequal wings*, (in *entomology*) wings of which the anterior and posterior pairs are of unequal length, the anterior pair being in this case usually the longer.

*upper wing*, (in *entomology*) one of the superior wings, of an insect; an anterior wing.

*vertical wings*, same meaning as *erect wings*.

2. an artificial structure resembling a natural wing in form or function, designed for aerial sustentation or flight; one of the sustaining-surfaces, or sets of sustaining-surfaces or sails, on either side of the axis of flight, or of the

body, of a flying-machine; one of the supporting aerofoils or planes of a biplane or multiplane flyer.

*continuous wing*, a wing or supporting-plane which is continuous or which presents a single uninterrupted surface to the air; a sustaining-surface which consists of but one aerofoil and is not of two or more separate wings: contrast *separated wings*.

*flapping wing*, a wing which flaps, moves up and down, sways, or beats; a reciprocating wing.

*oscillating wing*, a wing which oscillates, swings, vibrates, or moves to and fro, or up and down.

*reciprocating wing*, a wing which reciprocates, waves, flaps, moves to and fro, or has an alternating movement; a flapping wing.

*rocking wing*, a wing which rocks or is capable of an oscillatory movement, as in some monoplane flying-machines, for purposes of lateral balancing.

*rotating wing*, a wing which rotates, revolves, moves round a center or axis, or has a circular motion like that of a screw-propeller blade.

*separated wings*, wings or supporting-planes which, though disposed in approximately the same geometric plane, are separated by a certain space, as in a tandem monoplane; sustaining-surfaces consisting of distinct or discontinuous aerofoils placed one after the other with some space between. contrast *continuous wing*.

*spread of wing*, the surface-measurement or area of the wings of a flyer; wing-area; wing-spread (*sense 2*).

*vibrating wing*, a wing that swings, oscillates, or moves to and fro; an oscillating wing.

*waving wing*, a wing that waves, undulates, fluctuates, or sways up and down or to and fro.

**wing** win *v.* [past participle and preterit *winged, wingd*]

1. *tr.* equip or provide with wings for flying; furnish with fethers or vanes, as an arrow; qualify for flight: as, for her he \*wings his shoulders.

2. *tr.* bear in flight; transport on or as on wings: as, he will \*wing me some withered bough.

3. *tr.* perform or accomplish by means of wings: as, to heaven she \*wingd her flight; to \*wing one's way.

4. *tr.* traverse in flight: as, to \*wing the midway air.

5. *tr.* wound or disable in the wing; shoot or disable while traveling on the wing, or in flight: as, the offense of \*winging a balloon or an aeroplane at a thousand yards.

6. *intr.* fly, soar, travel on the wing: as, he has never \*wingd from view of the nest.

**wing-action** 'wɪŋ,ækʃən *n.* the action characteristic of wings; the motion peculiar to wings.

**wing-arc** 'wɪŋ,ɑ:z k *n.* the arc or angular distance traversed by a flapping or reciprocating wing or aerofoil.

**wing-area** 'wɪŋ,ɛ:-zi-ə *n.* the area of the wing or wings; the area of the sustaining-surfaces of a bird or flying-machine; spread of wing; wing-spread (*sense 2*).

**wing-arm** 'wɪŋ,ɑ:z m *n.* the arm or structure to which the wing of a flying-machine is attached, and which moves the wing.

**wing-band** 'wɪŋ,bænd *n.* same meaning as *wing-bar*.

**wing-bar** 'wɪŋ,bɑ:z *n.*

1. a colored bar or band across a bird's wing; such a band formed by the tips of the greater or median wing-coverts, or both of these, and located between the wing-bow and the wing-bay; a wing-band.

2. a bar or rod used as a longitudinal strengthening-member in a wing-frame; one of the spars or poles which span an aeroplane sustaining-plane from tip to tip at right angles to the ribs; a simple wing-girder.

**wing-bay** 'wɪŋ,bɛə *n.* the (bay-colored or other) plumage-marking of a bird formed by the secondary feathers of the wing when the wing is closed and these feathers differ in color from the rest of the plumage.

**wing-beat** 'wɪŋ,bɪt *n.* a beat or stroke of a wing; one complete motion, or cycle of movement, of a wing in the action of flying; a wing-stroke: as, the smaller the creature, the quicker the \*wing-beat.

**wing-blade** 'wɪŋ,blɛd *n.* the blade or vane of a wing or of a wing-like part.

**wing-bone** 'wɪŋ,bʊn *n.* any bone of a bird's wing.

**wing-border** 'wɪŋ,bɔ:z-dəz *n.* the border, margin, or edge of a wing.

**wing-bow** 'wɪŋ,bʊ *n.* the plumage-marking on the shoulder or bend of a bird's wing.

**wing-case** 'wɪŋ,kɛs *n.* the hard, horny, case-like anterior or upper modified wing which overlies the functional wing of many insects, especially coleopters; a wing-cover; a wing-sheath; an elytrum; a hemelytrum: as, the flight of the \*wing-case insects.

**wing-cell** 'wɪŋ,sɛl *n.* (in *entomology*) any one of the spaces between the nerves or veins of an insect's wing.

**wing-center** 'wɪŋ,sentəz *n.* the center or middle point of a wing.

*aerodromic wing-center*, a point, in a wing of an aerofoil, such that, if the whole wing-resistance (in the line of

flight) were concentrated there, the rotary stability of the aerofœil would be the same as in the actual case. compare *aerodynamic wing-center*, *aerodromic radius*.

*aerodynamic wing-center*, a point, in a wing of an aerofœil, such that, if the whole lifting-power of the wing were concentrated there, the rotary stability of the aerofœil would be the same as in the actual case; the aerodynamic center of a wing. compare *aerodromic wing-center*, *aerodynamic radius*.

**wing-cover** 'wɪŋ,kʌvəz *n.* same meaning as *wing-case*.

**wing-covert** 'wɪŋ,kʌvət *n.* a covert or covering-feather of a bird's wing; any one of the small feathers which overlie or underlie the flight-feathers of a wing; a covert-feather or tectrix of the wing.

**winged** 'wɪŋd *adj.* having or wearing wings: as, the \*winged god, Mercury; the \*winged horse, Pegasus; (of an arrow) having vanes; feathered.

*winged leaf*, (in botany) a pinnate or pinnately divided leaf.

*winged petiole*. (in botany) a petiole with a thin wing-like expansion.

*winged seed*, (in botany) a seed, as a samara, having one or more wings or membranous extensions causing it to be wafted by the wind.

*winged stem*, (in botany) a stem having thin lateral extensions.

**winged** wɪŋd *past participle and preterit.* see *wing* (verb).

**wingedly** 'wɪŋd-ɫɪ *adv.* in a winged manner; on, with, or by means of wings.

**wing-end** 'wɪŋ,end *n.* the outer end or lateral termination of a wing or aerofœil; a wing-tip: as, sliding or swinging \*wing-ends.

**winger** 'wɪŋəz *n.* one who or that which wings, in any sense.

**wing-feather** 'wɪŋ,fedəz *n.* [also spelt *wing-feather*] any feather of a bird's wing, especially a quill-feather of the wing; a wing-quill; a flight-feather; a remex.

**wing-finger** 'wɪŋ,fɪŋgəz *n.* one of the fingers or digits, as of a bat (or pterodactyl), which supports (or supported) the wing-membrane.

**wing-fish** 'wɪŋ,fɪʃ *n.* a flying-fish, especially a flying-gurnard.

**wing-flapper** 'wɪŋ,fɪæpəz *n.* a bird, such as the pigeon, which habitually flies by means of wing-flapping; a bird which employs flapping flight.

- wing-flapping** 'wɪŋ,flæpɪŋ *n.* that flaps wings; provided with flapping wings: as, a \*wing-flapping machine.
- wing-flexion** 'wɪŋ,flɛkʃən *n.* same meaning as *wing-flexure*.
- wing-flexure** 'wɪŋ,flɛkʃəz *n.* the flexure, bending, or warping of the wings; wing-flexion.
- wing-flight** 'wɪŋ,flaɪt *n.* artificial flight by means of wings; mechanical flight.
- wing-flyer** 'wɪŋ,flaɪ-əz *n.* [also spelt *wing-flier*] one who flies with wings or winged machines; an aeroplanist, an aviator; a man-bird.
- wing-footed** 'wɪŋ,fʊtɪd *adj.* having wings; aliped; also, rapid, swift: as, \*wing-footed Mercury.
- wing-form** 'wɪŋ,fe:zm *n.* [also spelt *wing form*] the form or shape characteristic of, or desirable for, wings or aerofoils; wing-form; wing-plan.
- wing-formed** 'wɪŋ,fe:zmd *adj.* [also spelt *wing-formd*] formd like a wing; wing-shaped, aliform, alate.
- wing-frame** 'wɪŋ,freɪm *n.* the frame or framework which gives form to or supports a wing or aerofoil; the skeletal structure of an artificial wing.
- wing-girder** 'wɪŋ,gɜ:z-dəz *n.* a girder in a wing-frame; a wing-bar, commonly of built-up construction.
- wing-handed** 'wɪŋ,hændɪd *adj.* having hands or forelims modified as wings; chiropterous, as a bat.
- wing-incidence** 'wɪŋ,ɪnsɪ-dns *n.* the incidence of a wing; the impinging of an aerofoil upon the air.
- wingless** 'wɪŋləs *adj.* having no wings or only rudimentary wings, as the ostrich or the apteryx; apterous; not alate; not winged; impennate or squampennate, as any ratite bird or penguin.
- winglessness** 'wɪŋləs-nɪs *n.* the state of being wingless; the condition or trait of being destitute of wings.
- winglet** 'wɪŋlət *n.* a little wing; (in *ornithology*) the alula of a bird's wing; the bastard or spurious wing; the ala spuria; (in *entomology*) the alula, a membrane under the base of the elytron of many coleopters; also, the pterygium, a lateral expansion on each side of the end of the rostrum, in many weevils.
2. a relatively small supplementary wing, vane, or aerofoil in a flying-machine or other aerial device, as an aileron, or a propeller-blade.
- winglike** 'wɪŋ,lʌk *adj.* [also spelt *wing-like*] like or resembling a wing.
- wing-mark** 'wɪŋ,mɑ:zk *n.* a conspicuous mark or colored band on an animal wing; the speculum of a duck.

- wing-membrane** 'wɪŋ,mɛm-bɛn *n.* the membrane or skin of a bat's wing; the alar membrane; the patagium or parachute of certain flying animals.
- wing-motion** 'wɪŋ,mʊʊ-ʃən *n.* the motion of a wing or wings; the mode of moving the wings: as, the \*wing-motion of birds.
- wing-muscle** 'wɪŋ,mʌsəl *n.* one of the muscles of a bird's wing; a flight-muscle.
- wing-nervure** 'wɪŋ,nɜ:v-z-vioz *n.* one of the nervures or veins of an insect's wing.
- wing-outline** 'wɪŋ,aʊt-lain *n.* the outline, contour, or shape of a wing or aerofoil; wing-form; wing-plan.
- wing-pad** 'wɪŋ,pæd *n.* an undeveloped pad-like wing, as in a young grasshopper.
- wing-pair** 'wɪŋ,pɛ:z *n.* a pair of wings; the two wings or aerofails of a bird or flying-machine considered together.
- wing-patch** 'wɪŋ,pætʃ *n.* any conspicuous patch of color on a bird's wing, as a wing-mark or speculum.
- wing-plan** 'wɪŋ,p læn *n.* the plan or horizontal projection of a wing; the form or contour of an aerofoil as seen from above or below.
- wing-plane** 'wɪŋ,p læn *n.* a plane or aeroplane, in an airship, which functions as a sustaining-surface: as, \*wing-planes and rudder-planes.
- wing-post** 'wɪŋ,pʊst *n.* a post or messenger that travels on the wing, as a carrier-pigeon.
- wing-power** 'wɪŋ,pau-əz *n.* the power or force of the wings or sustaining-planes; the mechanical energy of reciprocal wings, as used in an ornithopter.
- wing-pressure** 'wɪŋ,pɜ:səʃəz *n.* the pressure of the wings (as of an albatross) against the air, in flight.
- wing-propeller** 'wɪŋ,pɜ:pələz *n.* a propeller which operates the wing or wings of an aeroplane or flying-machine.
- wing-quill** 'wɪŋ,kwɪl *n.* one of the quill-fethers of a bird's wing; a flight-fether; a remex.
- wing-resistance** 'wɪŋ-zɪ,zɪstəns *n.* the resistance offered to the air by either wing of an aerofoil: as, the relativ \*wing-resistances in the line of flight.
- wing-scale** 'wɪŋ,skeɪl *n.* (in *entomology*) the scale or tegula covering the base of the anterior wing of a hymenopter; a squamula or squamule.
- wing-section** 'wɪŋ,sɛkʃən *n.* a section or sectional diagram of a wing; a wing grafically represented as if cut by an intersecting plane; especially, the longitudinal section (showing the fore-and-aft curvature) of a wing.
- wing-sheath** 'wɪŋ,ʃiθ *n.* a wing-case; an elytron.



**wing-shell** 'wɪŋ,ʃeɪ *n.* (in *entomology, obsolete*) a wing-case, wing-cover, or wing-sheath; an elytron.

**wing-shield** 'wɪŋ,ʃiɪld *n.* the wing-case, as of a beetle.

**wing-shooting** 'wɪŋ,ʃu:tɪŋ *n.* the art or practice of shooting birds while they are on the wing, or flying.

**wing-shot** 'wɪŋ,ʃet *adj.* shot in the wing; also, shot while on the wing or in flight.

**wing-shot** 'wɪŋ,ʃet *n.* a shot made at a bird which is on the wing; also, one who shoots flying birds.

**wing-skid** 'wɪŋ,skɪd *n.* a small skid or runner attached under the wing or lower main-plane of a flying-machine, commonly at the tip, in order to keep the wing free of the ground, or to facilitate its motion along the ground, as in landing. compare *tail-skid*.

**wing-spread** 'wɪŋ,spred *n.* [also spelt *wing-spread*]

1. the distance from tip to tip of the extended wings, as of a bird, bat, or insect; tip-to-tip measurement of the outspread wings; extent or expanse of wing; alar expanse; alar extent: as, a \*wing-spread of 12 feet.

2. the surface-measurement or area of the outspread wings, or of the projection of the outspread wings upon a given plane; spread of wing; wing-area.

**wing-stay** 'wɪŋ,steɪ *n.* a stay or prop which supports a wing or aerofoil.

**wing-stroke** 'wɪŋ,stri:k *n.* a stroke or beat of a wing; the upward or the downward sweep of a wing; one complete motion, or cycle of movement, of a wing in the action of flying; a wing-beat.

**wing-structure** 'wɪŋ,stri:kʃəz *n.* the mode of structure of the wings: as, the degraded \*wing-structure of penguins.

**wing-surface** 'wɪŋ,sɜ:fsɪs *n.*

1. the surface of a wing; a wing considered as a sustaining-surface or aerofoil.

2. the surface-measurement or area of the wing or wings; sustaining-surface, supporting-surface; wing-area; wing-spread (*sense 2*).

**wing-swift** 'wɪŋ,swɪft *adj.* swift of wing; characterized by rapid flight.

**wing-tilting** 'wɪŋ,tɪltɪŋ *adj.* designed for tilting or slanting the wings; used for tipping the sustaining-planes, or inclining them sidewise: as, a \*wing-tilting contrivance.

**wing-tip** 'wɪŋ,tɪp *n.*

1. the tip or extremity of the wing of a bird or flyer; the tip-end of the wing commonly composed of the two or three longest primary wing-feathers; the point of the wing.

2. the outer or lateral end or extremity of one of the

wings or sustaining=planes of a flying=machine; a supplementary winglet, such as an aileron: as, movable \*wing=tips: see *tip*.

*plural wing=tips*, several or many tips on each wing; multiple tips at the lateral extremity of a supporting=plane. compare *tip=feather*.

*swinging wing=tip*, a wing=tip, in a flying=machine, which is capable of a swinging movement; as on a hinge.

**wing-tract** 'wɪŋ, trækt *n.* the feather=tract or pteryla, of the wing, upon which grow all the wing=fethers except the scapulars (which grow on the humeral tract); the pteryla alaris.

**wing-warping** 'wɪŋ, wɔ:z-pɪŋ *n.* the process of warping, bending, or contorting the wings or aeroföils, as of an aeroplane flying=machine.

**wing-warping** 'wɪŋ, wɔ:z-pɪŋ *adj.* designed or used for wing=warping: as, \*wing=warping devices.

**wing-weight** 'wɪŋ, weɪt *n.* the weight of the wing or wings of a bird or flying=machine; aeroföil=weight.

**wing-wheel** 'wɪŋ, wiil *n.* a small wheel mounted under the wing or lower main=plane of a flying=machine, commonly at the tip, in order to keep the wing free of the ground or facilitate its motion along the ground, as in starting or landing.

**wingy** 'wɪŋɪ *adj.* having wings; also, soaring as on wings; lefty; rapid, swift.

**wire-tightener** 'waɪz, taɪ-tɪn-əz *n.* any device, as a turn-buckle, for tightening a wire stay or other part made of wire; a strainer.

**wrist-link** 'zɪst, lɪŋk *n.* the wrist=joint, as of a bird's wing.

**zenith** 'zi-nɪθ *n.* the point directly above the observer's head: the vertical point of the heavens at any place; the vertex: as, the blue \*zenith; to dwindle in the \*zenith: the opposite of *nadir*.

*astronomical zenith*, the point at which a plum=line, suspended at the point of observation would, if produced upward, touch or pierce the celestial sphere; the plum=line zenith. The astronomical zenith is farther from the equator than the geocentric zenith. see *angle of the vertical*, under *vertical*.

*geocentric zenith*, the point at which a line drawn from the center of the earth and passing thru the observer would, if produced upward, touch or pierce the celestial sphere. contrast *astronomical zenith*.

*plumb=line zenith*, same meaning as *astronomical zenith*.

**zenithal** 'zɪi-nɪ-θəl *adj.* of the zenith.

**zenith-distance** 'zɪi-nɪθ,dɪstns *n.* the angular distance of any body from the zenith or vertex of the heavens; the arc or portion of a great circle of the heavens intercepted between the zenith and any object in the sky; the coaltitude.

**Zeppelin** 'zɛpə-lɪn *n.* a dirigible balloon of the type developed by Ferdinand von Zeppelin; a Zeppelin airship.

**zone** zɔ:n *n.* a belt or band; specifically, one of the five arbitrary divisions of the earth's surface, bounded by lines parallel to the equator; a climatic belt: as, the torrid \*zone, or one of the temperate or frigid \*zones; also, any horizontal or vertical belt, tract, or region, as of the atmosphere, differing in character from adjoining belts: as, a \*zone of discontinuity.

*climatic zone*, one of the zones, belts, or tracts girdling the earth and characterized by certain climatic conditions; one of a number of elongated or belt-like subdivisions of the surface of the globe distinguished by successive differences of climate: as, Koeppen's \*climatic zones, Woejickoff's \*climatic zones.

*zone of cyclones*, the zone or belt between latitudes 30 and 60, characterized by the prevalence of cyclones due to the conflict of descending polar winds with ascending equatorial winds.

*zone of discontinuity*, a zone or region of the atmosphere where the wind-conditions are discontinuous; the neutral aerial belt or tract constituting the meeting-place of the rising air-currents and the upper-wind; an upper inversion-zone; a calm-zone.

*zone of equilibrium*, a zone, tract, stratum, or layer of the atmosphere in which a balloon assumes a condition of equilibrium, equipoise, balance, or stability, tending neither to rise nor fall.

*zone of mixture*, a zone characterized by the mixture of conflicting winds, such as a zone of cyclones.





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