Adventures in Science Fiction Series

TRAVELERS OF SPACE

Edited by
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CHRISTOPHER YOUD
ROBERTSON OSBORNE

GNOME PRESS

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AN ANTHOLOGY OF LIFE ON OTHER WORLDS

Edited by MARTIN GREENBERG

With an introduction by
WILLY LEY

ILLUSTRATED BY
EDD CARTIER

INCLUDING A SCIENCE FICTION DICTIONARY

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Special Feature:
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Introduction by SAMUEL ANTHONY PEEPLES
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Preface

IN A LARGE Pacific Coast bookstore, a browser picked up a copy of Isaac Asimov's *I, Robot* and, with a puzzled frown, examined it. As a clerk came up, the prospective buyer held out the book.

"It's science fiction, I know," he said. "But what's it all about?"

A few moments later I stood before the display of science fiction and marveled at the choice of books which a few years ago hadn't existed. I had no doubts about what it was all about. At least I thought I hadn't. After all, I'd read fantasy and science fiction for twenty years—a veteran at the age of 32, I thought, and had to laugh. And yet there was something which the other fellow had said. . . .

"Half the time I don't savvy what they're talking about—parsecs and space-warps and androids—heck, it sounds like a refresher in higher physics!"

. . . why, the thought struck me, the guy was right! It was a problem of familiarity, not higher education. I write Western novels, so I drew a comparison: the average reader reads a Western—about surcingles, bits, single-action Colts, hog-tieing, jingle-bobbing and takes them in his stride. Not because of actual experience or training, but a familiarity with the terms in relation to the story. And he enjoys that familiarity.

A lot of reasons have been assigned to the present popularity of science fiction. For myself, I read it because it's *different*, a sort of entertainment that requires some mental cooperation for the fullest enjoyment. A great many book buyers must take home science fiction for that reason. And it is for them, the casual reader, that the science fiction dictionary in this anthology has been devised.

No pretense is made that this is a complete dictionary. The unlimited scope of the field itself prohibits a complete reference work. But certain words and terms have, as in Western or Detective fiction, become standard and the science fiction writer feels no explanation or definition is required. It is these commoner words and terms that are treated in this dictionary.

Science fiction, *per se*, is not a new form of literary expression.

Only the present popularity of the form is new, for imaginative fiction is as old as man's imagination. It has carried many labels through the years, ranging from Scientifiction to Romances of Science. As in Detective or Mystery or Western or Supernatural fiction, any definition must be of an arbitrary nature. A Detective story, for example, may be a comedy, a romance, or a tragedy; it may be logical or illogical; it may be compounded of whole fiction, or a literal fictional presentation of an actual occurrence. So, like science fiction, there is no set rule-of-thumb to go by. Like any fiction story with no set pattern or style within the form, the piece may be pure romance, character-study, pseudo-technical treatise, history, exposé or hoax.

The earliest American publication readily identifiable as science fiction is *Symzonia* by Adam Seaborn (presumably a pseudonym for John C. Symmes), published in New York in 1820. The first widespread popularization of the form came with Jules Verne's successes. It is interesting to note that even after a hundred years science has not yet caught up with the imaginative genius of Jules Verne.

By 1900 magazines both in the United States and Great Britain had accepted science fiction as legitimate romance, and stories by H. G. Wells, Garrett Putnam Serviss and George Griffith gained enormous public interest. But it remained for Hugo Gernsback in 1926 to bring forth the first magazine devoted exclusively to the form. The first issue of Gernsback's *Amazing Stories* was dated April, 1926. In rapid succession in the next decade a host of similar magazines appeared. Some few of them have thrived or have been revived for the present day, with strange or lurid titles proclaiming "Amazing," "Astonishing," "Astounding," "Fantastic," "Cosmic," "Dynamic," "Wonder," etc.

These magazines, devoted almost exclusively to science fiction, evolved the first comprehensive story patterns. But the type was not science fiction as it is known today; the pulp magazine formula called for over-powering action with little characterization or plot. There were exceptions, of course—stories by Taine, E. E. Smith, Keller, Cummings, Merritt, Kline, Burroughs. The fact that even today their stories of the twenties and thirties are being reprinted is testimony that what they wrote was entertaining by any standard.

One of the earliest of those magazines was *Astounding Stories*, originally published by Clayton Magazines and later by Street and Smith. It followed in Gernsback's footsteps until the second major change in science fiction occurred. Under the guidance of a young science fiction writer, John W. Campbell, Jr., *Astounding Stories* made the first break with the stilted, tongue-in-cheek attitude most editors had assumed toward the form. Prognostication was put on a

scientific basis, and writers were urged to speculate without limitation, saving only logic. It is significant that almost every novel-length story since 1938 published in *Astounding Stories*, or *Astounding Science Fiction*, as it is now known, has been re-published in hard covers for the entertainment of a far less specialized audience.

Today the magazine stalls are crowded with science fiction publications. Some of the old magazines, notably *Astounding Science Fiction*, *Thrilling Wonder Stories*, and *Startling Stories*, are carrying on in fine style, but there are fine new publications, setting even higher standards, such as *Galaxy Science Fiction*, under the guidance of Horace L. Gold. The old pulp format has been giving way to semi-slick presentation. Men like Ray Bradbury and Isaac Asimov and a host of others are doing more than writing science fiction—they are writing *stories*, of a calibre equal to that in any literary form. The new magazine titles and quality of stories are varied. How many will survive remains to be seen. But their number is proof of current public interest.

But, as that book buyer had asked, *what is it all about?* The question is almost unanswerable. What do *you* expect from a story? Imagination, provocative ideas, action, glamorous settings, terror or suspense? Science fiction excels in these. But a definition is impractical. About the only limitation is the use of a scientific basis—and then it's up to the writer's ingenuity.

Who hasn't wondered what it would be like to be the last man alive? Or about the future? Or the challenging mystery of the stars? Who hasn't escaped his workaday life in a few wonderful hours of reading?—And in order to help you enjoy the escapism of science fiction, the fullest adventure in imaginative reading you will ever find, is the purpose of the dictionary that follows. Glance through it, not as a chore or a task, but simply for the fun of finding the romance of words, words unknown a few years ago. It is exciting adventure in itself, for you can absorb without study, learn without trying; and the full scope of science fiction will be open to you. These words are becoming a part of the American language; new ones are appearing every day—and you'll find them first in science fiction. To the new reader of science fiction, to you to whom these words are directed, goes my heart-felt wishes for enjoyment—and all my envy!

Samuel Anthony Peeples

ANDROID—Literally "resembling a man." Given generally to "thinking" machines, *i.e.*, automatons, robots, etc. The primary difference arbitrarily assumed by most SF writers between a "robot" and an "android": a robot's actions are purely mechanical, but an android is capable of thought. However, sometimes the author follows the rule of physical appearance: a robot looks machinelike while an android looks humanlike. Two excellent extrapolations of automatons are *I, Robot* by Isaac Asimov (Gnome Press, N.Y. 1950) and *The Humanoids* by Jack Williamson (N.Y. 1949). In the first, a future history of robots is outlined, outstanding for the thematic variations. In the second novel, the effect of automatons (of non-human origin) on humanity is studied. In a lighter vein, the "Adam Link" short stories by Eando Binder cover much robot characterization now considered standard. This series was anthologized partially, notably in *The Other Worlds* edited by Phil Stong (N.Y. 1941). (See: ROBOT)

ASTEROID—Literally "starlike." Used generally to define a small planet in orbit between Mars and Jupiter. Used also for minor, usually unnamed planets and planetoids. Passage through the "asteroid belt" dividing the inner and outer planets has often made exciting story material. SF theories for interplanetary background range from an origin of an exploded unknown planet to world-collision debris. Unusual variants with unique problems are presented by Will Stewart (Jack Williamson) in two *CT* novels, *Seetee Shock* (N.Y. 1949) and *Seetee Ship* (Gnome Press, N.Y. 1951).

ASTROGATOR—Coined from Astrognosy, the science of fixed-stars. Implies someone qualified to navigate among the stars; an extraterrestrial navigator in the common sense. Astrogation (also Astronautics) in SF is considered an exact science, although the many problems of three-dimensional space navigation are still to be met and solved. Considered *de facto* in SF, some scattered short stories have outlined this science.

ATOM—A unit of minute "energy" particles. SF has considered the possibility of smaller particles forming the atomic particles, perhaps *ad infinitum*. Thus, besides space-exploration (macrocosm), SF writers have journeyed into tiny atomic worlds (microcosm). Ray Cummings pioneered in stories of the atom-worlds, his earliest being *The Girl in the Golden Atom* (N.Y. 1923). A similar approach was considered in *The Green Man of Kilsona* (or *Graypec*) by Festus Pragnell (London 1936), but modified by Will Garth in *Dr. Cyclops* (N.Y. 1940). (See: NUCLEAR PHYSICS; DISINTEGRATOR)

B.E.M.—"Bem" or "Bug-Eyed Monster." Used to designate unreasonable monstrosities for mere story sensationalism. The problem of creating believable alien life has always confronted SF writers and even contemporary space travel stories are guilty of illogical grotesqueries invented as unusual "monsters." Writers, however, are now more apt to concern themselves with the logic of their ingenious creations, both psychologically and physiologically. The two central stories of A. E. van Vogt's *Voyage of the Space Ship Beagle* (N.Y. 1950) illustrate the attempt at this standard. Just as the painstaking physical detail of alien life forms by Edgar Rice Burroughs in his Martian and Venerian stories added convincing authenticity to his works, attention to psychological aspects makes for entertaining, as well as thought-provoking, fiction. Examples are *A Martian Odyssey* by Stanley G. Weinbaum (Reading, Pa. 1949), representative of all his other work, and *The Martian Chronicles* by Ray Bradbury (N.Y. 1950). (See: BIOLOGY)

BIOLOGY—Although SF has treated innumerable aspects of biology, the emphasis has been on the human element. The final evolutionary stages of human life concerned H. G. Wells in *The Time Machine* (N.Y. 1895). Thematic variants are in S. Fowler Wright's works, *e.g.*, *The World Below* (London 1930), and Olaf Stapledon's *Last and First Men* (London 1930). Of recent years, with attention to atomic energy, emphasis has shifted from evolution to mutation. John Taine's remarkable *Seeds of Life*, first published in magazine form in 1931, considered this theme. (See: B.E.M.; SUPERMEN)

BLASTER—SF term for hand weapon. Also descriptive of tools for mining operations on alien worlds employing atomic energy or disintegration. The variety of hand weapons is endless, mostly described as "ray guns" ranging from deadly "rays" (usually hard radiation) to sonic disturbance. A sonic-blaster destroys the molecular balance, adjustable to kill or maim; a heat-blaster employs direct or sympathetic radiation; a disintegrator totally destroys matter by molecular dis-

semination. Particulary vivid use of ray guns is found in *Maza of the Moon* by Otis Adelbert Kline (Chicago 1930) and in the "Lensmen" series by Dr. E. E. Smith. (See: DISINTEGRATOR; WEAPONS)

BLAST-OFF—The initial expenditure of energy by a space ship leaving a planet, or in emergency takeoffs.

BOTANY—A science greatly explored by SF writers. John Taine, in particular, investigated botanical ideas, *e.g.*, *The Forbidden Garden* (Reading, Pa. 1947), as did H. G. Wells in *The Island of Dr. Moreau* (Chicago 1896). Sentient plant life is a common SF subject. Edgar Rice Burroughs is noted for his detailed strange, quasi-human plants in his Martian, Venerian and Pellucidarian stories. Mineral life has also been suggested in SF, A. Merritt presenting an exceptionally vivid picture in his early *The Metal Monster*.

CHANGELING—Applied in SF to those who undergo personal metamorphosis. The changes range from human to animal, animal to human, and human to superman. Excellent examples of changelings are to be found in the writings of A. E. van Vogt. (See: SUPERMEN)

COMET—In science, a luminous celestial body. In SF, a basis for threatening Earth's destruction, but an unusual story by Austin Hall, *The People of the Comet* (Los Angeles 1948), humorously treated with cometary inhabitants. Another unusual Earth-comet collision novel is *The Second Deluge* by Garrett P. Serviss (N.Y. 1912) in which the outer space visitor is a great water nebulæ or spiral. A non-fiction book of interest is *Worlds in Collision* by I. Velikovsky (N.Y. 1950). (See: WORLD CATASTROPHE)

CONTRATERRENE—(See: SEETEE)

CT—(See: SEETEE)

CYBERNETICS—The science of "thinking machines," *i.e.*, machines with an electronic memory. In SF, this new science's future is elaborately explored. A most striking example of such possible "giant brains" is the Game Machine in A. E. van Vogt's "Null-A" stories.

DIMENSIONS—In SF other dimensions, besides our perceptible three of length, breadth and thickness, are often used. Most often the new dimension creates a new plane of existence, frequently with its own alien life. SF visualizes an infinite number of spheres of existence occupying the same time and space. The "fourth dimension" of Time or duration is the most common, with or without the additional plane of existence. The mode of transportation varies greatly from precise SF explanations (*The Time Machine* by H. G. Wells,

N.Y. 1896) to unscientific incantations which SF purists decry. *Romance Island* by Zona Gale (Indianapolis 1906) was an early investigation of this theme while a more descriptive extra-dimensional jaunt is described in Dr. E. E. Smith's *Skylark of Valeron* (Reading, Pa. 1948). Fredric Brown speculates amusingly in his *What Mad Universe* (N.Y. 1949). *The Ship of Ishtar* by A. Merritt (N.Y. 1926) is a beautiful extra-dimensional fantasy. Other treatments include: *Sidewise in Time* by Murray Leinster (Chicago 1950) and the Fletcher Pratt and L. Sprague de Camp books, *e.g.*, *The Castle of Iron* (Gnome Press, N.Y. 1950). In a book of the provocative land of *The Well of the Unicorn* by George U. Fletcher (N.Y. 1948) the story is presented with no stress on the extra-dimensional SF theories. (See: TIME TRAVEL)

DISINTEGRATOR—An SF weapon or tool. Nuclear reaction chains are frequently used, but other methods of disintegration are common, *e.g.*, sonic disturbances, electronics. The heat consumption of matter by electricity or electronics is in actual use today; heatless "electronic" ovens cook food by ultra-short waves or radiation which, for example, leave hotdogs "broiled" while leaving a wax paper wrapping unharmed. (See: BLASTER; WEAPONS; ATOM)

DOPPLER EFFECT—In science, the "color" of light seems to change with the rapid motion of its source. Used much by astronomers for investigations, in SF this phenomenon has various interpretations, such as in the Dr. E. E. Smith novels. Two interesting conceptions used in "space operas" are: first, a space ship at the speed of light brings absolute (literal) darkness; second, at such a speed an endless series of light-images of the vessel pace the movement of the craft to infinity. (See: LORENTZ-FITZGERALD CONTRACTION)

ENERGY BEAM—In SF, transmission of power from source to user without wires. Non-leakage or "tight" ultra-frequency beams are used in SF to "broadcast" power to vehicle or home user while registering it on a meter as consumed. Variants of this theory are applied to all types of power: atomic, cosmic, space-warp, electrical, etc. An especially logical application of this wireless transmission of energy is developed by George O. Smith in *Venus Equilateral* (Phila. 1947).

E.S.P.—Extra Sensory Perception, the possession of true foreknowledge. Scientists are seriously investigating E.S.P., notably Duke University experimenters. In SF, E.S.P. is often commonplace, particularly in the case of exceptional mentalities and mutants. (See: BIOLOGY) A. E. van Vogt's *Slan* (Sauk City, Wisc. 1946) is an excellent example of the use of this E.S.P. theme. Many writers depict mutants with the ability to read and often control other minds.

E.T.P.—Extra Temporal Perception, mental viewing of the future or past. Like E.S.P. (above), but with no barriers of time or distance. Striking use of E.T.P. is made by Lewis Padgett in *The Fairy Chessmen* and *Tomorrow and Tomorrow* (Gnome Press, N.Y. 1951).

FORCE-FIELD—SF speculation in hyper-physics, concerning the conflict of planetary gravitational fields generating energy. Variants include cosmic energy—the unknown force driving interstellar particles of cosmic dust, etc.—space-warps involving energy created by Time changes over vast areas, recovery of lost solar energy and radical temperature differences in outer space. Used in SF terminology, however, primarily to describe a defensive screen against all sorts of missles and rays. (See: SPACE-WARP; WEAPONS)

FREE FALL—Used in SF interplanetary stories to imply non-gravitational motion, usually under accumulated inertia. Other usages: to indicate a fall out of control; to fall into the gravitational influence of a planet without use of power.

FUTURE HISTORY—A limitless theme in SF. George Orwell's *1984* (N.Y. 1949) limits itself to a short viewpoint while Olaf Stapledon's *Last and First Men* (London 1930) treats all human existence. Individual examples are innumerable, but two current treatments are noteworthy: an anthology assembled to form a past and future history of mankind, *Journey to Infinity* edited by Martin Greenberg (Gnome Press, N.Y. 1951), and Robert A. Heinlein's "Future History" series, of which *The Man Who Sold The Moon* (Chicago 1950) is the first.

FUTURE WAR—Another limitless theme in SF. Striking examples of forecasting actual events are plentiful, *e.g.*, *Invasion!* by Whitman Chambers (N.Y. 1943) and *Destroyer* by Steve Fisher (N.Y. 1941). Other prophecies: the atom bomb in 1889 by Frank R. Stockton in *The Great War Syndicate*, aerial warfare by H. G. Wells (c. 1895), and the submarine by Jules Verne (c. 1873). SF is constantly plagued with new facts outmoding old speculations, which in turn, however, create new subject matter. In SF, a favorite pastime of writers has been the devising of future weapons, *e.g.*, *Pattern for Conquest* by George O. Smith (Gnome Press, N.Y. 1949). (See: WEAPONS)

GRAVITY BELT—Also Anti-Gravity Belt. Often used in SF to permit an individual to minimize or eliminate his weight. Of many theories, one of the most unique was described by Edgar Rice Burroughs in his Martian stories as the effect of "Barsomian rays." (See: GRAVITY-PLATES)

GRAVITY PLATES—Usually described in SF as electrical apparatus to diminish the gravitational pull of any planet. Used to permit a person or vehicle to leave a planet's surface or to maintain artificial gravity for passengers on interplanetary trips. (See: GRAVITY BELT; LEVITATOR)

HYDROPONICS—The science of growing plants in chemically enriched water. Used in SF for space-saving food sources on space ships, planetary outposts, etc.

IMMORTALITY—A popular SF theme. Illogical and accidental causes of longevity are usually avoided. The two most common SF ideas: life, assumed as electrical in origin, can be "recharged"; life, basically chemical, can be rejuvenated with chemicals. Different means of achieving longevity are advanced in: *The Immortals* by Ralph Milne Farley, *The Elixir of Hate* by George Allan England, and *The Master Mind of Mars* by Edgar Rice Burroughs.

INTERGALACTIC—Literally "between galaxies," or star islands. (See: SPACE TRAVEL)

INTERPLANETARY—Literally "between planets." Usually applied to space travel in our own solar system. (See: SPACE TRAVEL)

INTERSTELLAR—Literally "between stars." (See: SPACE TRAVEL)

LEVITATOR—Used in the standard sense of any person or thing which counteracts gravity. An interesting example is illustrated in *The Planet of Peril* by Otis Adelbert Kline (Chicago 1929). In more common SF usage is the "levitator beam," usually pure force emitted by a "projector" as either weapon or tool. (See: GRAVITY PLATES; WEAPONS)

LIGHT YEAR—In science, the distance light travels in one year at 186,000 miles per second. In SF, used to measure distances and speeds of space vehicles. (See: PARSEC)

LORENTZ-FITZGERALD CONTRACTION—In science, the theory that a moving body contracts in length along its line of motion, ultimately reaching zero length at the speed of light. Thus, in physical terms, a three dimensional body contracts to two dimensions. An extension of this theory assumes Time itself is changed by a similar ratio. This would mean, in common terms, an interstellar vehicle at the speed of light would shrink to two dimensions while star-determined Time would accelerate. The traveler, however, with his own senses also altered, would not notice any change. On this basis, SF depicts interstellar flight at light speeds as a one-way voyage into Time as well as space. This time travel angle of space travel has been used in SF for several years. (See: DOPPLER EFFECT; LIGHT YEAR)

LUNA—Earth's moon. As our closest space-neighbor, Luna is a popular SF locale, *e.g.*, *The Moon Maid* by Edgar Rice Burroughs (Chicago 1926) and *Maza of the Moon* by Otis Adelbert Kline (Chicago 1930), but its airless, "dead" condition usually calls for placing its life forms within an innerworld or caverns.

MATTER TRANSMITTER—In SF, an apparatus which dissembles an object, transmits it through space and re-assembles it at another point. The transported matter is usually broken into its component atoms, keyed, "beamed" and reconstructed by a specially keyed receiver. Travel is thus instantaneous. Examples are in *The World of A* by A. E. van Vogt (N.Y. 1948) and *The Last Space Ship* by Murray Leinster (N.Y. 1949). (See: TELEPORTATION)

MARTIAN—An inhabitant of Mars. The forms identifying the various inhabitants of alien worlds usually vary with the whims of SF authors, but they are generally based on Roman or Greek origins, *e.g.*, Venusian, Venerian; Jupiterian, Jovian; Lunite, Lunerite, Selenite; Mercurian; Saturnian; etc. Even fictional planet names are so formed, *e.g.*, Xanthos, Xanthians, etc.

METEOR—Also Meteorite, Meteoroid. A stone or metallic body, commonly called "shooting star" when falling through Earth's air. The destruction of Earth by alien matter from space is a constant SF threat, *e.g.*, *The Poison Belt* by Sir A. Conan Doyle (London 1913), *Planetoid 127* by Edgar Wallace (London 1929), *The Big Eye* by Max Ehrlich (N.Y. 1949), etc. An intriguing theory incorporating unrelated meteorological and asteroidal facts is contained in Otis Adelbert Kline's *Maza of the Moon* (Chicago 1930). (See: WORLD CATASTROPHE)

NOVA—In astronomy, a star that suddenly flares into life, usually to die again. Often considered in SF as our own sun's fate. (See: WORLD CATASTROPHE)

NUCLEAR PHYSICS—The science of the atom. Amazingly accurate SF forecasts of uses of atomic energy (See: FUTURE WAR) are found very early; in *A Columbus of Space* by Garrett P. Serviss (N.Y. 1911) radium, a product of uranium, is described as fissionable material used to drive an interplanetary vehicle to Venus. In recent years, the dangers of hard radiation have evoked countless stories (See: BIOLOGY). One of the earliest references to hard radiation resulting from atom bombs is in *Gay Hunter* by J. Leslie Mitchell (N.Y. 1934). (See: BIOLOGY; FUTURE WAR)

ORBIT—The path of any physical body through space, such as the planets around the sun. The eccentric movement of comets and other wanderers, including drifting space ships, can be described as eccentric orbits.

PARSEC—An astronomical unit of measurement for stellar distances, equivalent to almost 19 trillion miles, equal to 3.26 light years. (See: LIGHT YEAR)

PERIPHERY—In SF, the farthest point reached by a space traveler. Also man's frontier in the universe.

PLANET—Used to designate any world, including asteroids and excluding suns or stars. (See: TERRA)

PLATINUM-IRIDIUM SPONGE—In SF, a manufactured metallic substance considered suitable for electronic memory brains (See: CYBERNETICS) used in thinking robots (See: ANDROID). The basis for Isaac Asimov's *I, Robot* (Gnome Press, N.Y. 1950), which introduces a "positronic brain."

POSITRONIC BRAIN—(See: PLATINUM-IRIDIUM SPONGE)

PREHISTORIC—In SF, bygone days are reconstructed from scientific theories and facts. John Taine's pre-human *Before the Dawn* (Baltimore 1934) is perhaps the most remarkable SF *tour de force*. Subhuman races have been treated in *The Day of the Brown Horde* by Richard Tooker (N.Y. 1929), *The Wonder Stick* by Stanton A. Coblentz (N.Y. 1929), *Warrior of the Dawn* by Howard Browne (Chicago 1943), etc. Perhaps the most elaborate and well-known prehistoric conception is the "Hyborean Age" of Robert E. Howard in *Skullface and Others* (Sauk City, Wisc. 1946) and *Conan the Conqueror* (Gnome Press, N.Y. 1950). (See: TIME TRAVEL)

ROBOT—A mechanism contrived to do human or superhuman tasks. (See: ANDROID) An early example of robots replacing human life was presented in Karel Capek's play, *R.U.R.* (*Rossum's Universal Robots*) (N.Y. 1923).

SEETEE—Also Contraterrene, CT. In SF, an inverted type of matter, foreign to Earth. Seetee atoms are inside out electrically, with negative nuclei and positive electrons. (See: ATOM) The hypothetical union of these atoms with ordinary atoms is pictured as infinitely more explosive than nuclear fission. This subject is dealt with by Will Stewart in his *Seetee Ship* (Gnome Press, N.Y. 1951) and *Seetee Shock* (N.Y. 1949).

SOLAR SYSTEM—A sun and its planets, held together by solar attraction. Usually it refers to our own system of which Earth is a part. (See: INTERPLANETARY; TERRA)

SPACE DRIVE—In SF, a term to denote space ship propulsion. The popular types include liquid fuels (rockets), nuclear fission, and utilization of force-fields and space-warps. (See: FORCE-FIELD; NUCLEAR PHYSICS; SPACE-WARP)

SPACE—In SF, generally applied to the universal void which lies beyond the atmospheres of the worlds of the universe. (See: VOID)

SPACE LOCK—In SF, an opening into a space ship, complete with air lock to avoid loss of atmosphere or penetration by alien air. Also refers to a space ship's berth or launching platform. (See: SPACE PORT)

SPACEMEN—In SF, generally applied to those men who work in space or on space ships. Usually excludes passengers or travelers on space ships.

SPACE OPERA—Used to label a "blood and thunder" SF interplanetary story or "Western of the space lanes," not necessarily a derogatory term.

SPACEOPHONE—In SF, a short range radio transmitter-receiver used for space ship crew communication, especially when "outside" in space suits. (See: VISI-PLATE)

SPACE PORT—Used in SF for several designations: as a window or observation port in a space ship, as a synonym for "space lock," as a city or building used as a port for space craft, and as the actual dock, berth or landing platform for a space ship. (See: SPACE LOCK; SPACE TERMINAL)

SPACE SHIP—A vehicle designed for interplanetary or interstellar travel. The most common type is the rocket ship, propelled by the thrust of various engines, ranging from powdered and liquid fuels to atomic energy. For a survey of types, note: *From the Earth to the Moon* by Jules Verne (N.Y. 1874), in which a giant bullet forms the vehicle when fired from an enormous gun; *The First Men in the Moon* by H. G. Wells (London 1901), in which "Cavorite" is employed as an anti-gravity device and the vehicle "floats" into space free from gravitational pull; *By Rocket to the Moon* by Otto Willi Gail (N.Y. 1931), an early "realistic" approach utilizing liquid fuels; *A Columbus of Space* by Garrett P. Serviss (N.Y. 1911), in which atomic energy is used. (See: SPACE TRAVEL)

SPACE SUIT—Apparel designed for use by spacemen when in space or alien atmospheres. Variants range from rubberoid suits, similar to deep sea diving suits, to metaloid garments capable of withstanding tremendous atmospheric pressures on giant worlds. (See: SPACE TRAVEL)

SPACE TERMINAL—Also Space Port, Space Station. Terminals imply hugeness, but are not necessarily so, *e.g.*, a space platform anchored by gravity in an orbit between Earth and Luna. A space station operated for transmittal of interplanetary radio messages was the locale of George O. Smith's *Venus Equilateral* (Phila. 1947). (See: SPACE PORT)

SPACE TRAVEL—The SF conception of space travel development has followed a generally accepted pattern. The hypothetical, chronological outline of the conquest of space, with few exceptions, is:

1. Initial space travel attempts between Earth and Luna.

2. With bases on the moon to utilize reduced gravity and atmospheric fiction, the next objective will be to the near planets and thence outward in the solar system. This is termed "interplanetary" travel. Any planetary coalition of governments would be a "Solar" union.

3. The next step is beyond our solar system, into our galaxy or "island of stars." This is termed "interstellar" travel. Many "space operas" in SF are concerned with the troubles of this galaxial conquest.

4. The final step is onward to other galaxies—"intergalactic" travel. Inasmuch as this perhaps represents the ultimate, although other universes are often considered, the SF background of intergalactic stories is usually extremely advanced, with all sorts of new sciences and machines accepted as commonplace.

There are many examples of each stage of space travel in books. Some are: Stage 1: *The First Men in the Moon* by H. G. Wells (London 1901). Stage 2: *A Columbus of Space* by Garrett P. Serviss (N.Y. 1911) and *The Horror on the Asteroid* by Edmond Hamilton (London 1936). Stage 3: *The Voyage of the Space Ship Beagle* by A. E. van Vogt (N.Y. 1950) and *Foundation* by Isaac Asimov (Gnome Press, N.Y. 1951). Stage 4: *The Star Kings* by Edmond Hamilton (N.Y. 1949). Stage 5: (Hinting at other universes) *Cosmic Engineers* by Clifford D. Simak (Gnome Press, N.Y. 1950). The most definitive book outlining the entire future history of space travel is an anthology, *Men Against the Stars* edited by Martin Greenberg (Gnome Press, N.Y. 1950), following this general outline. An exceptional non-fiction book is *The Conquest of Space*, text by Willy Ley, paintings by Chesley Bonestell (N.Y. 1950).

With space travel there naturally follows exploration. There are roughly two types represented here: the action-adventure, *e.g.*, Edgar Rice Burroughs' Martian novels and Otis Adelbert Kline's Venerian novels; and the science-adventure, *e.g.*, Dr. E. E. Smith's intergalactic "Skylark" epics and John W. Cambell, Jr.'s *Mightiest Machine* (Providence, R.I. 1947) and *Incredible Planet* (Reading, Pa. 1950). (See: INTERPLANETARY; SOLAR SYSTEM; SPACE SHIP)

SPACE-WARP—An SF theory of space divided into strata or vectors. With such overlapping divisions artificial fields of force in opposition are created. By draining the energy of one while in the other, a vehicle might theoretically achieve stupendous propulsion, and by shifting from one field to another gigantic leap-frog maneuvering might be feasible, thus exceeding the speed of light by reducing the normal light distances. Details of space-warps in free flight are dealt with by Dr. E. E. Smith in his "Skylark" series. (See: FORCE-FIELD)

SUPERMEN—In SF, predicated on the assumption that some day *Homo sapiens* must give way to a superior species. References to Supermen are made in many ways by individual writers, *e.g.*, *Homo intelligens, Homo superior, Homo anthropus, Homo caninus, etc.* Changes have been attributed to: harmful atomic radiation, *e.g.*, *Slan* by A. E. van Vogt (Sauk City, Wisc. 1946); radiological research, *e.g.*, *Seeds of Life* by John Taine (Reading, Pa. 1950); accidental or deliberate mutation of present day animals, *e.g.*, *Sirius* by Olaf Stapledon (London 1944); natural evolution, *e.g.*, *The Time Machine* by H. G. Wells (N.Y. 1895) and *The World Below* by S. Fowler Wright (London 1930). Other writers, going further, have visualized mankind replaced by alien life forms carried to Earth in cosmic dust or through actual physical conquest. (See: BIOLOGY; CHANGELING; E.S.P.; E.T.P.)

TELEPORTATION—Also Telekinesis. An unusual SF theory based on the assumption that some form of mental levitation is possible to transport objects. Employed strikingly by Otis Adelbert Kline in his Venerian books, *e.g.*, *The Planet of Peril* (Chicago 1929), etc. (See: MATTER TRANSMITTER)

TERRA—Also Earth. Our own world among worlds. The derivative "Terrestrial" is an adjective. Terrestrial also stands for Earthman or Earthling. (See: PLANET; SOLAR SYSTEM)

TIME MACHINE—In SF, the mechanism used to transport any person or thing into the past or future. H. G. Wells' *The Time Machine* (N.Y. 1895) provided both the name and plot basis for most time travel vehicles. (See: TIME TRAVEL)

TIME TRAVEL—In SF, the transportation of any person or thing into the past or future. An extremely popular SF theme, filled with paradoxes. The methods of travel involve everything from machines and chemicals to incantations. A unique study of various time theories in SF form is offered in *The Omnibus of Time* by Ralph Milne Farley (Los Angeles 1950). Examples of time travel stories are collected in *Travelers in Time* edited by Philip van Doren Stern (N.Y. 1947). *Portrait of Jennie* by Robert Nathan (N.Y. 1940) is a poetic time travel story without explanations—yet explainable by "overlapping time phases." (See: DIMENSIONS; DOPPLER EFFECT; LORENTZ-FITZGERALD CONTRACTION; PREHISTORIC; TIME MACHINE)

TRAJECTORY—The curve described by an object in space under the action of certain forces, such as a comet or a power-driven space ship. Thus the plotted trajectory of a space ship is its mapped course.

UNEXPLORED LAND—In SF, there are still hidden areas on Earth. Once embracing large continental areas, *e.g.*, *The Lost World* by Sir A. Conan Doyle (N.Y. 1912), they are now limited by aerial surveys to obscure islands, *e.g.*, *King Kong* by Edgar Wallace (Lovelace) (N.Y. 1933), or the Himalayas, *e.g.*, *Lost Horizon* by James Hilton (N.Y. 1933) and the works of John Taine. An early SF theme in America concerned an innerworld, with Earth's surface only the crust enclosing it. *Symzonia* by Adam Seaborn advanced theories in 1820 which still are not entirely refuted. Edgar Rice Burroughs' "Pellucidar" novels expanded this idea.

VIBRATOR—In SF, usually a weapon of the sonic type. (See: BLASTER; WEAPONS)

VISI-PLATE—Also Visi-screen. Usually an SF type of television replacing ports or windows in space ships. Also used for communication. (See: SPACEPHONE)

VOID—Also Space, Cosmos. In SF, used to delineate the matterless areas between worlds, generally synonymous with space and cosmos. In some SF, used arbitrarily to designate the gulf between galaxies. (See: SPACE)

WEAPONS—In SF, a subject as wildly misused as "B.E.M.s." There has always been a prevalence of unexplained "rays," usually of deadly purpose and garish coloration. Of the more logical weapons, the "blaster" is the most common hand gun, usually interpretations of sound scientific theories. (See: BLASTER; DISINTEGRATOR; VIBRATOR) Space ships are often armed with various repulsing and attracting devices, usually called "tractors" and "repellors." Dr. E. E. Smith's

"Skylark" novels contain many weapons with plausible and ingenious explanations. (See: FORCE-FIELD; FUTURE WAR)

WORLD CATASTROPHE—Mankind has always worried about its possible extinction and SF has taken up the possibilities, as well as adding to them. An early title (1914), still one of the best, is George Allan England's *Darkness and Dawn.* Almost every conceivable end has been pictured for Earth: planetary collision in *When Worlds Collide* by Philip Wylie and Edwin Balmer (N.Y. 1932) and *The Hopkins Manuscript* by R. C. Sheriff (N.Y. 1939) (See: METEOR); a poisonous cosmic cloud in *The Purple Cloud* by M. P. Shiel (London 1929); a watery nebula in *Deluge* by S. Fowler Wright (N.Y. 1928) (See: COMET); electrical phenomenon in *A World in Spell* by D. E. Stevenson (N.Y. 1939); and many others (See: NOVA; SUPERMEN).

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