TRAVELLER:™
2300

PLAYER'S MANUAL

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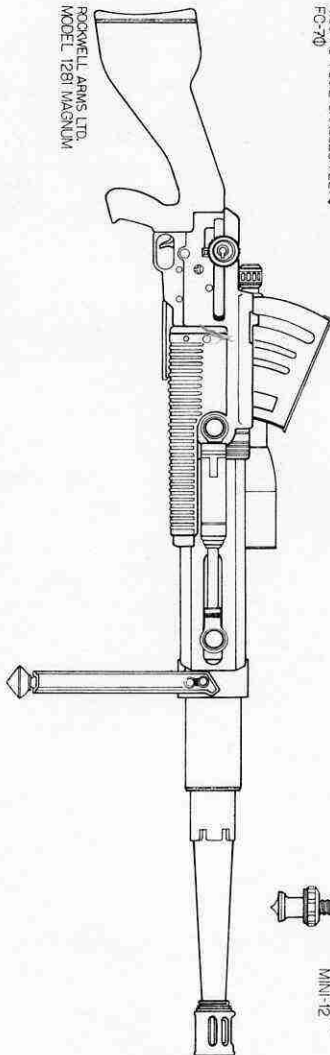
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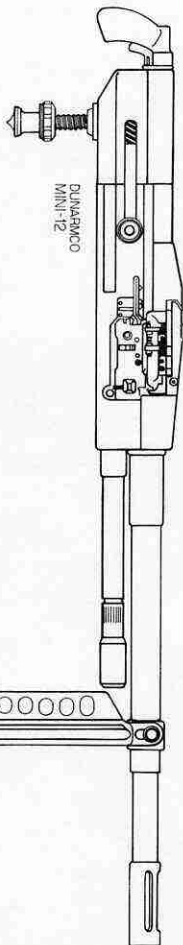
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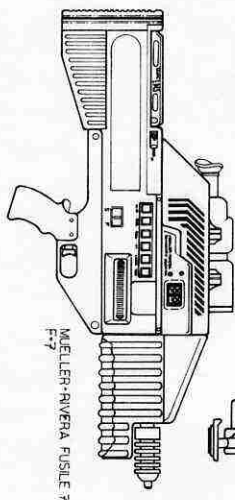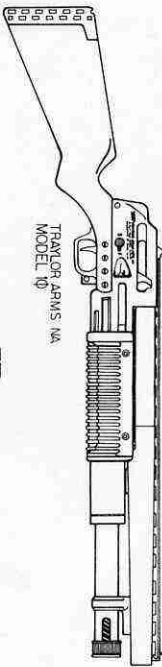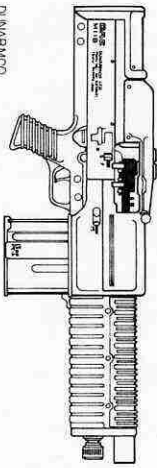
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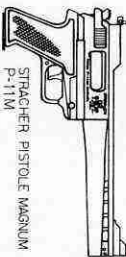
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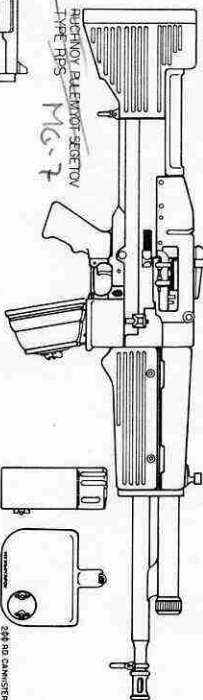
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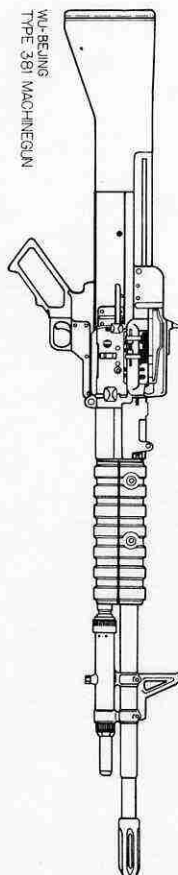
STEVE VENTERS

DATE 14-11-2349

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TRAVELLER: 2300

PLAYER'S MANUAL

GAME DESIGNERS' WORKSHOP
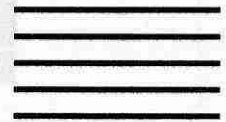
Introduction

MANKIND DISCOVERS THE STARS

The year is 2300 AD. The nations of the Earth have marched forward (sometimes in step; more often each to the beat of its own drum) with increasingly sophisticated technology and economies. Politics have changed the world; new nations have risen in power, and some older ones have fallen on hard times. Wars have ripped through the continents, with territorial, governmental, and social changes the result.

The future is at the same time vastly different from the 20th century, and very much the same.

There is no world government, for example; individual nations still rule their own territories and they still fight among themselves. On the other hand, there have been no nuclear wars since World War III, and all nations fairly well agree that their homeworld cannot be contaminated with radioactivity. The last three hundred years have seen mankind's collective wisdom grow, at least in certain areas, allowing the world to survive, flourish, and embrace a new age.

THE WORLD OF THE FUTURE

Traveller: 2300 is a science fiction role-playing game set in the early years of the 24th century. Players become characters who travel to star systems that Earth wants to colonize, develop, explore, or chart. Characters begin on the frontier planet of Beta Canum Venaticorum, a vital colony world, and their adventures begin on that world. As the game progresses, characters have great latitude in where they travel.

The uncharted territories of every planet in the universe offer the potential for discoveries that will reward individuals and advance technology.

The products of dozens of worlds are in demand on dozens of others, and commerce between the worlds offers the promise of riches and power.

The intelligent inhabitants of other worlds offer new insights into logic, science, art, and hundreds of other fields.

PLAYING TRAVELLER: 2300

Traveller: 2300 is a role-playing game. Several players and a referee join together to resolve adventures which involve the imagination and the mental resources of everyone present.

Role-playing means that the players assume roles (called characters) and play out those roles in pursuit of their own goals. Role-playing means that players can assume the roles of individuals with greater (or lesser) characteristics than they themselves have: a smart player can assume the role of a dumb character; a weak player can assume the role of a strong character.

There are few rigid requirements for playing **Traveller: 2300**. Beginning with a copy of the game, one player becomes the referee and gathers up several other people to be players. Writing materials are useful; so are snacks and soft drinks. Once everything necessary is gathered together for a play session, the current adventure can begin.

The Referee: The ultimate master of the adventuring session, it is the referee's imagination which becomes the arena for the player characters. He must adhere to the wishes of the players, determining the success of their plans, all the while keeping track of events unknown to them, creating new obstacles for them to overcome and new rewards to which they can aspire.

The Players: Players manipulate their characters

through the universe presented by the referee. They must take situations as presented by the referee and build on them, attempt to overcome them and be successful. They verbalize their wishes to the referee, who, with the help of the game rules you are reading, determines what happens as a result. This give and take between players and referee is the very essence of role-playing.

Teamwork is extremely important for the players and their characters. They must band together, using their individual skills in concert with each other in order to achieve their ends.

THE STRUCTURE OF TRAVELLER: 2300 GAMES

There is a structure to role-playing games that makes them intriguing and exciting. This structure produces two results: it makes each session of the game interesting and challenging, and it makes the players want to play again and again.

The Session: Each time that **Traveller: 2300** players meet, it is called a session. Sessions are usually an evening of free time, or a spare afternoon. Usually, a session takes several hours. There is no time limit in **Traveller: 2300**—a single adventure could be concluded in an evening, or a protracted campaign could generate exciting entertainment for years—it's up to you.

The Adventure: Playing **Traveller: 2300** is much like living through an exciting adventure story where all of the options are possible; the players themselves decide what courses of action to take and how to best undertake those courses of action.

The adventure is the basic situation in **Traveller: 2300**. It is a complete situation, a plot that provides motivation and goals for the characters. An adventure may be completed in one session, or it may be spread out over several sessions.

The Episode: Within the adventure is the episode. An episode is one of several situations in which the players must seek out information, overcome obstacles, and make decisions. The results of the episode influence what happens in later episodes and how they all come together for the resolution of the adventure.

The Campaign: Once an adventure is finished, the players have achieved their goals and are able to savor their victory (or pick themselves up, dust themselves off, and try to make the best of things). Typical players, however, develop an attachment to their characters and soon want to venture out into the universe in search of more.

When the same character (or the same group of characters) builds successive adventures on the foundation of previous ones, the players are engaged in a campaign.

Campaigns are like serial fiction; in each adventure, the players already know about their own characters and about the local situations they will have to deal with. They are free to devote their attention to the specifics of the plot and the action of the adventure.

We have provided much of the information necessary to create a campaign in human space. In this box is the current extent of human civilization in the stars, political situations, equipment available, the march of technology, and a host of foundations in search of brave adventurers. All of this information is useful when creating plots for adventures and campaigns—the possibilities are endless.

The structure of role-playing game situations can be divided into a hierarchy. The smallest unit is a scene; several scenes produce an episode; several episodes create an adventure. Many adventures played against the same background are a campaign.

REQUIRED MATERIALS

The most important item necessary for playing **Traveller: 2300** is yourself and your friends (new or old). The second most important item is in your hands—the rules themselves. The rest is easy.

Other common household or office items will prove to be very useful in playing. These are paper (lined, blank, or graph), pens, pencils, dice (some are provided, but more might be useful), calculators, and a nice, comfortable place to sit back and enjoy the bounty of your collective imaginations.

It will also be handy to have access to a photocopy machine. All of the forms in the forms booklet are intended to be copied for your purposes (permission is given here to photocopy those forms for use with your game). Having plenty of blank forms available will make your game run more smoothly.

The referee will also have to have a prepared situation for the session. This game includes a beginning scenario, *The Tricolor's Shadow*, which introduces the player characters to the world of **Traveller: 2300**. Other adventure situations can be created by the referee prior to the session, using *The Tricolor's Shadow* as a model for organization and detail. More detailed adventures, sourcebooks, and other modules will be published, all expanding on the background information presented here, which will add enormously to your campaign.

GETTING STARTED

For those of you who have never played a role-playing game, reading the next few paragraphs will be very helpful.

A **Traveller: 2300** session requires planning and preparation if it is to be a successful gathering. The following is a typical sequence for playing **Traveller: 2300**.

Referee Preparation: The referee decides what adventure will be played and selects the basic elements to be used. An existing **Traveller: 2300** adventure can be purchased and used, or the referee can create his own.

Setting the Time: The referee contacts the players and arranges a time and place for the adventure to be played out. A sure sign of an interesting adventure or campaign is when the players start contacting the referee to see when he can have another session.

Character Generation: The players generate the characters they will use in the adventure. Players may generate new characters before they arrive at the session, or players may arrive early to get this part of the game out of the way. If the session is part of an ongoing campaign, then players will already have characters generated and ready to use.

The First Episode: The adventure begins with the presentation of an episode to the players by the referee. The episode tells the players where they are, something about their present financial and social circumstances, and offers clues to a goal worth pursuing. The episode may be a job offer, a rumor, or a dangerous predicament worth fleeing. Once presented with the episode, the players present their initial responses and the adventure begins.

As play progresses past the first episode to another and yet another, the players and referee have embarked on an adventure which could take them to the very edge of human exploration, face to face with alien creatures, or among the towering cities of Earth, the hub of human activity in the stars.

As the referee and players play, the referee will find what types of adventures the players are interested in, and the players will learn how best to express themselves to the referee.

FUN

Regardless of the detail and realism you want to put into your game, remember that it is a game, and you are supposed to have fun. We have built a universe where we can all play, with a hopeful outlook for the future of mankind, but nevertheless loaded with adventure and intrigue—the world of **Traveller: 2300**. Enjoy!
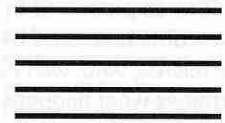
History

By 1700, the western world had completed its transition from a Mediterranean-focussed society to a global society. The first Age of Discovery was over; the outlines of the continents had been drawn on the map of Terra, and it was merely the interiors that needed to be filled in. Europe at that time was the center of the new global society. Not only was it the center of much of the planet's new surge of scientific and philosophical thought, but only European states thought of themselves in global terms, and planned strategies of global expansionism. Three powers in particular struggled for supremacy: Spain, France, and Great Britian. All held extensive overseas colonies, all competed to dominate international commerce, and all were prepared to back their interests in Europe with force.

The Age of Reason (1701 to 1800): The 18th century was an age of scientific and philosophical investigation. The foundations of chemistry, physics, astronomy, electricity, and modern mathematics were laid. At the same time, philosophers explored the basic issues of logic, reason, morality, and the relationship of the individual to society. Their thoughts and writings would have as profound an influence on society as the work of the scientists. The most obvious measure of this effect was the changing view of the nature of the state. At the opening of the century, the state was defined in terms of the possessions of a sovereign. The state was the land owned by a ruler, and the inhabitants of that land were his subjects. By the end of the century the sovereign had been placed by the people as essential definers of the state. France, for example, was thought of less in terms of the land ruled by the current sovereign and more in terms of the land occupied by Frenchmen.

European conflict centered around the struggle to maintain a balance of power between the major powers. The wealth of Spanish possessions in the new world was spent rather than invested, and as the flow of silver and gold decreased, so did Spanish power. By the end of the century Spain was a minor power. French power grew to fill the vacuum, and Britain bent its energies to checking this growth.

The Age of Industry (1801 to 1900): The 19th century began dramatically as Napoleon led a resurgence of French power. Britain's renewed adherence to a policy of containment of French influence plunged Europe into the Napoleonic Wars. Ultimately unable to break Britain's commercial dominance, this French resurgence failed, but worked profound changes on Europe. Napoleon's repeated victories over Prussia and Austria led those states to increased reliance on mass levies of troops on the French

model. This use of the nation in arms and the appeals to native patriotism necessary for its success increased German nationalism and laid the ground work for Bismark's unification of Germany in the Second Reich in 1871. Russia, in successfully resisting Napoleon's invasion in 1812, established itself as a potential major power. The extent of the damage caused by the Napoleonic Wars convinced the sovereigns of Europe that a system was required to prevent major conflicts from occurring again. The Congress of Vienna (1815) confirmed the monarchic system of government and established guidelines for the resolution of conflicts short of total war. The result prevented a recurrence of a major European war for 99 years (1815 to 1914), but at the price of a dramatic decrease in governmental flexibility. When a general war finally came it would sweep away the old order entirely.

In the New World, the American colonies expanded westward and after the American Civil War (1861 to 1865) joined the ranks of the major powers. The colonies of South America threw out their Spanish rulers (1810 to 1830) and proclaimed their own independence; the original Gran Colombia, however, soon broke up into several nations, each of which remained moribund. Spain's losses confirmed its decline as a major power.

The 19th century was the age of industrialization. The names that history records in the 19th century are those of inventors: Morse, Bell, Fulton, Colt, Edison, Marconi, Bessemer... Their inventions changed the face of the world. Industrial power automatically translated into world power; nations with an industrial base produced products in demand around the world; industrialized nations also possessed the marketing networks which allowed them to sell their products, and the modern arms to protect worldwide interests. The existing major world powers either industrialized, or fell to the ranks of the lesser powers.

The Age of Technology (1901 to 2000): The first half of the 20th century was consumed by war and the preparations for war. The unresolved conflicts of the Crimean War, the Russo-Turkish Wars, the Balkan Wars, the Franco-Prussian War, and even the Russo-Japanese War were again the pretexts for hostilities. In 1914, all of Europe was plunged into the First World War. When the exhausted belligerents accepted an armistice in 1918, it was due more to general collapse than a clearly won victory. And with the collapse of the Central Powers (Germany, Austria-Hungary, and Turkey) came the collapse of the monarchies in general and the system of European stability embodied by the Congress of Vienna. Unfortunately, there was no effective system of stabiliiy and security to replace it, and much of the rest of the century was spent

in futile search of one.

One idealized approach was the League of Nations, but nations were unwilling to surrender their own sovereign power to a higher organization. The leap to a democracy of nations was too great for a world still unaccustomed to democracy within nations. From 1930 to 1950, the world embraced the Strong Leader system. Hitler mobilized the resources of Germany, and Mussolini did the same with Italy. All major nations produced strong individual leaders during this period, if not immediately, then under the pressure of war. World War II (1939 to 1945) was characterized by strong leaders for each nation involved.

The Faltering Leader: By the end of World War II, the Strong Leader system had clearly demonstrated its weaknesses; provisions for succession were unclear, peaceful situations seldom produced powerful leaders, and there were few controls on the excesses a leader might be led to. With the concentration of international power largely in the hands of two nations, the United States and the Soviet Union, the Strong Leader system was replaced by the Bloc System. Nations grouped themselves into blocs reflecting common interests: the West, the East, the Third World, the Non-Aligned Nations, OPEC, the European Economic Community, and NATO. Blocs established and defined policies, and members received both direction and support in international relationships.

The strongest of the blocs were arrayed around the superpowers: America and Russia. The destruction of Germany as a military and diplomatic force placed the Soviet Union and the United States squarely at odds in Europe. Each had global power and nuclear weapons; sparring between the giants took place throughout the world: in Germany, Greece, Korea, Cuba, Southeast Asia, Afghanistan, Africa, and Central America. Diplomatic maneuvering, contributions of aid, rhetoric—all of the weapons of the Cold War were directed at manipulating or affecting the other superpower. Even the use of terrorism by smaller nations was an attempt to bypass the overwhelming power of the superpowers.

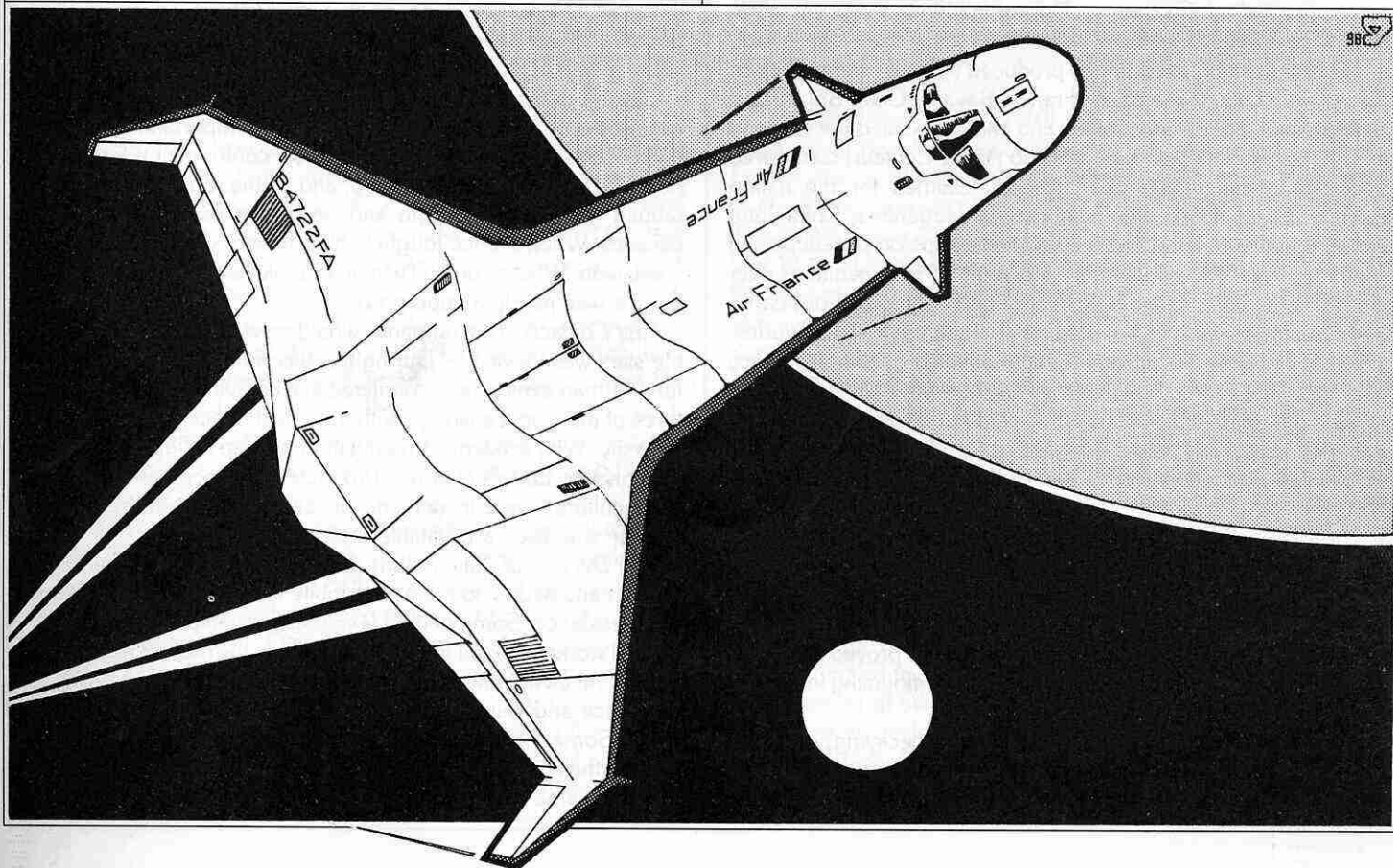At the end of the century, the tensions broke and the world was finally engulfed in the long-anticipated World War III. It settled nothing; instead, it shattered the superpowers and many of their allies, and lasted into the opening years of the 21st century. The Bloc System was shattered in the war as well.

The Age of Recovery (2001 to 2100): The devastation of World War III was global in scope, and did not end with the fall of the last bomb. The slide through pestilence, famine and anarchy continued for two decades after the war ended. The physical destruction was limited to the war zone (North America, Europe, the Indian subcontinent, and China). A disaster of equal magnitude, however, was the destruction of the world's transportation network. Vulnerable ocean shipping fell victim to naval action early in the war and could not be rebuilt due to the loss of industrial capacity. Only Japan retained a viable merchant fleet and dominated world trade in the immediate postwar years.

An age of recovery is not necessarily an age of unrelieved famine and despair. During recovery populations worked hard, building for themselves and for their children. The 21st century was marked by three important movements: the end of dependence on fossil fuels, the French Peace, and the Melbourne Accords.

The Fuel Crisis: World War III destroyed oil refineries and oil fields, but its greatest effect was the destruction of the oil distribution network. Once the war was over the oil distribution networks were gradually re-established, but great progress toward alternative fuels had been made in the interim. By 2050, oil consumption levels and oil reserves reached the point where true alternatives were necessary. Rationing and restrictions were required during the transition, but, by 2090, most industrialized nations had established hydrogen distribution networks and a major portion of industrial power was supplied by solar power satellites.

The French Peace: Into the power vacuum following the war stepped the only European nation not ruined by the fighting: France. With its far-flung territories in Africa and the Pacific, France re-established a commercial interest in peaceful trade and calm international relations. French power was projected to resolve dis-

putes, but French policy was not overtly imperialistic. By 2060, the French were involved in virtually every region in the world, and French arms imposed peace, albeit sometimes a very uneasy one.

The Melbourne Accords: The world returned to space in the 2040's with limited surveillance, weather, and communication satellite launches, and followed in the 50's with manned missions. By the end of the century, near Earth orbit was cluttered with solar power satellites and orbital factories. The conquest of space naturally produced disputes concerning territoriality, access to orbits, and the appropriateness of specific targets in conflicts. A continuing international discussion culminated in a series of treaties and agreements collectively known as the Melbourne Accords (first signed at Melbourne, Australia in 2099). The Accords had three major provisions: certain orbits around Earth were demilitarized, power satellites properly operated and certified were classified civilian (rather than military) targets, and other worlds (at that time Mars, Mercury, and the Jovian satellites) were declared open to colonization by all. The Accords bound signatories to its provisions only with respect to other signatories. Many smaller nations signed immediately; holdouts among the major powers included France, Bavaria, Britain, Azania (all four cooperating as the European Space Agency), and Canton. Canton signed in 2108 while the ESA did not sign until 2163.

The Second Age of Exploration (2101 to 2200): The conquest of space opened a new frontier to Earth, and, naturally, an age of exploration followed. Expeditions to Mars (by France) and Mercury (by Manchuria) were launched early in the century. Later expeditions visited the asteroids and the moons of Jupiter, but the Second Age of Exploration would have died rather quickly if confined to the Solar System.

In 2086, the theoretical basis for a practical star drive was established, and by 2100, several research establishments were well on their way to demonstrating a prototype. The race for a star drive occupied the technological abilities of the major powers for the first half of the century. During that time, those same nations were gaining expertise in space travel within the Solar System.

The first working starship was produced by the European Space Agency in 2136; its members (France, Bavaria, Great Britain, and Azania) shared in the technology and jointly operated the ship and its successors. The first expedition to Alpha Centauri discovered a garden planet which was promptly claimed for the nation members of the ESA. Within short order, Argentina, China, and America built and launched their own starships on expeditions to Alpha Centauri, Barnard's Star, and Wolf 359. Expeditions over the rest of the century explored to about 20 light years from Earth, and settlements were established on about ten extra-solar worlds.

Worlds close to Sol sprouted many national colonies (a policy decided by the Alpha Centauri War); the diversity enabled colonies to concentrate on specific industries and trade with the others for their needs. But as nations explored farther from Earth, each was able to colonize whole worlds and exploit them without competition from other nations.

The Eclipse of France: Under the French Peace, the nations of the world were able to recover and prosper. Inevitably, some would chafe under French domination, and as they become more powerful, they competed for power and influence with France. At the same time, the burdens of world leadership proved very costly to France, already economically stretched in mounting interstellar exploration missions.

By 2150, French power in the world was decaying; other nations were quick to side against France in minor disputes. In 2150 Argentina confronted France on the issue of interstellar coloniza-

tion, and France was forced to back down. This humiliation marked a low point in French prestige, and brought about a collapse in the government, as well as reorientation of government policies. It was the end of the French Peace, and the beginning of a new era of global conflict.

The opening of the stars to colonization, however, moved much of Earth's conflict beyond the solar system. Conflicts between the major (that is, the star-faring) powers took place on colony and outpost worlds where they fought for rights to prime territories, access to markets, or proper treatment of their own nationals. War on Earth was either an extension of these extra-solar conflicts, or minor wars between non-star-faring nations.

By 2199, the Second Age of Exploration was drawing to a close. Earth had explored parts of a sphere out to 20 light years and established colonies dedicated to exploiting the resources of many virgin worlds.

The Second Age of Commerce (2201 to 2300): Exploration breeds commerce; territorial discoveries naturally reveal products that can be marketed. Even with the high cost of interstellar travel, there are always some products, services, metals, and information that can still be carried at a profit. With the discovery and settlement of star systems beyond Earth, the 23rd century was an era of trade.

The star-faring nations built fleets to service their colonies. Even a self-sufficient colony is useless if it can't provide feedback, products, information, or resources to its parent. Hulls carrying colonists to the stars are best used when they carry products and goods on their return voyages.

Developments on Earth, however, did not come to a standstill because of interstellar exploration. International rivalries, population pressures, and ideological disputes continued. The nations of Latin America struggled through three Rio Plata Wars as Argentina and Brazil fought for supremacy on their continent. Vietnam, a source of cheap labor early in the century, industrialized to the point that it was a prime plum coveted by both Canton and Indonesia. The Canton-Indonesian War (2264 to 2268) turned Southeast Asia into a war zone and made the Indochina Peninsula a restive Cantonese puppet state.

Early in the 23rd century, France began to re-exert its power in selected regions where its interests were important: Africa, the Pacific, and the Mideast. Avoiding direct confrontation with direct rivals such as Argentina, Mexico, and China, France was able to rebuild its military strength and reputation over the course of decades. When France fought battles, it won; when it negotiated, it also won. What it couldn't win, it scrupulously avoided. By 2250, France was nearly a superpower.

First Contacts: That humanity would meet other cultures among the stars was inevitable. During the second half of the 23rd century, human explorers encountered at least five intelligent species, three of them space-faring. With these first contacts came cultural diversity. With academic investigation of alien cultures came new insights into Earth's cultures. Products and processes from these alien cultures were in demand on Earth. Basic information exchange was itself a profitable endeavor.

The Decline of Nationalism. Easy travel on and off Earth enabled many people to maintain mobile lifestyles without a permanent residence. Some people (explorers, starship crew, orbital industrial workers) found themselves taxed on the basis of geography, but not receiving any real benefit from those taxes. Others found deference and status came with national citizenship rather than merit. Some interest groups created their own nations to better protect their interests. Others rejected nationality completely.

At the same time, more people came to philosophically reject
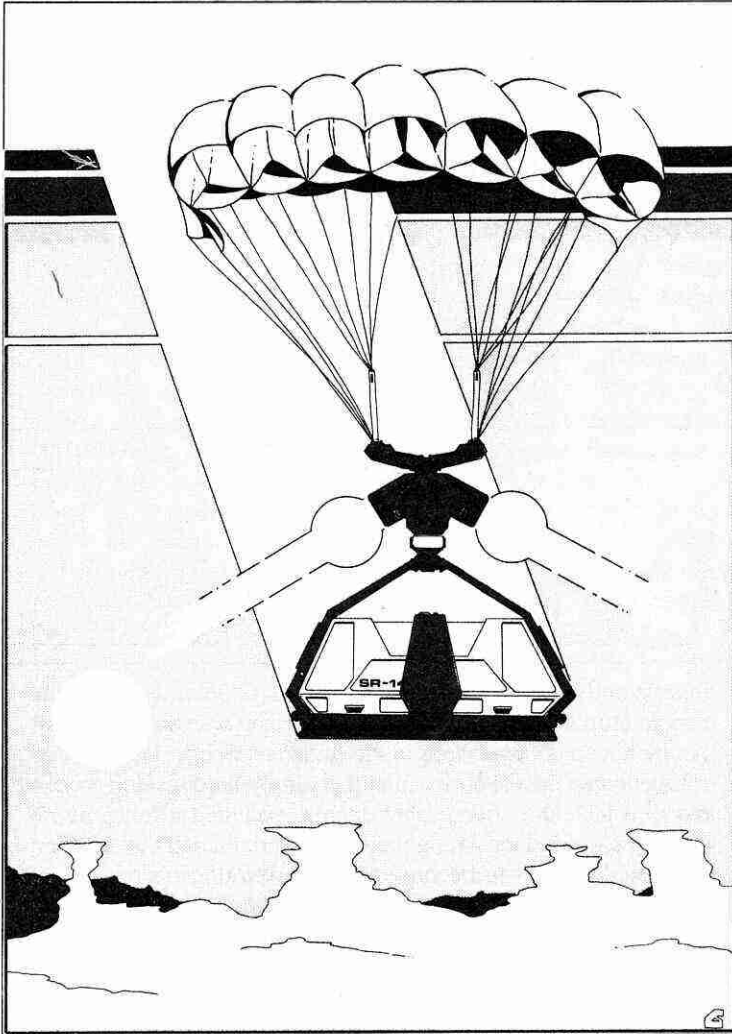
nationalism, finding more in common with ethnic, religious, ethical, or professional values. The proper national citizenship remained a convenience (a wrong one could be a hindrance), but many people had come to feel that there were higher values than mere geographic allegiance.

The Rise of Germany: For centuries, the German nations of Europe (Bavaria, Hanover, Westphalia, Saxony, and Brandenburg) were content to live in the shadow of France. French-dominated Bavaria enjoyed membership in ESA, flew starships under its own national colors, and colonized worlds under other suns. The other German states alternately allied with France and Bavaria, with other powers, or chose their own paths.

In 2282, Russia and France (and Bavaria) allied against Manchuria in a dispute over territory in the Central Asian Republic. Manchuria was on the verge of victory when Japan entered the war to shift the balance, ending the war at the prewar borders. Guerrilla warfare continued for decades, not only in the Central Asian Republic, but also in Western Manchuria. A Franco-Russo-Japanese peacekeeping force remained to keep order.

French victory was not enough; it was Japanese help that saved the day, and French prestige suffered. With growing sentiment for reunification, all the German nations but Bavaria accepted a call by Hanover to unite, and they then mobilized to bring Bavaria into the German nation. French objections produced a short war in which France was defeated and forced to accept the creation of a new German state.

The French Empire: The costly French victory in the Central Asian War in 2287 produced well-grounded charges of poor support and supply for the army. In 2289, the army staged a coup which threw out the 12th Republic and established a system of monopolies in vital industries. These monopolies were profitable for the contractors, but inefficient sources of supply; and with typical military thinking, the coup printed money to pay national debts. The result was runaway inflation and tremendous social unrest. When the armed forces could not stop or win the War of German Unification (2292 to 2293) or the Flemish War of Independence (2293), the army was forced to allow free elections.

Because political opposition had been suppressed, there were no organized political structures in existence to campaign. The leading personality was Nicolas Ruffin, a leading industrialist as well as a free market advocate; he and his followers were swept into office in the elections of 2294. A combined policy of free market economics (within the French Commercial Union) and stringent controls of government spending produced tangible results by 2298.

Although national elections were to be held to establish a new French constitution and republic in 2298, a popular movement to dispense with republics and regain the glory of empires gained considerable support during the period of economic recovery. The balloting of 2298 included a plebiscite on the matter of establishing a French Empire, and the issue passed handily. In later 2298, Ruffin was crowned Emperor of France and the Third French Empire was inaugurated.

MAJOR WARS SINCE 2000

The Saudi War (2010 to 2013): France, Great Britain, Bavaria, Japan, and Egypt occupied the Saudi oil fields in 2008 (to assure oil production for Europe) replacing United States forces which had been in the region since the start of World War III. Iran objected to the occupation, and the Saudi War (2010 to 2013) began with an Iranian attack on the occupation forces, and ended with the establishment of a buffer zone along the northern edge of the Saudi peninsula.

The French role in the Saudi War was an expression of its new status in the world. France was the only global power; interested in commerce and stability, it injected its presence anywhere in the world that its interests were present. France was creating the French Peace.

The Indochina Action (2030): Canton moved to occupy Indochina for its petroleum resources, but was forced to back off by French action guaranteeing the independence of the region.

The Russo-Ukrainian War (2065-2072): Russia vs the Ukraine. The Soviet Union was splintered into three nation-states by World War III: the Ukraine (south of the Pripyat and west of the Urals), the Central Asian Republic (from the shores of the Caspian to the Himalayas), and Russia (European Russia north of the Pripyat Marshes). Russia included all of Siberia, but that region remained an unsettled frontier for a century afterward. The three nations lived in an uneasy peace marked by occasional border clashes. Russia retained some industry and struggled to rebuild; the Ukraine suffered from fallout contaminated cropland, but rehabilitated its soil over a period of 50 years; the Central Asian Republic remained primarily a backward agricultural nation. All three countries were unable to make any substantial progress due to a lack of capital and direction.

In 2065, reindustrialized Russia invaded the Ukraine in a drive for its natural resources in the Caucasas. France, Poland, and Bavaria backed the Ukraine; Iran sided with Russia in exchange for a promise of part of the spoils, and Siberia remained neutral. Initial Russian gains gave them Kiev, but the war stalmated along river lines. Japan's entry into the war in 2070 turned the tide, and Russia collapsed in 2072.

Mexican-American War (2099 to 2103): Texas (aided by America) fighting for independence from Mexico. Mexico occupied the American Southwest (Texas, New Mexico, Arizona, and Southern California) in 1999 and was able to hold the territory primarily because the United States was occupied suppressing rebellious regions in the Southeast and trying to reunite its feuding military and civilian governments.
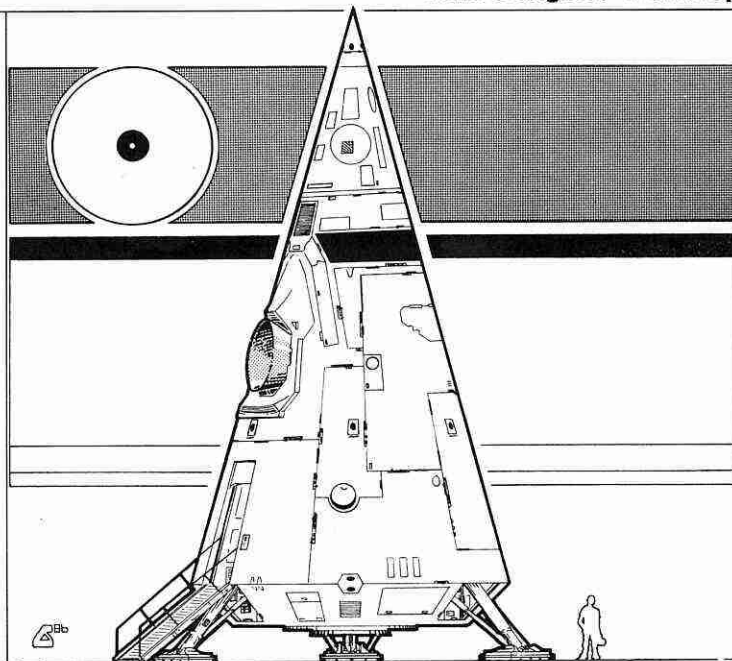
Through most of the 21st century, Mexico was able to develop the industrial potential of southern California, and Los Angeles became a rival to Mexico City in population, industrial output, and political power. The border between America (reunited in 2045) and Mexico became an armed (but stable) line drawn roughly along the Colorado River.

By the 2080's, Mexico divided into three rival geographic regions with great power: central Mexico and Mexico City, northern Mexico and Los Angeles, and Texas and Houston. After a series of tax increases, Texas declared (in 2099) its independence from Mexico and appealed to America for aid, which was promptly provided. The Mexican responses in Texas were exceptionally brutal, which only hardened the Texan resistance. America offered statehood to Texas, but settled the war with the establishment of Texas as an independent buffer nation instead.

The Mexican Civil War (2103 to 2106): Federal Mexico vs the former American states of California, Arizona, and New Mexico. Californian discontent with the centralized government in Mexico City was crystallized by the treatment of Texas during its succession from Mexico. California seceded from Mexico in 2103 and was quickly followed by Arizona, Baja, and New Mexico. The Peace of El Paso (2103), however, guaranteed the current Mexican-American border and America remained neutral.

Fighting between Federal Mexico and California continued in a series of battles in Arizona and Baja culminating in an amphibious invasion which devastated much of Los Angeles, but crushed the rebellion. In the years that followed, the assimilated Mexican-American middle class remade Mexico into an industrialized, progressive state.

The Tantalum War (2142 to 2143): Discovery of the star drive created an intense international demand for tantalum, the metal which proved essential to the drive's construction. Nations which had tantalum could someday hope to travel to the stars, those who did not had no such hopes. The discovery of a tantalum deposit on the Andaman Sea created an international dispute between In-


donesia and Bengal. Unsettled by diplomacy and mediation, the dispute erupted into the Tantalum War. The war was characterized by hovertank operations in the Andaman Sea and the ultimate occupation of the Andaman Island chain by Indonesia. Bengal's loss of a tantalum source permanently excluded it from the interstellar club; Indonesia, on the other hand, gained the tantalum that would allow it to become a space-exploring nation.

The Alpha Centauri War (2162): Argentina and Mexico vs the European Space Agency (France, Bavaria, Great Britain, and Azania). The initial discovery of a habitable world orbiting Alpha Centauri promised the potential of such worlds around every star. In the next several years, habitable worlds proved somewhat less common than had been supposed. Argentina, unable to find a garden planet of its own, objected to ESA members being the sole owners of Tirane (Alpha Centauri's sole habitable world). When announcements of ESA settlement and colonization of Tirane were made, Argentina secretly constructed a squadron of armed cruisers and confronted the expedition in the Alpha Centauri system, prohibiting its landing until Tirane was opened to colonization by other nations as well. The colonists became a bargaining chip; world opinion supported open colonization; and ESA could not field armed cruiser squadrons soon enough to react. The war was fought primarily in the Alpha Centauri system, punctuated by long waits for instructions from Earth, and then short clashes as the two sides jockeyed for position.

Ultimately ESA was forced to accept open colonization in order to land its own expedition. France, Bavaria, and Britain signed the Melbourne Accords (which stated that newly discovered worlds are open to colonization by all, subject to some reasonable restrictions by the discoverer). Within ten years, Tirane had colonies from some seven Terran nations.

The Rio Plata War (2203 to 2207): Brazil vs Argentina. During the first half of the 21st century, South America was cut off and forced to fend for itself; between 2050 and 2100, Brazil industrialized with European and Japanese capital because it was a source of cheap labor. Through most of the 22nd century, Brazil and Argentina competed for foreign markets with increasing acrimony, and by the turn of the century were on the verge of open warfare.

Uruguay was originally allied with Argentina; a chance change in government made it a Brazilian puppet. In 2203, Argentina
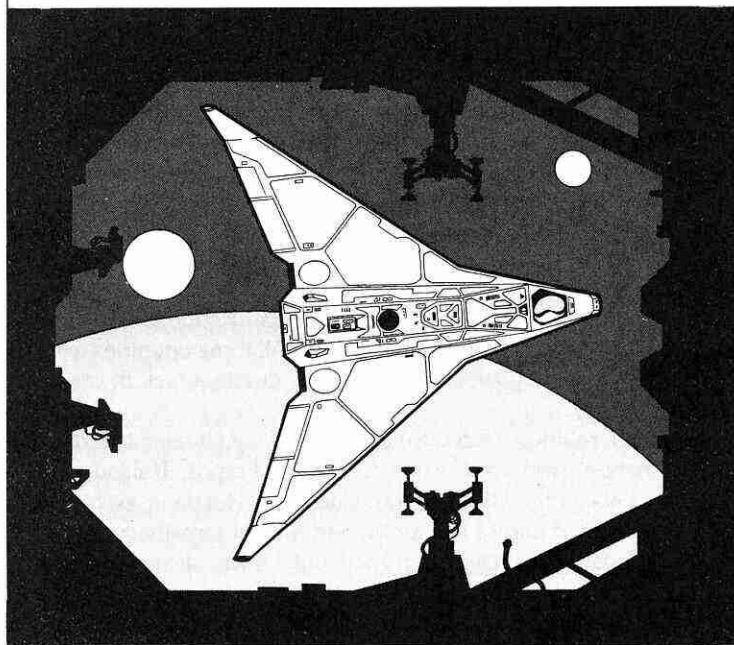
attacked through Uruguay with a drive on the industrialized Rio de Janeiro region. Brazil delayed by giving up territory slowly while mobilizing industry and population. Both sides declared mutually inclusive blockade zones which isolated the continent from seaborne commerce. Much of the war was fought at sea within five hundred kilometers of the coast. Brazil, already a pioneer in lighter-than-air transport for exploitation of the Amazon Valley, developed trans-oceanic LTA in order to bring in French electronics, fiber optics, and other war material from French Africa.

Major targets throughout the war reflected the underlying theme of the war: continental ascendency. Strikes concentrated on seaports and industrial regions. Both sides worked hard to cripple their rivals, and succeeded to some extent.

Brazil turned the tide in 2205, and the front pushed almost to Buenos Aires, whereupon Argentina sued for peace. Peru was occupied by Brazil, and the Argentine capital was occupied for two years. The Argentine defeat smoldered for a generation to break out in the Second Rio Plata War.

The Second Rio Plata War (2235 to 2237): Brazil's economic domination of South America after the First Rio Plata War placed Argentina at a severe disadvantage. However, Brazil's Portuguese language and heritage was a continuing barrier to markets in the Hispanic nations of the continent. Argentina, confident of assistance from other Hispanic nations, attacked Brazil in 2235. After several quick victories, when it became apparent that Chile and Bolivia would not join the fight, Argentina and Brazil concluded an armistice.

The Third Rio Plata War (2275 to 2279): In the aftermath of the Second Rio Plata War, Argentina encouraged insurrection in Peru and Ecuador playing first on Hispanic anti-Portuguese feeling and later emphasizing the nations' Inca heritages. In 2275, the seven major anti-Brazilian resistance groups united under the banner of the Inca Republic; Argentina and Mexico immediately declared their support for the new nation.

Initially, the fighting was concentrated in Inca territory with the Brazilian-Argentine border a fortified line. When it appeared that the Inca Republic would fall, Argentina crossed the border into Uruguay and pressed on to southern Brazil. Rather than risk its industry, Brazil accepted a peace which recognized the Inca Republic, ceded some territory from Uruguay to Argentina, and recognized Mexican occupation of parts of Central America.

The Cantonese-Indonesian War (2264 to 2268): Canton vs Indonesia. The rise of Indochina as a newly industrialized region made it a ripe economic target for both Canton and Indonesia. When Indonesia moved to annex the region, Canton invaded and occupied the coastal provinces. Four years of war could not dislodge Cantonese forces, and Indonesia eventually settled for a portion of Burma.

The Central Asian War (2282 to 2287): Large mineral strikes in Central Asia and increasing Iranian efforts to export revolution led Russia, with French backing, to occupy the Central Asian Republic. Manchuria intervened ostensibly to protect the CAR, but soon announced the annexation of the Sinkiang border regions. Bavaria joined France and Russia in a war against the Manchus. After inflicting heavy losses, the Manchus were at the point of winning when Japan entered the war. Provided with advanced satellite surveillance systems, the Allies were able to turn the tide. Prewar borders were re-established with a Franco-Russo-Japanese peacekeeping force in Central Asia. Postwar fighting by Iranian-supported guerrillas continued to drain the resources of the peacekeeping forces.

The War of German Reunification (2292 to 2293): The French Army, drained and battered by the Central Asian War, proved unable to stop the unification of Bavaria with the other German states and only stopped a combined German invasion of France itself at the Somme. Facing certain defeat, France sued for peace and accepted German unification. The Flemish War of Independence (which created an independent Flanders) took place in the last months of the war.

THE EFFECTS OF HISTORY

The turbulent history of Earth has created a background which will, at times, become directly relevant to the activities of the player characters. This will mostly manifest itself on an individual level in the form of national rivalries and allegiances

Traditional Rivalries: Recent wars and long-term frictions have created rivalries between nations.

Franco-German Rivalry: Bavaria had, until recently, been a traditional ally of the French Union, working with it to restore order to Europe and then the world, and participating heavily in ESA exploratory and colonization programs. However, after the War of German Reunification (2292 to 2293), the Germans and French had a falling out. Defeated, the French lost a great measure of their prestige and national pride, and the populations of both nations are not likely to soon forget this.

Argentine-British Rivalry: From disputes extending back hundreds of years, including the Falkland Islands and Antarctic showdowns, Argentine and British governments have more often than not been at odds; their rivalry solidified over issues like the Alpha Centauri War and the British denouncement of the Inca Republic (although the Incas have since become an embarrassment to its Argentine and Mexican creators).

Manchurian-French Rivalry: When the Manchurian intervention into Central Asia erupted in war, the French (as world peacekeepers) became their main adversaries. The rivalry is not all-encompassing (many Manchus living off Earth do not consider it much of a rift at all), but for Terran Manchus the memory of the victory unjustly robbed from them by French-solicited Japanese intervention remains.

American-Mexican Rivalry: American manifest destiny dies hard. The idea that portions of the American southwest have been stolen by the Mexicans has created a deep-seated dislike among Americans for their southern neighbors. Years of existence in the shadow of their northern neighbor has done much to deteriorate Mexican opinion of Americans, as well.

Traditional Cooperation: Civilized relationships between properly motivated nations have created cooperative efforts and friendships which have followed mankind to the stars.

American-Australian Cooperation: Since they were both among the latecomers to the extraterrestrial scene, America and Australia combined their space efforts from the onset. As a result, an entire exploratory arm is virtually dominated by their works, an accomplishment neither nation could or would have aspired to separately.

The Bonds of ESA: The member nations of the European Space Agency, France, Great Britain, Bavaria (now Germany), and Azania have a tradition of cooperation in both terrestrial and extraterrestrial matters. Even the split between Germany and France (over German reunification) has done little to break this particular bond of friendship, especially among the citizens of each nation who live off Earth.

The French Empire: The French Empire binds together lands and peoples from all over the Earth. From Central Africa to South America to Europe, all subjects of the French Empire feel an elitist comradery which binds them together, though their world reputation suffers for it.
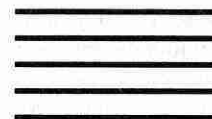
Political Geography

Rarely does the physical geography of the world change. A few islands might rise in the ocean; coastlines might erode a few kilometers; some climate changes might be caused by industrial pollution or by overcropping. Within human lifetimes, changes in geography are changes in political geography: changes in borders and allegiances. The state of geography in 2300 reveals some of the complex relationships which are at work in the world.

NORTH AMERICA

North America has been dominated by America ever since its rise to world power in the late 19th century, but that domination has diminished as both Canada and Mexico have industrialized and flexed their muscles. Mexico, with its attention directed toward Latin America, is profiled under South America.

America: America was split by the chaos and aftermath of World War III into three factions: rival civilian and military governments and a reactionary isolationist New America. Territories controlled by the factions were a patchwork intermingling of all three and creating constant fighting. By 2020, the military and civilian governments had settled their differences and joined in a war against New America, then concentrated in the southeast. Mexico supported New America's losing fight while taking the opportunity to seize New Mexico, Arizona, and southern California. Canada, a nation blessed with fertile land and excellent resources, made excellent use of both in the years after World War III. Relieved of the overwhelming presence of America (at least until it could reunite in 2020), Canada was able to support its own industry with its own resources at a time when supply was scanty and unreliable. Discoveries of petroleum reserves in the Northwest Territories were discovered and exploited in the late 22nd century (no longer needed for fuel, petroleum was still a vital resource for lubrication and synthesis).

Texas: An independent country from 1836 to 1845, Texas was admitted to the United States in 1845, seceded in 1861, and was readmitted in 1870. Conquered by Mexico in 1999, Texas was made part of Mexico in 2025. Chafing under Mexican rule, Texas rebelled in 2099 and became an independent nation.

SOUTH AMERICA

South America experienced a gradual awakening in the 21st century, primarily because World War III created new opportunities for South American markets in the Pacific and Africa. Brazil and Argentina dominate South American economics, with Mexico holding a close third place. As a result of the Rio Plata Wars, Argen-tina is now the ascendent industrial power, and Brazil is in a gradual economic decline. The Inca Republic, brought together by Brazilian occupation, is emerging as a strong and growing economic power on the continent.

Argentina: Argentina benefitted from its own industrialization prior to World War III, and vigorously marketed its production throughout South America. Argentine exports supplanted European, American, and Japanese production which were diverted by the war and its aftermath; its major competition was from Brazil. Differences between Argentina and Brazil increased as both competed for the markets of South America. Argentina's first major coup was to conclude an economic assistance agreement with Chile; markets were guaranteed for Chilean mineral resources, and for Argentine production. Argentine territory has remained constant, although portions were occupied by Brazil in the 23rd century.

Bolivia: Bolivia suffered as an underdeveloped nation well into the 22nd century. With minerals its only export, Bolivia was at the mercy of the economic climate and the demands of neighboring industrialized nations. Brazil attacked and occupied parts of Bolivia in the First Rio Plata War. In the Second War, Bolivia was an ally of Brazil, and was ceded a corridor to the Pacific at Arica (taken from Chile). Access to the sea made possible increased investment in Bolivia mining and industry, as well as a Bolivian merchant fleet, and a long-delayed economic boom. Access to the Pacific directed Bolivian attention westward to the extent that, when the Third War began, Bolivia sided with Hispanic Argentina and the Inca Republic. That step made it possible for Bolivia to retain its Pacific corridor and its newfound economic success.

Brazil: Brazil was one of two industrialized powers in South America after World War III, but was always at a disadvantage because of its Portuguese language. It was a testimony to Brazilian quality and marketing that its products penetrated the Spanish language market as well as they did. Although Brazil has no need for increased territory, it did fight the Rio Plata Wars to defend or enhance its economic position on the continent. The Third Rio Plata War lost the Amazon headwaters to the Inca Republic.

Chile: Chile established an economic relationship with Argentina in 2024, and thereafter was essentially a nation dependent on and closely allied with Argentina. In 2274, Bolivia was given the Arica corridor from Chilean territory.

Guyana: French Guiana was selected as the site for one of two French orbital catapults in 2066, and was the only catapult on the South American continent until Brazil's became operational

in 2102. Guyana and Surinam were gradually included in catapult operations and support, and the three territories merged as one nation (Guyana) in 2130.

The Inca Republic: Argentina, in a continuing campaign against Brazil, encouraged insurrection and revolution in Brazil-dominated Equador and Peru. Resistance groups rose in 2275 and declared an independent Inca Republic, which was immediately recognized by Mexico and Argentina. The end of the Third Rio Plata War won Brazilian recognition as well. Columbia joined the Inca Republic in 2284.

Mexico: Mexico's seizure of Texas in 1999, and more of southwestern America in 2025 took advantage of the temporary breakup of the United States to recover traditionally Hispanic territory. The acquisition of Texas, New Mexico, Arizona, and southern California gave Mexico resources and manufacturing plants that were essential for proper industrialization. For the next one hundred years, Mexico was able to produce manufactured goods for its own consumption and for export to the markets of South and North America. Texas seceded from Mexico in 2099, but the other states were forced to stay within the Mexican nation as a result of the Mexican Civil War. After a generation of recriminations, California was fully integrated into the Mexican economy and social order. During the 22nd century, Mexico gradually annexed the Latin-American nations north of Panama, making them provinces of the nation.

AUSTRALIA

The island continent, always untroubled by competition by other nations on its land mass, continued its efforts to develop its potential. The concentration of population in the southeast helped promote industrialization, but hindered exploitation of other regions. Recent (since 2200) development of the northern (Darwin) shore has created a growing population center handling trade with Indonesia.

EUROPE

The center of western civilization has continued to be the focus of nearly all important international activity. France has dominated Europe since World War III, although it has experienced ebbs and flows in its power. Other nations have redefined themselves or rearranged their borders in response to economic or political considerations.

The Balkans: The borders of Balkan nations have changed somewhat as ethnic populations have worked to establish nations which reflect their political and economic needs. Austria absorbed Slovenia, becoming Austrovenia and, in the process, gaining access to the Adriatic. Portions of Yugoslavia were taken by Hungary, Romania, Bulgaria, and Albania; the remainder split into Serbia and Croatia.

European Russia: The Soviet Union lost control of the Ukraine immediately after World War III when it was forced to concentrate on its territory closer to Moscow. At the same time, Estonia was formally absorbed into Russia, Lithuania was absorbed by Poland, and Latvia broke away and reestablished itself as an independent nation. Originally, the Ukraine reached only as far east as the Don; in 2020, it forcibly extended its border to the Caspian.

France: France took advantage of postwar chaos to extend its border to the Rhine, and had maintained that boundary since; assistance to, and domination of Bavaria has helped to maintain the border. At the same time, Belgium was placed under French protection (it was made a department of France in 2007). In the Flemish War of Independence, Flanders forced France to accept its independence.

French foreign policy involved it in all corners of the world, never overtly imperialistic, but never reluctant to involve itself diplomatically or militarily when French interests were involved. French policy was to make territories departments of France. The nation of France has many departments which are not located in Europe: Algeria, Guyana, New Caledonia, plus Zaire and others in central Africa.

Germany: One reason World War III was fought was the attempted reunification of East and West Germany, but that was not to be. Instead, France encouraged the emergence of Germanic states. Bavaria enjoyed French aid and became an established French ally. Hanover, the strongest of the German states, kept the name Germany. The remaining German territory became Westphalia, Brandenburg, and Saxony; the shifting allegiances of these three states worked against any one German state becoming totally dominant, and against the German nation reuniting.

The Iberian Peninsula. Catalan separatists took advantage of the chaotic world situation after World War III to declare (in 2013) an independent Catalan state in northern Spain. Catalan guarantees to respect the French border produced diplomatic recognition from France and forced acceptance of the situation by Spain. Spain, Portugal, and Catalonia all suffered as undeveloped nations on the fringe of Europe for the next 300 years. In 2085, the importance of tantalum for star drives gave momentary importance to Spanish deposits, but (being unable to use the metal itself) Spain allowed it to be mined (taxing the production heavily), enjoyed the prosperity it produced for a few decades, and then sank back into economic doldrums. Portugal has enjoyed high levels of investment from Brazil (seeking access to European markets) and is now dominated by Brazilian interests. Catalonia is primarily agricultural and is strongly tied to France.

Central Europe was the battlefield of the Third World War. The ruin, chaos, anarchy, and contamination of civilization-shattering war turned Poland, Czechoslovakia, and Hungary into lawless frontiers dotted by self-governing city-states. Governments existed for these nations, but they were unable to exert any real control over their territories. By 2030, however, reconstruction had begun. France channelled recovery aid funds to Poland and Czechoslovakia; Austria concentrated on assisting Hungary. As Poland recovered, it extended its borders to include Lithuania. Hungary absorbed parts of Romania. The overwhelming French presence inhibited other nations ambitions toward the temporarily vulnerable nations.

Scandinavia: In the late 21st century, Denmark, Norway, Sweden, and Finland joined together in a commercial union in order to compete with French trading practices in Europe. The union grew in importance in regulating and promoting trade, and later in regulation of labor and technology. In 2205, the four nations (plus Lapland, carved from the northern portions of Norway, Sweden, and Finland) formally joined as semiautonomous states within the Scandinavian Union. Greenland was included in the Union as a territory of Denmark.

ASIA

The sprawling continent of Asia, settled for millenia, remained the last frontier of the world as late as the early 21st century. Russia abandoned Siberia; Central Asia and Western China were only sparsely settled. It was possible for entirely new nations (the Far Eastern Republic, for example) to emerge. The old world was becoming a new one.

China: Traditional China was virtually ungovernable in the collapse of world governments after World War III; national minorities pressed for independence while the central economy of China proved unable to handle the greater and greater demands placed

on it. Monolithic China split itself into three nations: Canton (southern China), China (north of the Yangtze, but south of Beijing), and Manchuria (northern China, plus Tibet and western China). Industrialized Manchuria carefully grabbed the wasteland resource regions of western China and Tibet in a foresightful attempt to support future expansion. The rest of China split along agricultural lines: Canton has a hot wet climate; the reduced China has a cooler climate.

Indochina: Vietnam, Laos, Cambodia, and Thailand struggled among themselves for ascendancy and supremacy, with Vietnam usually holding the upper hand. Canton attempted (in 2030) to take over the region in order to seize its petroleum resources, but was repulsed by French pressure; France maintained a strong interest in the region and assisted in its development. After the Cantonese-Indonesian War (2264 to 2268), Canton consolidated the region as Indochina, a puppet state with each of the former nations now a province.

The Indian States: During World War III, the Sikh population of the Punjab declared its independence from the central Indian government. Over the next fifty years, additional provinces within India also declared their independence, gradually whittling India down to a core of the subcontinent. Collectively called the Indian states, the eight Indian nations (India, Rajasthan, Bombay, Mysore, Madras, Bengal, Bihar, and the Punjab) periodically war over territorial and religious differences.

Indonesia. The embryonic industries of Indonesia suffered when worldwide markets collapsed during and after World War III, and Indonesia was slow in recovering. Expansionist governments attempted to take over Indochina early in the 21st century, annexing Malaysia, but further efforts were rebuffed by the French. Through the end of the 22nd century, Indonesia used its equatorial location to support a catapult and orbital manufacturing. Without being at the leading edge of technology, Indonesia was still able to use its orbital facilities to produce inexpensive, generic versions of orbitally manufactured goods (zero-G bearings; pharmaceuticals; stress-free castings; extrusions). Indonesia occasionally dabbled in imperialism, only to be foiled by a stronger power. Japan kept Indonesia out of the Philippines in 2092; Australia kept Indonesia out of Papua in 2140; Canton kept Indonesia out of Indochina in 2280. The only successful aggression Indonesia waged was the seizure of the Andaman Islands from Bengal in the 2265; that war gave Indonesia the tantalum resources necessary for it to build starships.

Japan: Japan was relatively unhurt by World War III, and it pressed its advantage in promoting a world trade empire. At the same time, America's collapse made it necessary for Japan to rearm for its own defense. The economically and militarily strong Japan was able to dominate the Pacific basin throughout the 21st century. During the 21st century, Japan attempted an economic domination of Korea, but was expelled by Manchuria, and thereafter concentrated on territories off mainland Asia. Japanese investments industrialized the Philippine Islands, constructed an orbital catapult in 2072, and brought them into the Japanese economic community in 2120. Japanese deep ocean mining operations made the Marianas, Carolines, Marshall, and Gilbert Islands part of Japanese territory during the 22nd century, and the Gilberts were specifically developed as a model scientific community during the 23rd century.

Southwest Asia: Afghanistan, having reverted to local rule during World War III, fiercely maintained its independence in the years afterwards. It enjoyed amiable relations with the Central Asian Republic, and remained a remote frontier until well into the 22nd century. Pakistan absorbed Kashmir in 2007 as India was fragmen-

ting, extending its twisting territory to the north to China. Pakistan's victory in the Iran-Pakistan War (2171 to 2176) forced the creation of an independent Baluch state to serve as a buffer between Pakistan and Iran. Baluchistan, feeling a mandate to incorporate all traditional Baluch territories, attacked and occupied Pakistani Baluchistan in 2212. Once hostilities with Pakistan were over (2213), the massed Baluch forces pressed north and occupied the Afghan lowlands as well. All captured territories were incorporated into Baluchistan proper in 2235.

Soviet Asia: The breakup of the Soviet Union produced two major nations in Asia; Russia and the Central Asian Republic. Russia was the traditional territory of the Soviet Union except the Ukraine and Kazakhstan. Kazakhstan became the Central Asian Republic, stretching from the Caspian Sea to Alma Ata on the Manchurian Border. Russia maintained its claim to Siberia, but virtually abandoned it north of the Trans-Siberian Railway and west of Lake Baikal. Manchuria occupied (2048) and eventually absorbed (2071) parts of Siberia along the Amur River. Ignored by Russia, Kamchatka and the Pacific coast governed themselves and finally declared their independence as the Far Eastern Republic in 2038. During the 22nd century, Russia gradually reclaimed Siberia but has been unable to reclaim the Far Eastern Republic or the territories north of the Amur lost to Manchuria.

THE MIDDLE EAST

The reshuffling of nationalities in the Middle East continued after World War III. New nations emerged, and older nations settled some of their differences.

Arabia: Saudi Arabia (now Arabia) was occupied by an alliance of Egypt, Bavaria, Britain, Japan, and France to secure the Arabian oil fields. The United States, with more pressing interests elsewhere, moved its forces back to America. Defending forces helped secure and rehabilitate the oil fields in Arabia, and protect them from revolutionary Iran. With the exhaustion of the oil fields in the early 22nd century, Arabia gained independence in 2112.

Armenia: Armenia found itself without an oppressor to fight when the Soviet government retreated during World War III; it was actively supported by the Ukraine when it absorbed the rest of the Caucasus region in 2020. With Ukrainian backing, Armenia joined with the Kurds to carve out their own nations from Turkey, Iraq, and Iran. Independent Armenia included some Turkish territory within its borders, and has been fighting a Turkish separatist movement since 2190.

The Confederation of Palestine: A new nation was created over a period of decades from the nations of Israel, Jordan, and Lebanon. Four nations (Lebanon, Israel, Jordan, and Palestine) share one territory (called Palestine) without specific borders being established within the country. Individuals hold citizenship in a specific nation, and each nation has its own legislature, elected officials, and bureaucracy. Sufficient guarantees of civil rights for all have permitted individuals to live, work, and own property with relative ease. Originally, there were four distinct governments operating over the entire territory, but the success of the nation has enabled many government services to be consolidated under just one administration.

Kurdistan: Having long fought for their independence, the Kurds were surprised to find that their mountain retreats were de facto independent in the chaos of World War III. When Armenia was created in 2020, the Kurds declared their own nation, consolidating their power and incorporating parts of Iraq, Iran, and Syria.

United Arab Republic: Egypt achieved its long-held goal of creating a broadly-based Arab republic by a simple maneuver: it

sided with France in its takeover of Saudi Arabia, In the early 21st century, when oil and transport were both scarce, Egypt provided its Suez Canal, participated in the operation of the Arabian Oil Consortium, received French assistance in its own affairs, and generally progressed socially and economically. Libya joined with Egypt in 2043 to create the United Arab Republic. Syria joined in 2048 (but left in 2057). The Sudan, administered as a territory from 2017, was pacified in 2068 and joined the car in 2077.

AFRICA

Africa is roughly divided into three regions: North Africa, dominated by the United Arab Republic and the French department of Algeria; Central Africa, populated by many small nations, and dominated by French Africa; and South Africa, dominated by Azania and its allied nations. North Africa, because of its ties to the Middle East, is profiled in that section.

Azania: The black majority in the Union of South Africa transformed that nation overnight into a representative democracy. The accompanying exodus of whites crippled the country's management ranks, but many skilled black workers were able to keep industry working and kept their economy from completely collapsing. Azania (as the new nation was called) plodded along until 2080, when a theoretical basis for star drive was proposed, and the rare metal tantalum was identified as essential to its production. Azania, a major source of the metal, was suddenly rich beyond any dreams. Keeping some of the metal in reserve for the future, Azania traded a portion of its supply for membership in the European Space Agency and traded still more for a space partnership with Japan. The fallout was far more than simply access to space. Azanian money brought high technology, capital improvements, education, and improved standards of living. Azania became a valued trade partner with Europe and with Japan. Between 2090 and 2150, Azania conquered or absorbed all of its Bantu-speaking neighbors, creating a Bantu state ruling the southern portion of Africa.

French Africa: The rise of France and the importance of France in world markets gave a great advantage to African members of the French Commercial Union. Their relationship to France as former colonies gave them precedence over other nations in Africa, for investment, for trade, for diplomatic and military defense. Throughout the 21st century, Cameroon, Chad, Zaire, and the Guinea Coast enjoyed a favored relationship with France. When France built its orbital catapults, equatorial Zaire was selected as one of two sites (the other was Guyana), producing an economic boom in the region as well as continuing industrialization. The African interior was conquered with air and road networks; African resources were exploited to support not only French industry, but local industry as well.

In 2104, Zaire first petitioned for status as a department of France; it was granted in 2111. Through the next half century, Cameroon, Chad, Katanga, and the Guinea Coast were also made departments. By 2200, Senegal and Burkina Faso were also departments. Through the 23rd century, there were more French in Africa than in France itself; more importantly, more tax revenues for the nation came from Africa than from European France. Necessarily, the French world view became more hemispherical than European.

ANTARCTICA

The original treaty commitments against settlement of Antarctica expired prior to World War III, but tacit agreement and a lack of recoverable resources restrained most nations from mounting more than research colonies. Argentina and Australia attempted to mine petroleum from Antarctica in the 21st century, but costs and climate made the effort unprofitable.

ORBIT

All major nations have solar power satellites in geostationary orbit, each supported by an array of relay satellites at lower levels. Low Earth Orbit (LEO) is occupied by a variety of transfer stations and factories.

L-5: The European Space Agency selected the LaGrange point trailing Luna for its space settlement. The first module was thrust into place in 2061, and the original structure was completed in 2074. Populated by citizens from the ESA nations, L-5 has expanded three times to handle its own population growth as well as immigration.

L-4: America placed the first space settlement at the LaGrange point preceding Luna. Soon Japan and Argentina placed their own settlements at L-4. Originally, America objected to neighbors at L-4, but the cross-fertilization of technicians and scientists in close proximity and the natural trade that arose between the neighbors soon turned that opinion around.

THE SOLAR SYSTEM

The return to space after World War III produced a succession of interplanetary expeditions. The Manchurians established a base on Mercury; the French placed one on Mars; several nations prospected the asteroids. Until the development of stutterwarp, the solar system was the only frontier available in space. The drab planets were a haven for scientists and researchers looking for clues on the nature of the universe.

When stutterwarp opened up interstellar space, the planets of the solar system became second class locations. It actually became easier and cheaper to place colonists and miners on garden planets around other stars than to exploit inhospitable planets such as Mars or Mercury. No Earth nation maintains a full-fledged colony on any solar planets. The American settlement on Mars and the Manchurian settlement on Mercury were originally established as colonies, but they are now simply commercial mines and bases, with their populations rotating in and out on a regular basis.

Mercury: Manchurian commercial interests maintain a consolidated base at the North Pole of Mercury, sending out expeditions onto the bright face of the planet to exploit pools of liquid self-smelting metals. Expeditions into the dark face recover pockets of frozen water and gas which are used for life support and chemical synthesis. Organizations and other nations rent space at the consolidated base for scientific research or prospecting.

Mars: The American base on Mars is primarily a scientific endeavor devoted to developing a greater understanding of desert worlds. It was scheduled to be abandoned in 2265, but the discovery of a small lode of tantalum near Mons Olympus prompted reconsideration, and America maintains the base in hopes of finding additional deposits.

The Asteroids: Most space-faring nations maintain mining operations in the Asteroid Belt. Supported by commercial interests offering high rewards for rare finds, the Belt attracts rugged individuals interested in getting rich quick.

Jupiter: France maintains a scientific base on Ganymede for the study of Jupiter and its accompanying moons; it is the farthest out of the standing bases within the solar system.

Saturn and Beyond: Various nations (America, France, Azania, Argentina, Japan, and Indonesia) have established temporary bases at Saturn, Neptune, and even Pluto, and the remains of those bases mark expeditions of the past several decades, but there are no permanent settlements beyond Jupiter.
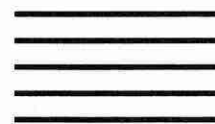
Technology

One of the fascinations of the future is the startling new technology that will become not only available but commonplace. New technology makes it possible to travel to the stars, survive in hostile environments, or call up mountains of information to answer questions or support decisions. On the other hand, the individual will have to travel to the stars, ask questions, make decisions, and use that technology to survive.

THEORETICAL BREAKTHROUGHS

Genuine theoretical breakthroughs, such as Einstein's work on general and special relativity, are extremely rare. Most technological advance comes as a result of progressive refinement of existing basic knowledge rather than dramatic breakthroughs. The only watershed theoretical breakthrough which took place between the beginning of the global recovery from World War III and the present (2300 AD) was the discovery of electromagnetic quantum jump. This discovery was made in 2080 AD at the new large French synchrocyclotron facility at Grenoble. On August 18th of that year a complete hydrogen molecule was induced to perform a microscopic quantum jump. Within two years the experiment had been replicated at the C.E.R.N. facility in Switzerland, and a small group of theoretical physicists had realized that mankind had finally discovered the key to the stars. However, scaling up the Jerome effect (Dr. Emile Francois Jerome, 2021-2103) from moving a single hydrogen molecule to moving a large fabricated spacecraft was a long, complex, and extremely expensive proposition. It was not until 2136 AD that the first unmanned stellar probe was launched, and more years passed before manned survey ships were launched.

THE BIOLOGICAL SCIENCES

Modern biological science has made great advances in genetic engineering, medical treatment, and life prolongation.

Genetic Engineering: The basic genetic structure of many organisms has been tailored to produce specific results. The major emphasis has been in crop management; modern crops are true-breeding, self-fertilizing (nitrogen-fixing), high yield plants well-adapted to specific climates and soils. Special use plants are employed for environmental clean up because they thrive on specific pollutants or contaminants.

Genetic engineering companies enjoyed a period of tremendous growth on Earth between 2050 and 2200, but recent growth has been extra-solar: each of the new colony worlds needs a wide variety of crop types adapted to specific world conditions. Supply of such genetically engineered crops has inevitably fallen far behind the demand caused by explosive growth in extra-solar settlement.

Medicine has used genetic engineering to eliminate most inherited diseases and to allow parental selection of characteristics such as gender, eye and hair color. Selection for aptitudes and intelligence has been less successful. Replacement organs are usually force grown from the patient's own tissues.

Current research has focussed on remedies for existing genetic disorders. The patient is infected with tailored viruses which then replace his genetic patterns with new ones—replacing inferior or radiation damaged patterns. The system, however, remains experimental.

Medicine: The major diseases of Earth are environmentally induced: UV damage, radiation, and tumors/cancer. Bodies deteriorate from aging beyond basic evolutionary lifespan. On colony worlds, diseases are caused by local bacterial/viral infections, variants of the known diseases, and unexpected environmental consequences. In space there is heart degeneration and bone decalcification.

The greatest advance in medicine has been the automed—computerized automated medical treatment. Automated tests determine precise results to a battery of standardized tests while expert systems analyze the results and produce high reliability diagnoses.

Chemical or pharmaceutical treatment can be administered automatically and without attendance. Life support is also an automatic function. The automed can handle most non-surgical treatments and many surgical ones (setting some broken bones, removing dead tissue). A skilled operator can manage resuscitation and most major treatments with an automed.

A recent advance in medicine has been the *anagathic regimen*—a series of treatments which effectively ward off aging. Announced and approved in 2264 after decades of testing, the anagathic regimen remains an expensive but effective treatment available only to the rich. Without the anagathic regimen, normal lifespan (excluding violent or accidental death) is about 100 years. The anagathic regimen is expected to more than double that, although it has not been in use long enough to determine the complete extent of its life-prolongation abilities.

DATA PROCESSING

Computers are commonplace, accepted as an appliance like the telephone or running water. In developed countries, the information processing bill comes monthly, just like the power and cable bills.

Computers are extremely easy to use, sporting voice recognition and plain language instructions. They also take keyboard input. Computers normally present information using flat screens, but can be directed to use voice or holographic presentations.

Computer programming is an automated process; most programs can be produced just by describing the input, the processing, and the results, and then checking sample outputs by the computer. Computers are extremely accurate and extremely fast. The concept of expert systems is extensively used, and many computers can mimic humans, for example, in sales or reservations clerk situations. True artificial intelligence has eluded the computer makers. Seemingly successful systems self-destruct within a few years of activation; the cause of the self-destruction is usually diagnosed as a psychosis.

MATERIAL SCIENCE

Material science has been successful at producing increasingly sophisticated synthetic materials for fabrication and construction, and in developing advanced methods of refining metals. Recent breakthroughs in electrically and magnetically stabilized metals have produced metal-fiber synthetic matrices that allow beanstalk cables which can connect a world surface to orbit—beanstalks have been built on two worlds: Beta Canum Venaticorum (from Premiere to Orbit), and Earth (from Libreville to Orbit).

While metals are still used in space and on frontier worlds in most large and commonplace fabrications, synthetics can now do most jobs more efficiently, and are used almost exclusively in vehicle construction, power plant components, and all machinery requiring high strength and low weight. Only in space and on the frontier where metallic ores are relatively plentiful (and thus cheap) is metal a more cost-effective alternative. On Earth metal is used for very little aside from some electrical components.

ENERGY

The near exhaustion of fossil fuels prompted the development of alternatives. Fusion power is efficient and cheap, but practical only in large installations. On Earth, it has been replaced by solar power satellites which beam their energy down to the ground.

Vehicles require a portable energy system because they cannot hook into the electric power grid. After experimentation with alcohol fuels, Earth transitioned to hydrogen in the 22nd century, and hydrogen fuel stations are as common as gasoline stations were in the 20th century. Most hydrogen-powered vehilces utilize hydrogen-burning fuel cells. Large vehicles, or those requiring very high energy levels, can benefit from the scale efficiencies of magnetohydrodynamic (MHD) turbines.

Battery technology has improved to the point that electric cars are also possible and cost-effective. Approximately 20% of the ground vehicles (wheeled, hover, or tracked) on Earth are battery powered.

TRANSPORTATION

As noted above, most personal vehicles are either hydrogen-burners or battery powered. On Earth, people and cargo are moved by several layers of transport based upon competing needs for speed and cost-effectiveness. On the surface most cargo and people are moved by high speed air film trains which travel through underground tunnels. Major lines travel between large terminals centered in metropolitan areas. Smaller feeder and commuter lines radiate from these central terminals. Generally well-suited to meeting peak commuter loads (there are always exceptions), the "tube" systems allow metropolitan areas to be very dispersed and it is not uncommon for workers to commute 150 kilometers to and from work.

While proposals have been made for trans-oceanic tube service, travel across oceans tends to be by ship, airship, or aircraft. Most passenger and cargo ships are of the over/under type: a completely submerged streamlined flotation hull containing the vessel's power plant and fuel bunkers linked by pylons to the upper passenger and cargo decks, which ride considerably above the waterline. This design makes for an extremely efficient ship as there is virtually no surface contact and thus drag is much reduced. The tremendous power needed to lift a large ship onto hydrofoils is also unnecessary. Unlike hydrofoils (which are still used for a variety of high speed naval and pleasure craft) this is a deep-water vessel only.

Airships are only slightly more expensive than surface vessels and largely make up for this by their greater flexibility. Large capacity airships carry both cargo and passengers across the oceans of the Earth and can land them at a variety of inland destinations.

For passengers and cargo which need to get to their destinations quickly, there is always TAC (Trans-Atmospheric Cruiser) service, which can move a passenger from one side of the world to the other in a couple of hours.
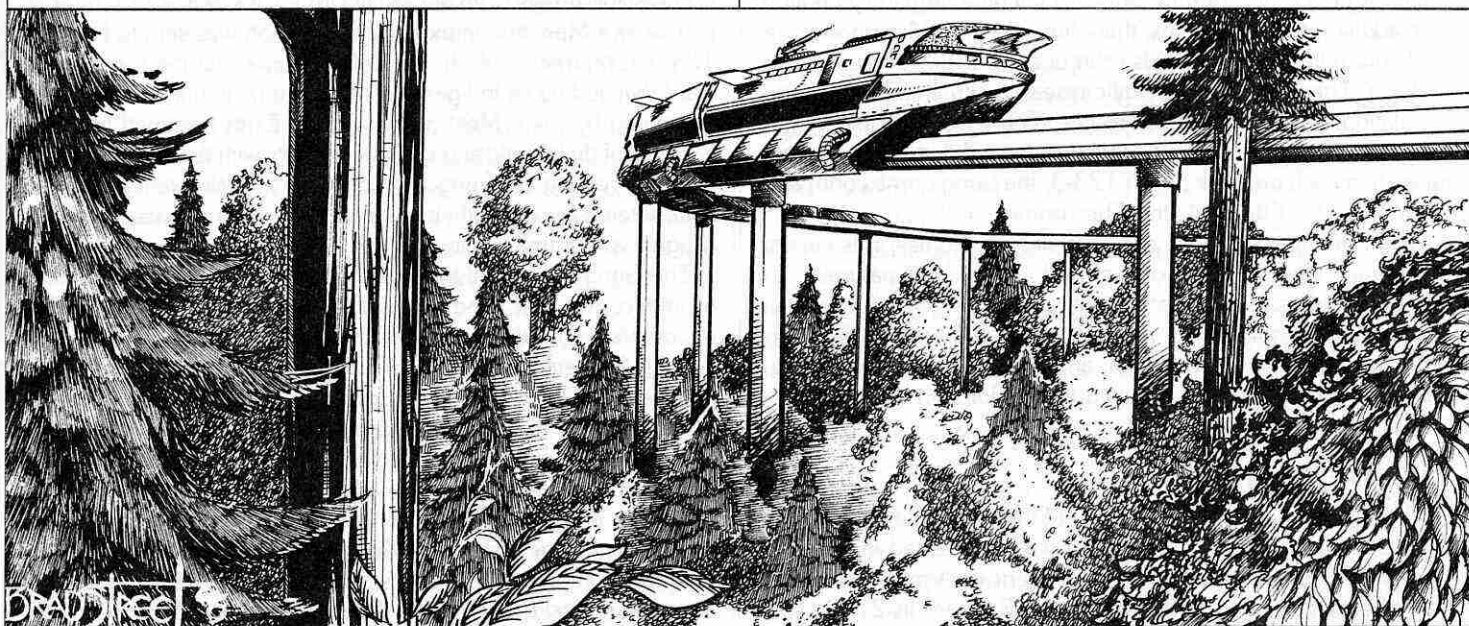
Colonies

There are a total of fifty-five established human colonies on twenty-nine inhabitable worlds. Of the fifty-two national colonies, three have since gained their independence and the ownership of a fourth is in dispute. The former Bavarian colony of Garten, one of the original national colonies on Tirane (Alpha Centauri 4), declared its independence after the War of German Reunification, and enjoys close relations with (and military protection from) the French Empire. The Bavarian colony on Heidelsheimat (Rho Eridani-2) has refused to recognize the authority of the central German government, but has not formally declared its independence. Negotiations between Heidelsheimat and the central German government are on-going. The former British colony of Wellon on Tirane, another of the original colonies, was granted home rule in 2241 and complete independence in 2277. It remains a member of the British Commonwealth. The former French colony of Elysia on Joi (61 Ursae Majoris-3) gained its independence in 2291 after six years of bitter guerrilla warfare.

The remaining national colonies enjoy a wide variety of relationships with their home governments. Some remain virtual protectorates, their external affairs managed by the mother country, while Provence Nouveau, the original French colony on Tirane, is officially a department of Metropolitan France, with elected representatives serving in the Chamber of Deputies. (With the establishment of the Empire, this has become largely symbolic.)

In addition to the colonies, there are a total of 34 manned outposts on uninhabitable worlds or in deep space orbit around star systems. These serve as scientific research centers and refueling waystations on important star routes. There are also four major human enclaves on worlds inhabited by indigenous intelligent races, two each on Stark (DM4 123-3, the Sung homeworld) and Kormoran (82 Eridani-4, the Eber homeworld).

Given the large number and diversity of colonies, it is easiest to examine them in terms of explored "arms," the naturally occurring corridors of colonization that result from stellar geography. There are three such arms, and they are almost universally referred to as the Chinese, American, and French arms, after the major powers which have dominated the exploration and colonization of the region.

THE AMERICAN ARM

The American Arm is the smallest of the three colonial regions. Although the first American outpost was established in 2160 at Barnard's Star, the opening of the American Arm proper dates from the establishment of the outpost at Broward in 2172. This way station became the crossroads for the two main branches of the American Arm, one leading through Clarkesstar (outpost established 2187) to the rich colony systems of King, and then branching at New Melbourne into the Australian sub-arm (to the colonies on Botany Bay and Zeta-Herculis) and the American sub-arm (to the colonies on Mu Herculis and Ellis). The second principal branch from Broward leads to DM-26 12026, the gateway to the Chinese Arm.

No indigenous intelligent races have been discovered thus far in the American Arm, although it is far from fully explored. Probes from DM-26 12026 to DM-34 11626 and DM-46 11370 indicate worlds potentially suitable for colonization, although no action has been taken along those lines as of yet.

THE CHINESE ARM

The Chinese Arm begins at Delta Pavonis and extends in two branches. One reaches to Beta Hydri, Zeta Tucanae, Rho Eridani, and 82 Eridani, all prime colonization territory. The other reaches through two red dwarf systems (Xiuning and Hunjiang) to the garden worlds of Tau Ceti, Epsilon Eridani, and Omicron2 Eridani where Manchuria placed a colony in 2208 after ten years of preliminary exploration.

Exploration and settlement of the arm proceeded smoothly until the establishment of an outpost at DM+1 4774 in 2247. Shortly thereafter a Manchurian exploratory mission was sent to DM+4 123 and returned with the electrifying news that the star system was inhabited by an indigenous intelligent race, the first to be encountered by man. Most nations of the Earth hastened to open a variety of diplomatic and cultural contacts with the race the Manchurians named the Sung. (In common with all intelligent races encountered by man, their own name for themselves translates roughly as "human being.")

The Sung, like mankind, were divided among a wide variety of ethnic, linguistic, and political groups. Nation states vied for diplomatic and military supremacy, although at the time of contact the Akcheektoon state enjoyed a clear supremacy, to the extent that the sixty years leading up to contact with the Manchurians is now referred to in Sung history as the "Akcheektoon Peace."

The initial euphoria over contact with Sung was considerably reduced, however, when it was discovered that a satellite of the major gas giant in the DM+4 123 system contained another indigenous intelligent race (the Xiang), considerably less advanced than the Sung (roughly stone age technology), and which were being mercilessly exploited by the Akcheektoons. The documen-

tation of forced labor camps with high deathrates on the Xiang homeworld led to a widespread public outcry on Earth and precipitated the Slaver War (2252-2255 AD).

The major Terran participants in the war were Manchuria and Canada, although expeditionary forces from a number of other nations also participated. The early stages of the war consisted of a short and effective demonstration of the impact of stardrive on military actions within a star system. The small Akcheektoon fleet was destroyed at virtually no loss to Terran forces. The second stage consisted of landings on the Xiang homeworld and reduction of the now-isolated Akcheekton bases there. The third phase of the war consisted of diplomatic maneuvering to forge an anti-Akcheektoon coalition on the Sung homeworld strong enough to bring down the Akcheektoon government and force a peace settlement.

Following the conclusion of the war both Manchuria and Canada established enclaves in Akcheektoon territory. Extensive educational and developmental missions have also been established on the Xiang homeworld, funded largely by Akcheektoon reparations. Several Sung nations have now begun operating stardrives and plans for Sung colonies on several of the worlds of the Chinese Arm are proceeding.

During this same period (the mid-23rd century), explorers and colonists in the Beta Hydri branch of the Chinese Arm discovered the ruins of a colony established some 4,000 years previous. Another ruined colony was found at Rho Eridani a few years later.

At about the time of the conclusion of the Slaver War, an exploratory mission of the United Arab Republic visited 82 Eridani-3 and discovered the Ebers. Considerably less advanced than mankind, the Ebers were nevertheless open to limited contact. Since then, two major colonial enclaves have been established in wilderness regions of Kormoran, the Eber homeworld.

Eber civilization had reached at least three other worlds and established colonies on them, only to have the entire group of worlds embroiled in a massive thermonuclear war which destroyed two colonies and knocked those remaining back to the stone age.

THE FRENCH ARM

The French Arm was first opened with the establishment of the Azanian outpost at Nyotekundu (Wolf 359) in 2141. Serious exploration of the region did not begin, however, until after the ratification of the Melbourne Accords by the member states of the ESA. The Arm extends from Sol to Nyotekundu, Bessieres, Neubayern, Augereau, DM + 74 456, and Queen Alice's Star to Kimanjano, the first major branch in the Arm. One branch extends to Beta Canum Venaticorum, justly described as "the crossroads of the frontier." Strategically located at a travel hub on the Arm, Beta Canum also boasts one of the only beanstalks in existence which makes it a tremendously valuable center of trade and commerce.

From Beta Canum, the French Arm splits into two branches, one being the fertile Ursae Majoris Corridor, the other being the route through DM + 36 2219 and to Vogelheim, DM + 27 2219, and Ross 627. Although this second branch has not proven as fertile as the Ursae Majoris Corridor, the first surveys of DM + 27 28217 resulting in contact with the Pentapods in 2251 AD. An aquatic race which has developed a technology based on bioengineering instead of material fabrication, the Pentapods are technologically advanced in ways not completely compatible with humans. Although previously only marginally interested in stellar exploration, the first contacts with humans sent shock waves of excitement throughout Pentapod society and they have embraced contact with Terrans wholeheartedly. There is now a Pentapod enclave in the oceans of Beta Canum and bioengineered products

for human consumption are beginning to appear.

The remaining branch of the French Arm extends from Kimanjano to the colony worlds of Beta Comae Berenices, Hochbaden, and Eta Bootis. Affairs on this Arm have been dominated for the last three years by the increasingly violent war with the Kafers. First contacted in 2295 by an exploratory party to the Arcturus system, very little is known about this race. The next major incident in human-Kafer relations came with the destruction of the French research outpost in the Arcturus system in 2297 and the subsequent attacks on merchant and military vessels entering that system. So far as is known all 173 men and women on duty at the French outpost were killed in the initial attack. In 2298, a large Kafer invasion squadron entered Eta Bootis. Although Ukrainian and Imperial French naval reinforcements had been dispatched to the system as a precaution, the early battles went in favor of the Kafers due to superior numbers. All satellites in orbit around Eta Bootis were destroyed, including the three operational solar power arrays. Close orbit was captured and infested with Kafer surveillance and defensive craft, and ground troops were landed.

Although relations between Germany and France remain stormy, the obvious crisis at Eta Bootis prompted the dispatch of a German naval squadron which, along with French and Ukrainian reinforcements, managed to drive the Kafer star fleet from the Eta Bootis system. Although the human defenders on the surface of the planet were relieved, surviving Kafer ground troops continue to strike from wilderness bases at outlying settlements in sudden, savage assaults. Understanding an alien race is difficult enough when all of the data is immediately available; ther Kafers present a special and on-going puzzle because there is no formal contact with the race, and no Kafer has ever been captured for study and analysis. Virtually nothing is known about their society and government, and very little is understood about their physiology.

FINGERS

The American Arm appears to be tapped out; the stars that can be reached along it within fifty light-years of Sol are limited. The French and Chinese Arms, however, extend infinitely. From the main branches can be found fingers that are exploited by smaller nations looking for their own worlds to settle and explore.

The Canadian Finger: Canadian explorers were the first to chart the system of DM + 20 5046, a distant but attractive system. In order to support a colonization effort, Canada found it necessary to establish a series of outposts (DM + 19 5116 and DM + 15 4733) to service ships travelling there. The series of systems is called the Canadian Finger. The finger also leads to a relatively pleasant planet at AC + 17 534-105, which gives the Canadians a good claim to exploiting that world as well.

The Latin Finger: Extending from Epsilon Eridani is a finite branch which reaches as far as Procyon before dead-ending. Paradoxically, the route to Procyon (so very close to Earth) is one of the longest in general use. The expedition to colonize Omicron2 Eridani was jointly funded and supported by Mexico and Argentina and the world is a gateway to the Latin worlds: DM-3 1123 (the Inca Republic, Texas, and a charity program conducted by the Life Foundation), and Procyon (Brazil).

Frontiers: The French Arm is replete with fingers, together known as the Frontiers. Their reach is still uncharted and their potential is still unrealized. Explorations beyond settled systems has brought contact with the Pentapods and the Kafers; the possibility of new contacts is real and immediate. For this reason most nations exhibit caution in their explorations.

Frontier fingers from the French Arm reach out to Arcturus, Gamma Virginis, and beyond into uncharted stellar territory.
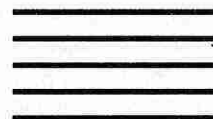
Foundations

Governments provide a variety of services for their citizens; how much they provide in the way of services depends on the prosperity of a nation's economy and the extent of the government's power. Throughout the 19th and 20th centuries, governments increased their services, gradually making government a major employer, a major supporter of research, and a major regulator of industry and commerce.

World War III changed all that. Governments collapsed; anarchy reigned in large areas of Europe, Asia, and America. Populations brought up to depend on their governments for pensions, employment, quality control, laws, regulations, public services, utilities, and hundreds of other vital services were put on their own. Those who could handle personal independence survived; those who couldn't died.

But some services can't be provided individually. Research support, higher education, standards for product quality, are all best provided under a centralized system. When government couldn't provide a valuable service, or stopped providing it, foundations were established to take over.

THE FOUNDATIONS

Foundations and their activities cover the entire spectrum of human activity. What each individual foundation has roots and interests in varies greatly, however, so that there is no typical explanation of them. In fact, it can be said that there are as many different types of foundations as there are foundations. What follows are descriptions of several of the more influential foundations—there are many others not in this listing.

THE ROYAL SOCIETY

Britain's climb back from the destruction of nuclear war was a long and troubled one—the English did not get back on their feet until long after other Europeans had done so. However, with the help of the European Space Agency (of which Great Britain was a charter member), and finally great wealth from holdings on Alpha Centauri, a period of renaissance came home to England, and has lasted for almost a hundred years.

An age reminiscent of the nineteenth century has emerged in England—a large upper-middle and upper class have gained back much of the pride Britains had lacked in the twentieth and twenty-first centuries, as wealth poured in from new Commonwealth territories on distant worlds. England ruled the waves once again—gravity waves, to be sure, but waves nonetheless.

The Royal Society is the chief catalyst in English interstellar ac-

tivities. The Royal Society has the blessing of the Royal Family, the tolerance of the parliamentary government, and the endowments and popular support of all of England to promote all sorts of colonial and exploratory expeditions on the frontier.

ACCADEMIA DEI LINCEI

Originally an Italian foundation concerned with the reconstruction on the peninsula, the Accademia has had a troubled history, to be sure. Once a relatively stable government was restored to Italy, the Accademia began a controversial campaign, forming their own political party, in fact. Their platform was based heavily on the return to ancient morals and values, and a revitalization of a Christian Roman Empire.

However, political opposition to this proposal brought the Accademia to its knees in the 2180s, and nearly wiped it out of existence. Now, under a completely apolitical board of trustees, the Accademia has turned to the quest for antiquity, its artifacts, its ideals, and its knowledge, making it an almost totally Earth-centered foundation.

THE LIFE FOUNDATION

Devoted solely to colonization, the Life Foundation has its beginnings in the initial colonization efforts on Alpha Centauri. Grants are provided to willing and talented individuals who wish to colonize other worlds, but who might otherwise have not been able to do so due to national or economic considerations. In its beginning years, Life Foundation was at the services of nations seeking particular individuals and skills which might have been in short supply. From that base, Life has become its own entity, promoting colonization in all of human space.

The Life Foundation's greatest achievement has been the colonization effort on DM+4 1123 on the route from Montana to Procyon, an effort solely accomplished using the Foundation's assets.

INSTITUTO NACIONAL DE ASTRONOMIA PRACTICA

Argentine and Mexican militarism of the 21st century (brought to its crest by the Antarctic Incident with Great Britain in 2188) has had a marked impact on those nations ever since. The Instituto Nacional de Astronomia Practica was established by the governments of those nations in the 22nd century, as their only viable response to a losing race to the stars. Of course, the Instituto had heavy militaristic overtones at its conception, and that has changed little since that time.

Instituto activities center mainly on the exploration of the Montana-Procyon branch. With the help of other Central and South American powers (chiefly the Incas, though they had a falling out with the Instituto in 2277 over economic issues) the Instituto has begun a couple of budding colonies, mostly with the use of surplus colony ships purchased from already established European powers.

NORTH AMERICAN RESEARCH LEAGUE

The United States has always been known as a very liberal, humanitarian country, even as far back as the 20th century. Organizations of that era concerned with ecological and moral issues abounded, and most were in league with international efforts seeking similar ends. Confrontations between these groups and government forces provided plenty of headlines and produced at least some success. The International Whaling Ban signed by every nation on Earth on October 3, 1993, was the largest achievement of these groups, and was the force which united nearly all of them into one coherent force—the North American Research League.

The name North American was derived from the chief source of charitable support for the organization at its conception. However, today the League enjoys international, indeed interstellar support of its activities to keep planetary ecologies safe from over-exploitation and the negotiation of national disputes in an attempt to avoid armed clashes. Though employing sometimes unorthodox tactics, the League and its far-flung membership can be found pursuing peaceful solutions to critical situations in all corners of human space. Their most interesting operation to date was their successful mobilization of world opinion to free the Xiang slaves from the Sung on DM+4 123, in direct opposition to an embarrassed Manchurian assurance to the contrary.

FOUNDATION FOR PRACTICAL KNOWLEDGE

In the shadow of its older brother, the Royal Society, the Foundation for Practical Knowledge is a much more academic approach to scientific endeavors. Created in the minds of university intellectuals in the British Alpha Centauri colonies, the FPK organized a successful peaceful secession from Great Britain in 2277, making the Commonwealth Nation of Wellon.

The FPKs roots are in Wellon, and in the intellectual pursuits of its founding fathers. While many operations on the frontier are funded by the FPK, it is usually the Royal Society or an independent contractor who provides the men and equipment for the expedition.

ALBERTA FARMERS' COOPERATIVE

Alberta's great expanses withstood the collapse of government relatively easily (roads already existed; crime was not a major problem). Farmers, however, needed markets for their produce and established the Alberta Farmers' Cooperative to aggressively find them. The AFC reached into Eastern Canada and south into Montana and Idaho, not only selling grain, but also providing transportation and even quality guarantees. Profits were shared with the producers, but enough profit was retained to endow the AFC with capital to support long-range programs. As the political situation stabilized and government re-emerged, the AFC relinquished much of its authority, but retained a long-range mission to support the agriculture of Alberta through research and marketing. Today the AFC has a major role in the exploitation of new-found worlds along the Canadian branch of the Manchurian Arm.

ZAPOMOGA

In the devastated areas of Europe, refugees placed great burdens on the isolated city-states, often asking for or needing more than could be provided. In Poland, several city-states established their own refugee relief organization which determined what was available and the priorities for providing it. Zapomoga originally provided food and temporary shelter; later it also provided direction and tools to help refugees settle vacant land. Zapomoga's mission gradually changed as the organization directed Europeans to settlements in Africa, Asia, and South America, and later directed Earthers to colonies on distant worlds.

ASTRONOMISCHEN RECHEN-INSTITUT

Pure research establishments are organized to pursue goals that governments cannot or will not. Often, the results of pure research are decades away, governments have more pressing problems, and businesses are not able to invest the capital necessary to produce results. The Bavarian Astronomischen Rechen-Institut was originally part of the University of Heidelburg; endowed by Azania with tantalum (and funding) to support a squadron of interstellar scouts, the Institut is a foundation pursuing pure research into the nature of stars and their planetary systems.

The Rechen-Institut sponsors exploratory missions to strange star systems and phenomenon within reasonable distances. Most of these are directed at the immediate frontier systems. However, most interesting astronomical items are far beyond human space. At present there are several expeditions operating beyond fifty light-years from Sol. Many of these expeditions are not expected to return with results for more than a decade.

FOUNDATIONS AND PLAYERS

Players are likely to come into contact with foundations from many directions. Foundations have great influence in the affairs on many worlds, and hardly an independent exploratory expedition is launched which hasn't sold the film and publication rights to a foundation in return for financial assistance.

Foundations Seeking Players: A foundation is always in need of independent hirelings for a variety of tasks. Foundations themselves do not employ enormous numbers of people, but instead contract much of their work to outsiders. This is where the player characters fit in.

A foundation interested in charting a new system or systems, for example, might approach any group of player characters with a ship or with the right skills and ask for their help. Missions of this sort are generally quite well paying, and for good reason—they are usually quite dangerous. Exploratory missions are not for the careless—direct contact with alien worlds is always a dangerous proposition.

Players Seeking Foundations: Players might seek a foundation for financial backing on a particular project, say research or exploration. The chances of a foundation taking on the player characters on such a proposal relies on three things—the interesting aspects of the mission to be undertaken, the reputation of the player characters, and the amount of money involved. They might be very interested in taking on experienced player characters who have very interesting ideas that will cost only a few thousand livres. They will probably not take on inexperienced player characters who have relatively uninteresting ideas which will cost millions to produce.

Documentation: Remember that vast amounts of the capital taken in by a foundation is the sale of interesting photographs and stories to the masses in the core. Interesting missions, desperate adventures, and heroic exploits are what they are after, because that's what sells back on Earth. This means that almost every foundation-backed mission will have assigned to it a camera crew and journalists documenting every move made.
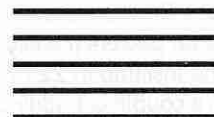
Character Generation

Every **Traveller: 2300** player participates through his *character*. Where the player is the actor in the drama of the game, character is the part, literally the role in the role-playing game. And like roles in drama, the player and the character are different.

Any person who wants to play needs a character.

Characters are generated with a degree of randomness in order to make each new one unique and interesting. However, the procedure of character generation is under the direction of the player himself, and the player's decisions shape the abilities and the skills that the character has.

Overview: Character generation is conducted by the player in a series of steps.

A homeworld is selected, which in turn determines the character's background and the gravity level in which he developed.

The player selects a basic body type for the character.

Physical and psychological attributes (numerical values) are generated using dice and various modifications.

The player selects a career field and finds how long the character spends in it. The time spent in the career determines a quantity of career points, which can be spent to acquire skills for the character.

It is possible to change careers once during the process.

At the end of career resolution, the player determines several secondary characteristics, including age, birthplace, mass, nationality, and native language.

Traveller: 2300 characters are defined using a series of attributes and skills, normally defined in numerical form. The exceptions to this general rule are the various background attributes, consisting of homeworld background and body type. Homeworld background is defined as Core or Frontier world, and the gravity type in which the character grew up. Body type, described more completely below, is a single word definition of the character's overall physical structure. The eight other basic attributes are divided into two distinct catagories—physical and psychological. There are four physical attributes—size, strength, dexterity, and physical endurance. There are four psychological attributes—determination, intelligence, eloquence, and education.

For ease in generating characters, a character data record is provided in the forms booklet; once generation is complete, the data is recorded on the character data record.

CHARACTER BACKGROUND

The first decision that must be made for a character is the definition of his homeworld. There are two broad types of homeworlds—Core and Frontier. Core worlds are those worlds at the center and hub of human civilization. Character's from this background will generally have had access to better educational facilities and be better versed in urban situations. Frontier worlds represent those worlds on the edge of explored space. Characters from this background will have had more exposure to the survival type activities encountered on these more primitive worlds. The choice of homeworld determines the gravity type to which the character is accustomed, as well as determining what kinds of background skills are applicable.

The next decision made for a character's background is the gravity type of the homeworld. There are four possible choices: high, normal, low, and zero-G. A character from the Core can choose either normal or zero-G. One from the Frontier can choose from any of the four categories. Gravity type limits body type choice, as well as determines a character's physical performance in different gravitational environments.

There are four categories of body type which must be chosen by the creating player (or the referee in the case of non-player characters). These are very general descriptions of human physical makeup, and are termed mesomorph, ectomorph, endomorph, and normal.

Mesomorph: A mesomorph tends toward being very muscular and husky. Mesomorphs will be quite strong, but usually make up for this with a slight deficiency in physical dexterity. The generally tall and wide stature of a mesomorph make him especially adept at such
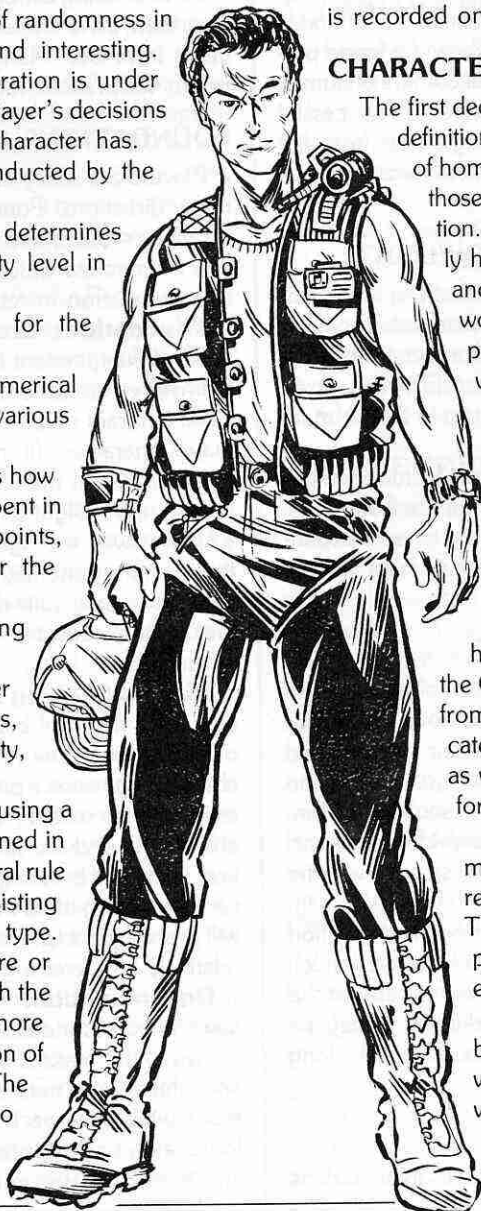
tasks as lifting and threatening, but unacceptable as aircraft pilots and many other space, air, and ground vehicle operations.

Ectomorph: The opposite of a mesomorph, an ectomorph tends toward being tall and slender, possessing very slight muscle mass. Ectomorphic individuals are usually quite agile, able to maneuver themselves and manipulate objects with great skill. Typical professions for ectomorph include starship personnel, engineers and mechanics.

Endomorph: Endomorphs are short and stocky, often possessed of increased constitution, though at the expense of dexterity. Endomorphs display great physical endurance, able to put their bulk and size to good use. Endomorphs do not do well in the confines of space and air vehicles, but are quite adept at most other tasks. However, since endomorphs suffer less from the effects of extreme gravity and acceleration, they do at times make excellent fighter pilots

Normal: A normal individual is just that. He is average in all respects, and can be expected to perform nearly every task with some degree of success.

Body type choice is dependant upon homeworld gravity type chosen above. A character from a zero-G environment can be an Ectomorph or Normal. One from a light gravity world can be an Ectomorph, Normal or a Mesomorph. A character from a heavy gravity world can be Normal, an Endomorph, or a Mesomorph. A normal gravity world will allow the character to choose from all four body types.

A body type is chosen by the player with an eye towards the net effects that type has on his other attributes, as described below. For instance, a player wishing to have a fighter pilot character should choose endomorph. One wanting a strong fighter might instead pick a mesomorph. The choice is the player's, and it must be made prior to rolling of other attributes.

PHYSICAL ATTRIBUTES

Physical attributes are associated with the physical size and strengths of an individual. They range in value from 1 to 20. The 4D6-4 die roll called for with size, dexterity, and endurance produces a result ranging from 0 to 20. Throw 4D6 and subtract four from the result. If a zero result occurs, reroll.

Size: Throw 4D6-4 for size. Size reflects the relative bulk of the individual within his particular body type peer group. A mesomorph or endomorph will mass more than an ectomorph if all three have the same size value.

Strength: Compute strength using size plus the physical attributes table value for body type. To compute the strength of an individual, the player merely modifies the size value of the character by the number dictated by his body type, as given on the physical attributes table. For instance, a mesomorphic character with a size of 12 will have (12+4) 16 for his strength attribute.

Dexterity: Throw 4D6-4 plus physical attributes table value for body type. For example, an endomorphic character rolling 6 would have (6-1) 5 for dexterity.

Physical Endurance: Like dexterity, physical endurance is rolled using 4D6-4 and

modified by body type per the physical attributes table. An endomorphic character rolling 9 would have (9+3) 12 for her physical endurance attribute.

PSYCHOLOGICAL ATTRIBUTES

Psychological attributes reflect the mental abilities of the character. All four are created using 4D6-4, but only education is subject to modifiers.

Determination: Perhaps the single most important psychological attribute, determination is generated using 4D6-4. There are no modifiers for determination.

Intelligence: Intelligence is rolled with 4D6-4. There are no modifiers for intelligence.

Eloquence: The ability to communicate one's ideas by a variety of media; eloquence is determined by rolling 4D6-4. There are no modifiers for eloquence.

Education: Education is rolled using 4D6-4, and is modified by the education modifiers table. Determination and intelligence both produce modifiers which are then added together and applied to the throw for education. For example, intelligence 16 produces a modifier of +4, and determination 8 produces a modifier of -1. The two modifiers are added (+4 plus -1 equals +3) and added to the education throw to determine education.

Education is not a strict equivalence to the amount of time spent in school; highly motivated people (with high determination) and highly intelligent people (with high intelligence) get more out of the educational process than do others. The opposite is also true.

Re-rolling: Some attributes may, through the random luck of the die roll, appear unsatisfactory, and it is possible to re-roll some of them. After all eight numerical attributes have been generated, the player may re-roll any one physical attribute and any one psychological attribute. The player may choose to keep either the new number or the old. Note that strength cannot be re-rolled, but it will certainly change if size changes. Each attribute not re-rolled must be checked against the new attributes to see that the proper modifiers have been used.

Filling in Strength and Dexterity: Once final numbers have been established for the gravity of the character's homeworld, strength and dexterity numbers need to be filled out for the three other gravity types. This is accomplished with the help of the gravity table on the character generation chart.

SKILLS

Beyond their basic attributes, characters will have a variety of skills. Skills are used throughout the game when the characters are called upon to perform tasks and resolve problems. Since skills are such an important aspect of play, their choice, and the choice of career, should be given much thought prior to generation.

In **Traveller: 2300**, skills are represented by a number from zero to ten, with zero only a bare familiarization with a particular area and ten representing extreme proficiency in the area in question. A list of possible skills has been provided. Please note that these skills are grouped into rough classifications for convenience. This list is not exhaustive; it can be expanded as needed.

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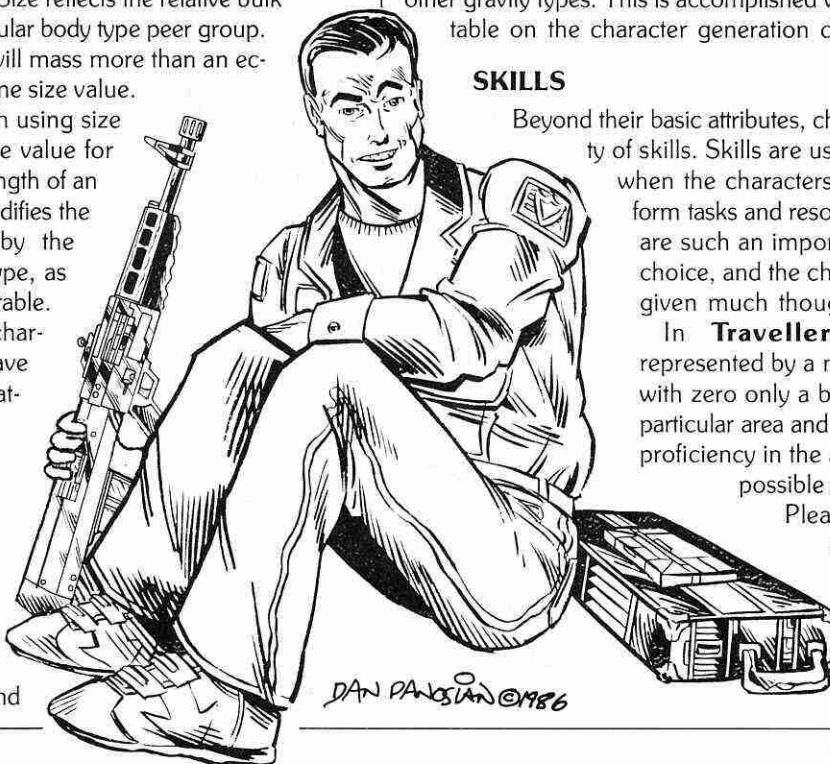
SKILL PURCHASE

Characters buy skills using skill points which they receive during their careers and training. Background skills are purchased using points provided by education; background skill points equals education divided by two (round fractions up). Career skills are purchased using points provided by the career; one point is received for each year spent in the career (but modified by determination and intelligence).

Skill levels are bought independently, and each requires the previous level as a prerequisite. For example, a character must have unarmed combat 2 before he can buy unarmed combat 3; he cannot buy unarmed combat 4 until he has bought unarmed combat 3.

Skill levels cost one half their level (round fractions up) in skill points. However, skill levels 0 and 1 each cost 1 skill point.

BACKGROUND SKILLS

Background skill points equal the character's education divided by two.

Characters from the Core can spend the points on any core skills; characters from the Frontier can spend them on any frontier skills. Points not spent are lost; they cannot be applied to other skills.

Referees may permit players to spend career skill points on background skills.

CAREER SKILLS

Career skills are purchased by a character who is pursuing a specific career. Each career description indicates the skills which can be learned in that career, plus any restrictions on acquisition of those skills.

Initial Training: When a character first enters a career, he undergoes initial training, and is provided an allowance of skill points for use in specified important skills. These skill points must be spent immediately on the skills indicated. They may not be spent on other skills, and if they are not used during character generation they are lost. In effect, initial training raises skill levels to a minimum level, but can rarely be used to increase levels above a minimum.

Career Skills: A career is divided into a series of periods, each separated by a turning point. When a turning point is reached, available career skill points are counted and must then be spent on career skills.

A character receives one career skill point for each year since beginning the career or since the last turning point. If the sum of intelligence and determination is less than 10, reduce the career skill points by -2 (but never to less than 1). If the sum of intelligence and determination is greater than 30, increase the career skill points by +2.

Careers present skills as primary and related skills. Skills not mentioned are unrelated skills. Primary skills represent those skills that make up the lion's share of a career. Related skills are those skills that are more auxiliary in nature, but still useful to a career. Unrelated skills are all other skills.

Primary skills are purchased normally. Related skills are purchased at double cost (if listed as costing 1 point, it would cost 2). Unrelated skills are purchased at triple cost (a 1 point skill would cost 3 points).

TURNING POINTS

Turning points occur every 1D10 years during a character's career. Upon starting a career, the player throws 1D10 and finds the number of years spent in the career until the first turning point. That number for years equals the number of skill points that are available for skill purchase. Once the skills have been bought, the turning point is resolved.

Passing a turning point is a task.

To pass a turning point. Easy. Determination. Instant.

Successfully passing a turning point allows the character to continue in the career; failure forces the character to end the career and end character generation.

Each turning point after the first becomes successively more difficult. The first is easy, the second is routine, the third is difficult, the fourth is formidable, and the fifth is impossible. No character can pass the fifth turning point.

After each turning point is passed, the character rolls 1D10 to determine the number of years until the next turning point. Skill points are counted and spent, and the task of passing the next turning point is undertaken.

Career Changes: A character can change careers once in a lifetime. The individual must successfully pass a turning point. He can then state that he is starting a new career, select it, and begin its initial training.

A character who has failed to pass a turning point cannot select a new career.

FINALIZING THE CHARACTER

When a player decides to terminate character generation (by choice, or because a turning point was not successfully passed), the character can then be finalized. The following secondary attributes are determined: eyesight, hearing, appearance, age, mass, nationality, birthplace, languages known, encumbrance, throw range, coolness under fire, money, and consciousness and life levels. The character generation charts show how to compute the proper values.

Life Levels: Combat requires consciousness and life levels for characters; consciousness level equals size divided by 20 (round results down); life level equals size divided by 10 (round results down).

Age: Age equals the length of time spent in careers plus 18. Add +1 if the character changed careers.

Nationality: A character may select any human nationality present on the character's birthworld.

Money: Upon mustering out of any career, a character receives a money amount based on years in service. Add all the years spent in service (character age minus 18), and multiply by Lv1000. This is the amount of money which the character begins the game with. Equipment may be purchased with this money.
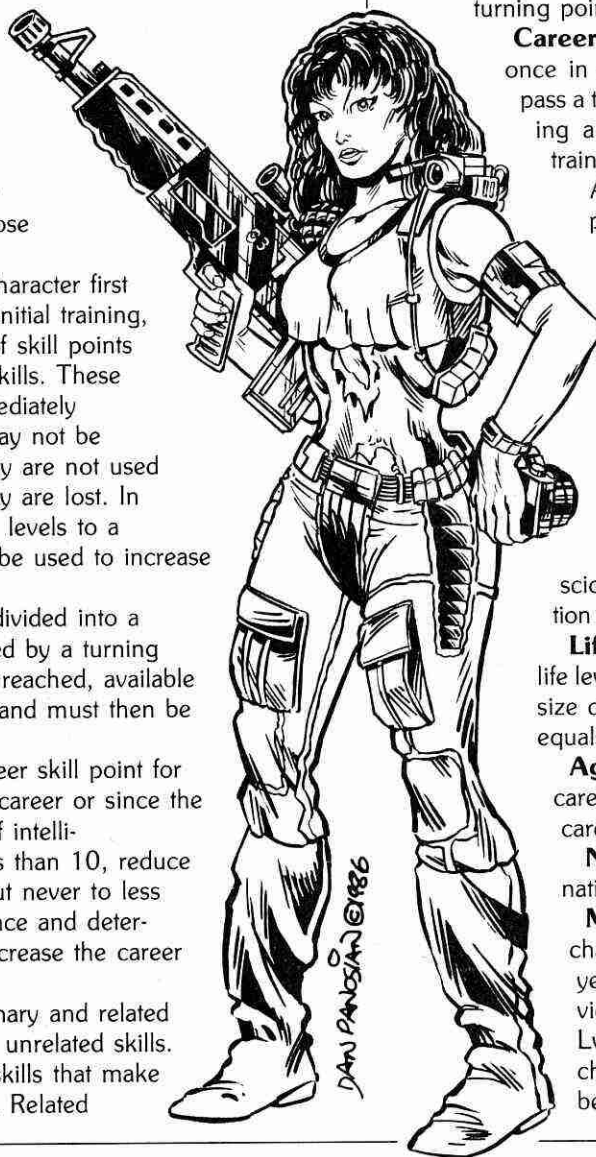
Character Generation

HOMEWORLD

1D10	Core/Frontier	Frontier	Core
0	Core	Zero-G	Zero-G
1	Core	Zero-G	Zero-G
2	Core	Low-G	Normal
3	Frontier	Low-G	Normal
4	Frontier	Low-G	Normal
5	Frontier	Normal	Normal
6	Frontier	Normal	Normal
7	Frontier	Normal	Normal
8	Frontier	High-G	Normal
9	Frontier	High-G	Normal

This table is optional. The player may select specific homeworld gravity and core/frontier type instead.

BODY TYPE

1D10	Zero	Low	Normal	High
1	Ecto	Ecto	Ecto	Endo
2	Ecto	Ecto	Ecto	Endo
2	Ecto	Ecto	Endo	Endo
4	Ecto	Normal	Endo	Normal
5	Ecto	Normal	Normal	Normal
6	Normal	Normal	Normal	Normal
7	Normal	Normal	Normal	Normal
8	Normal	Meso	Normal	Meso
9	Normal	Meso	Meso	Meso
10	Normal	Meso	Meso	Meso

This table is optional. The player may select a specific body type, but only corresponding to his gravity background.

PHYSICAL ATTRIBUTES

Body Type	Stren	Dext	Endur
Mesomorph	+4	−2	+2
Ectomorph	−2	+3	0
Endomorph	+1	−1	+3
Normal	0	0	0

EDUCATION MODIFIERS

If Intelligence or Determination is...	Change Education by...
1 to 4	−4
5 or 6	−3
7 or 8	−2
9 or 10	0
11 or 12	+1
13 or 14	+2
15 to 20	+4

Note: Consult this table once for intelligence and once for determination.

CAREER SKILL POINTS

A character receives one skill point for each year spent prior to a turning point.

If intelligence plus determination is less than 10, subtract two career skill points (but the number available is never less than 1).

If intelligence plus determination is more than 30, add two career skill points.

GRAVITY TABLE (STRENGTH)

	Gravity of Homeworld			
	Zero-G	Low-G	Normal	High-G
Zero-G	0	+1	+1	+4
Low-G	−1	0	+1	+2
Normal	−2	−1	0	+1
High-G	−4	−2	−1	0

GRAVITY TABLE (DEXTERITY)

	Gravity of Homeworld			
	Zero-G	Low-G	Normal	High-G
Zero-G	0	−1	−2	−4
Low-G	+1	0	−1	−2
Normal	+2	+1	0	−1
High-G	+4	+2	+1	0

BACKGROUND SKILLS

Background skill points equal education divided by 2 (round fractions up).

Frontier Skills: Combat Rifleman, Sidearm, Melee, Ground Vehicle, Hover Vehicle, Sea Vehicle, First Aid, Survival, Electronic, Mechanical, Riding, Prospecting, Swim, Vacc Suit.

Core Skills: Computer, Ground Vehicle, Hover Vehicle, Sea Vehicle, Bureaucracy, Information Gathering.

SPECIAL ATTRIBUTES

Characters have special attributes:

Mass: Mass (in kilograms) begins with a base of 50 plus 3 times size. If mesomorph, add +35; if endomorph, add +20; if ectomorph, subtract −20.

Coolness Under Fire: Throw 1D6 and add +1 for each turning point in a military, law enforcement, field agent, or extralegal career.

Throw Range: Strength times 8 gives throw range (for a 1 kg object) in meters.

Encumbrance: Twice the sum of size plus strength is the limit of carrying capacity in kilograms.

Money: Character has Lv1,000 times the number of years spent in service.

Nationality: Taken from any available on homeworld.

SECONDARY ATTRIBUTES

1D10	Eyesight/Hearing	Appearance
0	Average	Unattractive
1	Average	Plain
2	Average	Plain
3	Average	Good Looking
4	Average	Good Looking
5	Average	Good Looking
6	Average	Good Looking
7	Excellent	Attractive
8	Excellent	Attractive
9	Exceptional	Exceptional

CHARACTER GENERATION CHECKLIST

1. Select Homeworld.
   A. Determine if core or frontier.
   B. Find homeworld gravity.
2. Select Body Type.
3. Generate Attributes.
   A. Physical Attributes.
      1) Size. 4D6−4.
      2) Strength. Size+physical attributes table.
      3) Dexterity. 4D6−4+physical attributes table.
      4) Endurance. 4D6−4+physical attributes table.
   B. Psychological Attributes.
      1) Determination. 4D6−4.
      2) Intelligence. 4D6−4.
      3) Eloquence. 4D6−4.
      4) Education. 4D6−4+education modifiers.
   C. Rerolling. Any one physical and one psychological attribute may be rerolled and the old or the new die roll may be selected.
   D. Determine strength and dexterity values in alternate gravities.
4. Background Skills.
   A. Background skill points equal education divided by 2.
   B. Select background skills.
5. Career Skills.
   A. Select Career.
   B. Receive initial training.
   C. Throw years to turning point (1D10).
      1) Career skill points equals years.
      2) Apply career skill point modifiers.
      3) Select skills.
      4) Resolve turning point.
      5) If success, go to next turning point.
      6) If failure, go to character finalization.
6. Character Finalization.
   A. Eyesight/Hearing/Appearance.
   B. Consciousness and Life Level.
   C. Age. 18+years in careers; add 1 if character had two careers.
   D. Mass.
   E. Nationality and languages.
   F. Coolness Under Fire.
   G. Throw Range (in meters).
   H. Encumbrance (in kilograms).
   I. Money.

LANGUAGES

Native language is determined by nationality. Government and civilian careers also provide French. Mercantile, space military, exploratory, and ship crew receive English. Academics receive one additional language of choice. Linguistics provides one language per level of skill.

Skills

The skills that a player purchases during character generation will guide that character's duties and occupations during game life. The following descriptions are intended to give players better understanding of exactly what a particular skill entails. It is also designed to help the referee govern his universe.

COMBAT SKILLS

Combat Rifleman: The character can operate infantry weapons. Combat rifleman applies to all rifles, grenade launchers, lasers, machineguns, and shotguns.

Sidearm: The character can operate small arms such as pistols. Sidearm applies to all handguns and stun guns.

Melee: The character can engage in unarmed combat. Particularly high levels of unarmed combat skill represent training in very advanced methods of the martial arts.

Demolitions: The character can use explosives. This includes the ability to select, place, and tamp the proper explosives to do a specific job.

Heavy Weapons: The character can operate infantry support weapons. Heavy Weapons applies to plasma guns, auto guns, and missiles.

Thrown Weapon: The character is trained in throwing weapons, such as knives or spears.

Forward Observer: The character has the ability to locate targets and relay the information to a rear firing position. A forward observer often uses a laser to "paint" a target for attack from a remote position.

Indirect Fire: The character can hit targets which are in range of his weapon but are out of his direct sight.

Leader: The character has the ability to lead men. He can make them do his bidding, and perhaps even make them want to do his bidding. A leader has an ability to handle numbers of people in such a way as to better perform a cooperative of teamwork tasks.

Tactics: The character knows how to control and plan battles. Tactics allows a character some

knowledge of what goes on in a modern hostile environment, and how to deal with it.

VEHICLE SKILLS

Ground Vehicle: Ground vehicles include automobiles, motorcycles, trucks, and any vehicle which operates on tracks. Most run on battery or hydrogen power cells.

Hover Vehicle: Hover vehicles are air cushion vehicles. Hover vehicles can cross any reasonably flat terrain and carry almost any load. Hover tanks are the most mobile vehicles in modern combat, on land or at sea (although heavy weather is still a problem for them).

Sea Vehicle: Water vehicles do more than float. While there are many slow moving craft plying the water oceans of many worlds, alternatives such as hydrofoils are fast, mobile, and useful.
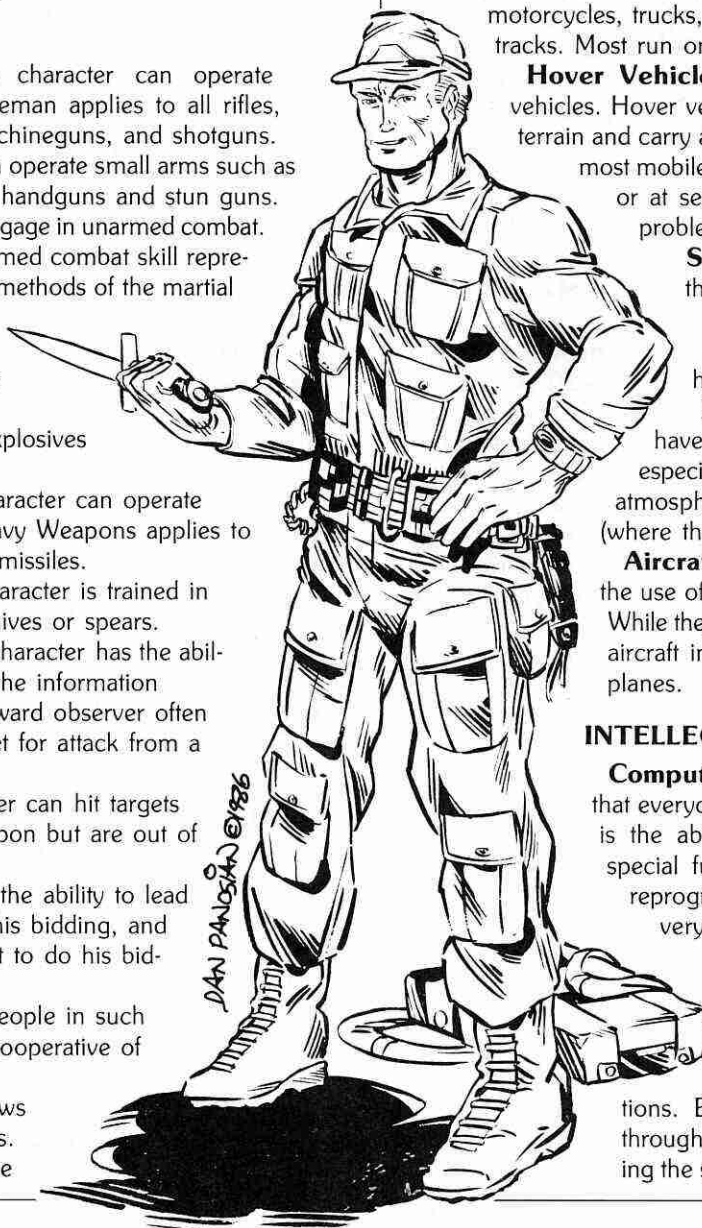
LTA Vehicle: Lighter-than-aircraft have gained prominence in cargo service, especially on high gravity worlds with dense atmospheres, and on worlds with little water (where they replace sea transport).

Aircraft Pilot: An aircraft pilot is trained in the use of any winged or heavier-than-aircraft. While they may specialize, they can handle any aircraft including interface shuttles or rocket planes.

INTELLECTUAL SKILLS

Computer: Computers are so commonplace that everyone can operate one. Computer skill is the ability to make a computer perform special functions, such as programming or reprogramming, or the ability to understand very complex machines, such as alien computers.

Bureaucracy: The character has experience in dealing with such complex organizations as governments and large corporations. Bureaucracy may be used to "cut through the red tape" of anything from dodging the starport officials to getting an appoint-

ment with just the right government official.

Information Gathering: The character has knowledge of where and how to look when he needs some particular piece of information. For example, information gathering is employed when trying to get information from institutions such as libraries or government offices.

JOURNALISTIC SKILLS

Imaging: The character knows operation and maintenance of general photographic equipment (including video and holographic devices), as well as the artistic aspect of their use.

Writing: The character has the ability to organize his thoughts coherently into words. Writing is a valuable skill in the academic, journalistic, and administrative fields.

UNDERWORLD SKILLS

Forgery: The character has the ability to fake or alter important documents or papers so that they may pass inspection unnoticed. Skill in both electronics and forgery might allow bypassing certain security devices (such as retina scans). The character will have some chance of spotting another forgery.

Streetwise: The character is skilled in understanding the local customs of a particular area or region. This gives the character a better chance of accomplishing tasks like finding out "the word on the street" or knowing where to find a particular person in a city.

Disguise: The character can alter his appearance in some way either to make himself seem as though he were another specific person or simply to not look like himself. In addition, the skill disguise will also help to detect or penetrate someone else's disguise.

Stealth: The character is skilled in the fine art of moving quietly, hiding in shadows, and generally avoiding attention. This skill is useful in anything to sneaking past a sleeping Kafer or evading a patrol of security officers.

SPACE CREW SKILLS

Pilot: The character is familiar with the operation of interstellar and interplanetary ships, but not interface vehicles.

Ship Drive Engineering: The character is skilled in the operation and maintenance of the powerful machinery necessary to propel starships through space.

Sensors: The character can operate the sensor work station on a starship effectively.

Communications: The character can operate the communications work station on a starship effectively.

Remote Pilot: The character can pilot a remote object, such as a missile or sensor drone. This skill is used during space combat.

Gunner: The character can operate laser or particle weapons in space combat.

ACADEMIC SKILLS

Academic skills provide a quantity of acquired knowledge in a particular area, which might become useful during play.

Astronomy: The study of stellar bodies, through observation and firsthand experience.

Biology: The study of life, terrestrial and extraterrestrial.

Chemistry: The study of chemical building blocks for alloy, material, and energy production purposes.

Geology: The study of planetary bodies and their components, plates, and makeup.

Physics: The study of Newtonian and relativistic physics and means of getting around them.

Linguistics: The study of language, its uses, its components, and how they come into use.

Psychology: The study of the mind, both human and non-human.

History: The study of human civilization. Branches are now studying alien histories, as well.

Anthropology: The study of civilizations. The discovery of alien species marks this as greatest age for this field.

Engineering: The knowledge of the use of tools and technology to attain a desired end.

Theoretical Sciences: The study of the cutting edge of technology, knowing something of what future possibilities hold, and having a better grasp of alien technology.

Medical: The study of human anatomy and health, used in the prevention of illness through chemical or bioengineering.

GENERAL SKILLS

First Aid: The character can carry out initial treatment of wounds, such as bandaging or setting fractures. The first aid skill is the equivalent of the medical skill, but it can be purchased to a maximum level of 2.

Survival: The character is trained to be able to live and operate in different hostile environments.

Electronic: The character can operate, repair, and manipulate various pieces of electronic equipment.

Mechanical: The character can maintain and repair certain pieces of mechanical equipment.

Riding: The character can ride and control various types of live mounts.

Prospecting: The character can use modern equipment to locate and process mineral deposits, either on a world's surface or in a belt or ring system.

Swim: Swimming has become a pastime of a bygone era. It is a specialized skill learned by only a few.

Vacc Suit: The character can handle himself very well in emergency situations in vacuum.

MERCANTILE SKILLS

Appraisal: The character can evaluate the probable fair market price of an object.

Trader: The characters can manipulate buying and selling cargoes through knowledge of the system.

Bargain: The character has the ability to haggle or bargain with a potential vendor.

OTHER SKILLS

New skills can be added to these lists by the referee and players as they see fit. If certain situations continuously appear in your game which are not covered by one of these skills, a new one might be in order. However, the creation of new skill categories should be considered carefully before implementation into your campaign.

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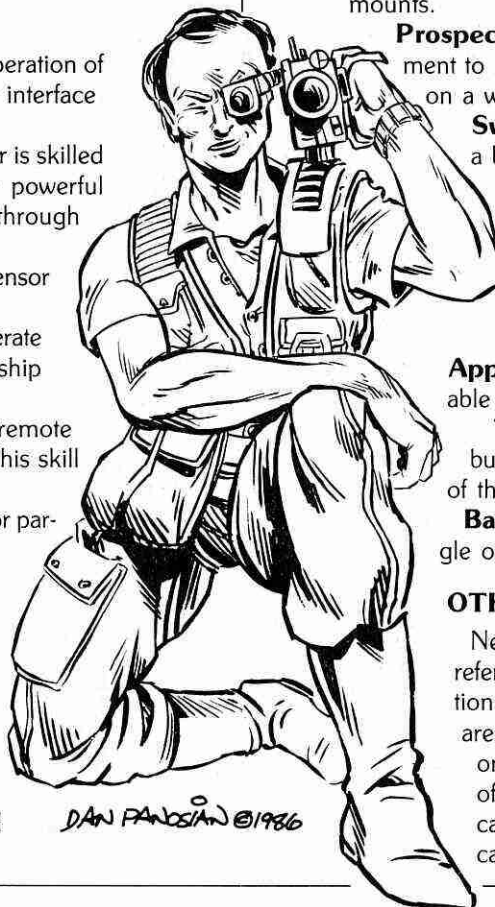
Careers

Once a character's basic attributes and background have been determined, he will then find it necessary to decide upon a career. When choosing a career for his character, a player should consider many things. One thing players should examine is the character's basic attributes. Obviously a character with a high strength and a very low intelligence would not be suited to an academic career, nor would a character with a very low communication excel in either the mercantile or journalistic fields. Another point to look at is the character's background.

MILITARY CAREERS

Ground Military: Military forces restricted to operations on the surfaces of worlds. The ground military gives its members training in combat, ground vehicle use, and basic survival skills.

Ground military personnel can be expected to be familiar with most forms of weaponry, body armor, and most ground vehicles.

Initial Training: Combat Rifleman-3, Heavy Weapons-2, Melee-3, Ground Vehicle-2, Demolitions-1, Survival-1.

Primary Skills: All Combat Skills, Ground Vehicle, Hover Vehicle, all General Skills.

Related Skills: Aircraft Pilot, Bureaucracy.

Sea Military: Concerned with operations on oceans of water, sea military personnel can pick up a variety of skills. Their duties involve the operations of water vehicles, most of which are of hydrofoil design, requiring very specialized skills for operation.

Initial Training: Combat Rifleman-2, Heavy Weapons-3, Melee-2, Sea Vehicle-3, Survival-1..

Primary Skills: All Combat Skills, Sea Vehicle, Hover Vehicle, all General Skills.

Related Skills: Aircraft Pilot, Bureaucracy.

Interface Military: The interface is that space between the surface of a world and its orbit. Personnel assigned to such operations will be familiar with various air and interface vehicles. Fighter pilots are considered to be interface military positions as are such fields as shuttle and space plane pilots.

Initial Training: Combat Rifleman-1, Sidearm-2, Aircraft Pilot-2, Mechanical-1, Electronic-1, Survival-2.

Primary Skills: All Combat Skills, Aircraft Pilot, all General Skills, Hover Vehicle.

Related Skills: Ground Vehicle, Bureaucracy.

Space Military: This includes all positions on spacecraft of a military nature. Gunners, pilots, remote pilots, engineers, medics, navigators, and computer operators are required on all military vessels. Also, security and ship's troops are assigned to ships—these will be heavily trained in advanced weaponry and zero-gravity combat methods.

Initial Training: Combat Rifleman-1, Sidearm-1, Melee-1, Mechanical-1, Electronic-1, Vacc-Suit-2.

Primary Skills: All Combat Skills, all Space Crew Skills.

Related Skills: Computer, all General Skills.

EXPLORATORY CAREERS

Scout: Initial survey of a system is done by scouts. These scouts use their ships and ship's sensors to detect the large scale characteristics of systems and worlds. Mapping and starcharting are their specialties, breaking new ground for exploratory teams and settlers. Scouts are also often the first to contact high-technology alien races.

Initial Training: Combat Rifleman-1, Sidearm-1, Melee-1, Mechanical-1, Electronic-1, Vacc-Suit-2.

Primary Skills: All Space Crew Skills, Chemistry, Biology, Geology, Astronomy, Physics, Survival.

Related Skills: All Combat Skills, all Vehicle Skills, all Mercantile Skills, Linguistics, History, Anthropology, Psychology, all General Skills.

Contact: Contact teams are sent to worlds which are particularly interesting as determined by a scout team. Contact personnel are well versed in various scientific areas such as biology, chemistry, linguistics, and anthropology. However, these skills are put to use in the field on an unknown
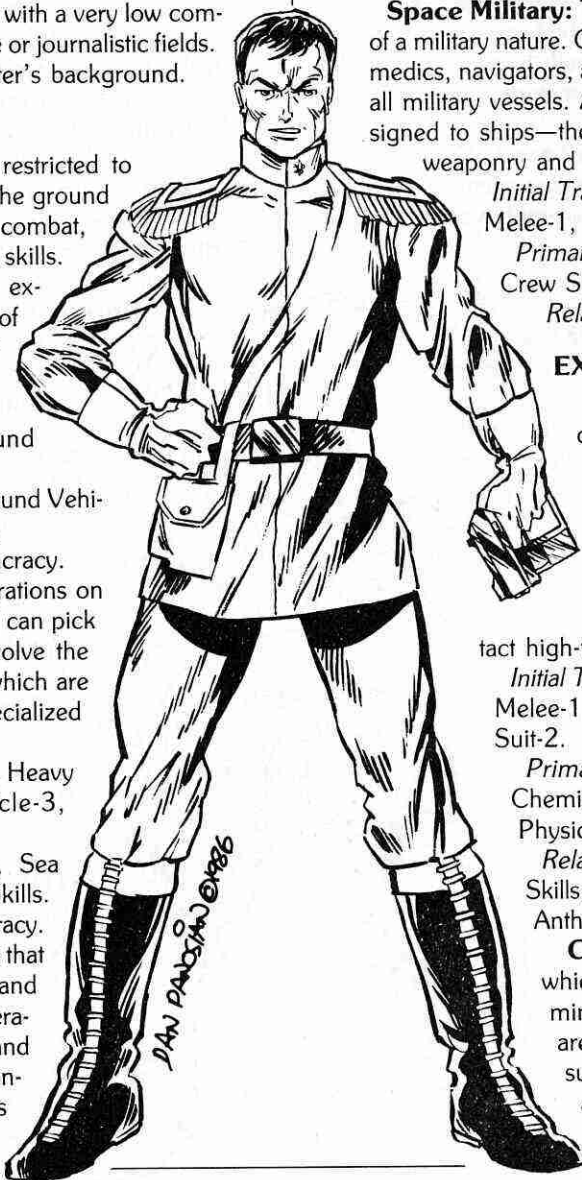
world far away from the academic life of a business or university.

Initial Training: Sidearm-1, Survival-3, Linguistics-2, Anthropology-1, Psychology-1, Vacc-Suit-2.

Primary Skills: Ground Vehicle, Hover Vehicle, Sea Vehicle, all Academic Skills.

Related Skills: all Intellectual Skills, all Journalistic Skills, all General Skills.

ACADEMIC CAREERS

Academics involves all forms of higher learning—specifically astronomy, biology, chemistry, geology, physics, linguistics, psychology, history, and anthropology. The academic pursuits usually involve grants from some government, business, foundation, or university which allow the individual to perform in-depth study or practical applications of knowledge already accumulated.

Initial Training: Computer-1, Bureaucracy-1, Information Gathering-2, Writing-1.

Primary Skills: One academic skill (below), all Intellectual Skills.

Related Skills: Two other academic skills (note below), Writing.

Note: The primary skill represents a major field of study which is chosen by the player upon hiring on, and is the only academic skill that can be purchased as a primary skill. The related academic skills represent minor fields of study and are also picked by the player upon hiring on.

COLONIAL CAREERS

Colonist: Life as a colonist on the frontier is in many ways like that of a pioneer in the New World. Luxuries are comparatively few, and one must rely heavily on one's own skills to make a home in a newfound environment.

Initial Training: Sidearm-1, Melee-2, Ground Vehicle-2, Sea Vehicle-1, Survival-2, First Aid-1, Swim-1, Vacc-Suit-1.

Primary Skills: All General Skills, all Vehicle Skills.

Related Skills: All Combat Skills, Biology, Chemistry, Geology, all Mercantile Skills.

Troubleshooter: Many corporations have interests on the frontier worlds. However, keeping in contact with them involves direct contact, which is quite unpalatable to an executive used to his metro office complex lifestyle on Earth. Troubleshooters are employed to bridge this gap—to investigate problems or potential problems on the frontier worlds and report back to corporation headquarters.

Initial Training: Combat Rifleman-1, Sidearm-1, Melee-3, Streetwise-2, Survival-1, Stealth-1, Vacc-Suit-2.

Primary Skills: All Combat Skills, all Vehicle Skills, all Underworld Skills, all General Skills, Information Gathering.

Related Skills: Computer, Bureaucracy, all Space Crew Skills, Psychology.

GOVERNMENT AND CIVILIAN CAREERS

Administrator: A government or corporate administrator leads a very cerebral life, usually in the core or in the bigger cities on the frontier. Their jobs range from information gathering and dissemination to business forecasting to product management.

Initial Training: Bureaucracy-3, Information Gathering-2, Writing-2, Psychology-1.

Primary Skills: All Intellectual Skills, Psychology.

Related Skills: All Journalistic Skills, all Underworld Skills, Appraisal.

Field Agent: For particularly nasty business, governments and corporations alike employ field agents. These are spies and information/disinformation experts used to enhance their employer's standing, often at the expense of their competitors.

Initial Training: Streetwise-2, Forgery-1, Information

Gathering-2, Computer-2, Sidearm-1, Melee-2, Bureaucracy-1, Stealth-1.

Primary Skills: All Underworld Skills, all Intellectual Skills, Melee, Sidearm, Psychology.

Related Skills: All Journalistic Skills, all General Skills, Demolitions, all Vehicle Skills.

Law Enforcement: Keeping the peace, whether in the core or on the frontier, requires a special type of law enforcement agent. Law enforcement officials are trained to handle dangerous situations using either psychology or weaponry.

Initial Training: Sidearm-2, Melee-2, Streetwise-1, Ground Vehicle-2, Psychology-1, Stealth-1.

Primary Skills: All Underworld Skills, all Intellectual Skills, all General Skills, Sidearm, Melee.

Related Skills: All Vehicle Skills, Psychology, all Journalistic Skills.

Journalist: Journalism has become much more sophisticated—cameras are shoulder mounted and microphones can be very easily concealed for either cosmetic or fraudulent purposes. However, the journalist's function remains virtually unchanged. Large broadcasting firms and foundations employ large numbers of journalists to bring in exotic news from human space.

Initial Training: Writing-3, Imaging-1, Information Gathering-2, Streetwise-1, Bureaucracy-1.

Primary Skills: All Journalistic Skills, all Intellectual Skills, Psychology.

Related Skills: All Underworld Skills, Linguistics, History.

Independent Trader: An independent trader either uses his own ship for mercantile activities or rents space on other ships for the same purpose. The goals are the same—purchase strange, exotic materials on the fringes of human space for sale to the hungry masses at the core.

Initial Training: Appraisal-2, Trader-2, Bargain-2, Bureaucracy-1, Streetwise-1.

Primary Skills: All Mercantile Skills, all Space Crew Skills.

Related Skills: All Underworld Skills, all Intellectual Skills, all General Skills, Sidearm, Melee.

SHIP CREW CAREERS

Spacecraft travel routinely between stars in the year 2300. It is therefore necessary to have people to operate and maintain these ships. These people are employed by governments, corporations, or even small trading companies. Because there is a great deal of time involved in space travel, most crews on starships learn to serve many different functions on board the ship.

Initial Training: Pilot-1, Ship Drive Engineering-1, Computer-1, Melee-2, Survival-1, Vacc-Suit-2.

Primary Skills: All Space Crew Skills, all General Skills, Melee, Sidearm.

*Related Skills:* All Underworld Skills, Combat Rifleman, all Mercantile Skills, Aircraft Pilot.

EXTRALEGAL CAREERS

Smuggler/Pirate: Criminal activities among the stars can have very rich rewards—hijacking a ship and selling it to someone willing to ignore its origin; smuggling illegal goods from star to star and misrepresenting cargo for customs purposes.

Initial Training: Combat Rifleman-1, Sidearm-2, Melee-2, Streetwise-2, Forgery-1, Computer-1, Survival-1.

Primary Skills: All Space Crew Skills, all Underworld Skills, all Mercantile Skills.

Related Skills: All Combat Skills, all General Skills, Information Gathering.
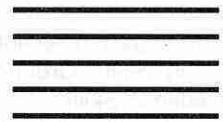
Equipment

The following equipment is generally available.

WILDERNESS SURVIVAL GEAR

Compact Rations: Each ration pack is a complete prepackaged fortified meal packaged in a serving tray. The meal is self-heating (or self-chilling for some dishes), the heating/cooling process being activated by breaking the seals and taking about thirty seconds. *Weight:* 1 kg *Price:* Lv5

Cold Climate Clothing: A lightweight adjustable body suit with hood, goggles and lower face cover. The suit contains a battery pack and internal heating elements with the ability to maintain a stable temperature down to temperatures of −20 degrees centigrade. Battery life is about eight hours under coldest conditions, but closer to thirty-six hours under more typical cool-weather conditions. *Weight:* 2 kg *Price:* Lv100 (More expensive versions are available for the fashion-conscious.)

Vacuum Suit: A close-fitting flexible suit with bubble helmet and battery-powered heating and air recycling life-support system. Life support unit duration is eight hours, but bottled oxygen can extend this up to twenty hours (maximum battery life). *Weight:* 15 kg *Armor:* 0.1 *Initiative:* -1 *Price:* Lv1,000

Hostile Environment Suit: A vacuum suit designed for use in particularly hostile environments (such as corrosive atmospheres, of radiological and toxic environments). The helmet is solid with audio and visual sensors linked to helmet monitors. *Weight:* 20 kg *Armor:* 0.4 *Initiative:* -2 *Price:* Lv2,000

Pressure Tent: An inflatable hemispheric tent with a radius of 2 meters. The tent includes a small airlock and life support system. The airlock can be detached for use on worlds with breathable atmospheres. *Weight:* 2 kg *Price:* Lv1,000

Biomonitor: The biomonitor is a broad-purpose monitor about 8 cm square and usually carried on the belt. It can give body function readouts for medical diagnosis, will monitor breathability of atmospheres (noting presence of various gasses, harmful pollens and other toxins), and can give a good analysis of edibility of local plant and animal tissue. *Weight:* 0.5 kg *Price:* Lv500

Biosampler: The biosampler is among the first Pentapod mass-produced bioengineered products for human consumption. It is a small animal chemically similar to a human being. It is programmed to determine toxicity or edibility of plant and animal tissue. Its simple output is that it will eat what is edible, if offered, and refuse what is inedible. Although its appearance is unimportant to its function, the Pentapods have, for marketing reasons, made it furry and given it a limited programmed semi-random behavior pattern to make it more appealing to humans. Although this pattern becomes predictable and repetitive after a while, they have become popular as children's pets on many frontier worlds. *Weight:* 0.5 kg *Price:* Lv20

TOOLS

Basic Tool Kit: Small hand tools suitable for a variety of purposes, including wrenches, pliers, screwdrivers, etc. *Weight:* 5 kg *Price:* Lv100

Power Hand Tools: A selection of power tools including a chainsaw, rotary saw, drill, and other electrical tools. Must have a power source to operate. *Weight:* 35 kg *Price:* Lv150

Vehicle Maintenance Tools: Specialized tools for repair and maintenance of vehicles. Includes torque wrenches, grease guns, engine calibration tools, etc. *Weight:* 10 kg *Price:* Lv150

Excavating Tools: Picks, shovels, mattocks, etc. *Weight:* 20 kg *Price:* Lv100

Construction Tools: Hammers, saws, squares, hatchets, chisels, and other woodworking tools. *Weight:* 30 kg *Price:* Lv100

Electronic Repair Tools: Specialized tools for work on electronic and photonic equipment. *Weight:* 3 kg *Price:* Lv300

SENSORS

Binoculars: Visual binoculars which incorporate thermal imaging for night visibility and limited visibility in fog, gyrostabilization for high magnification steadiness, and adjustable magnification from 5X through 20x. *Weight:* 1 kg *Price:* Lv200

Biocontacts: These are among the first Pentapod mass-produced bioengineered products for human consumption, and are widely distributed at fairly low prices both as a test marketing experiment and as a means of developing a distribution system for additional products. Biocontacts are transparent lenses worn in the eye. When purchased they are dormant and opaque. The purchaser must insert them and then keep his eyes closed and remain at rest for eight hours to activate the contacts and allow them to adapt to his body chemistry. (This is normally done during a sleep period). Once activated, the biocontacts are specific to the owner and will not function for anyone else. They can be removed and stored or kept in the eyes indefinitely. They draw nourishment from the owner's tears, and so must be stored in a special solution and the wearer needs to increase his fluid consumption slightly while wearing them for extended periods of time.

Biocontacts give the wearer enhanced infrared vision (for night vision) and squinting will give up to a 5X magnification. *Weight:*

insignificant *Price:* Lv500

Large Lifeform Detector: Actually, this is a moving point IR sensor which works as well on vehicles as lifeforms. Its short range makes it largely ineffective for military purposes, however, and it is designed to be cheap and portable for zoological field teams. *Weight:* 2 kg *Sensor Range:* 1,000 meters (+1) *Price:* Lv100

Remote Piloted Drone: This is a small battery-powered rotor-driven aerial sensor. It incorporates a television camera with up to 5X magnification and thermal imaging for night vision. The camera outputs directly to a monitor and a video recorder. The drone also includes a microphone for audio data and a large lifeform detector as described above. *Weight:* 10 kg *Sensor Range:* 1,000 meters (+1) *Signature:* 1 *Maximum Speed:* 200 kph *Cruise Speed:* 150 kph *Combat Movement:* 400 meters *Endurance:* 2 hours *Price::* Lv1,000

Basecamp Security Sensor: This is a multipurpose active/passive sensor suite designed to provide warning against intruders at remote sites. It must be attached to a vehicle powerplant or other power source. *Weight:* 50 kg *Sensor Range:* 5 kilometers (ground targets), 50 kilometers (aircraft) *Signature:* 3 *Price:* Lv20,000

SCIENTIFIC EQUIPMENT

Camera: A wide variety of still and video cameras are available to record observations. Cameras produce a nearly grainless digital image which is stored in a small memory chip and can be displayed on any computer. A single chip holds approximately 30,000 images. *Weight:* 1 kg *Price:* Lv300 (extra video chip costs Lv20)

Sampling Kit: A small kit carried by means of a shoulder strap used to take field samples and conduct quick analysis of any of a variety of substances. Sampling kits are available for soil, minerals, plants, and gas (atmosphere). *Weight:* 4 kg *Price::* Lv400

Remote Meteorological Station: A small data collection station for monitoring rainfall, humidity, atmospheric pressure, wind, and other meteorological and climatological data. These are generally cheap, unmanned sensors which record their data on a memory chip. Each chip can record a year's worth of data, although the station is usually visited more often than that. These are very useful in the early stages of a survey of a habitable world. *Weight:* 5 kg *Price:* Lv200
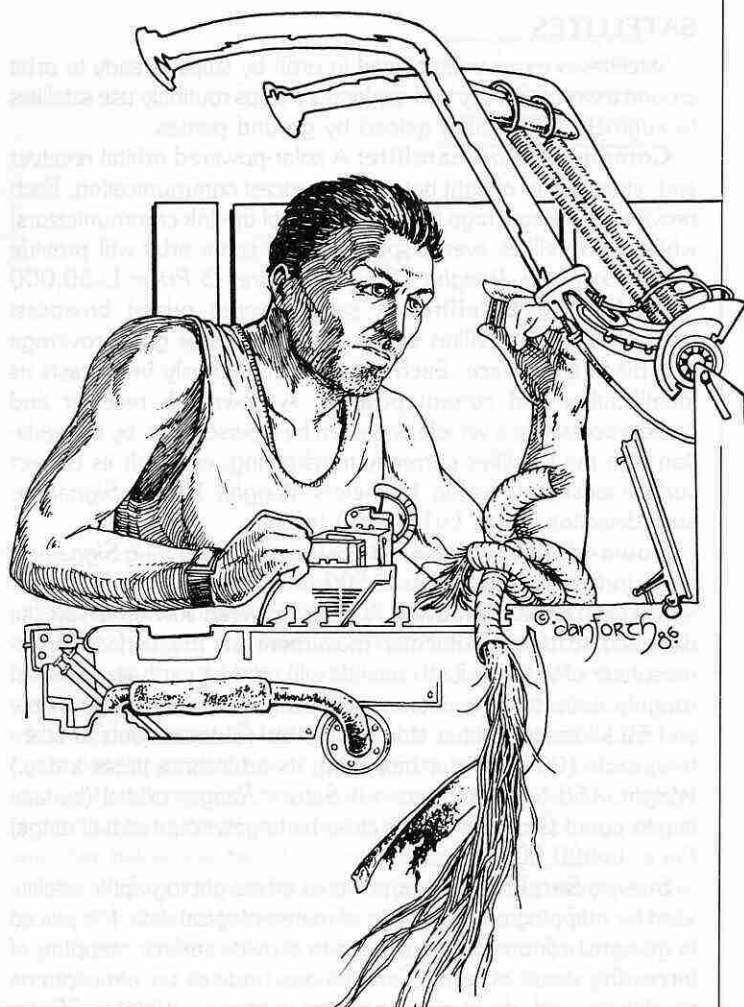
Autoinjector Gun: This is a compressed air rifle which fires an autoinjector or radio micro-transponder. It is used to subdue or tag animals. The radio micro-transponder has a range of 5 kilometers and can be monitored from a radio direction finder. It broadcasts a simple noise signal useful for determining direction and range. The associated direction finder weighs 3 kg and costs Lv50. *Weight:* 2 kg *Length:* 75 cm (bulk = 2) *Aimed Fire Range:* 300 meters *ROF:* 2 *DPV:* 3 (stun damage only) *Price:* Lv200

MEDICAL EQUIPMENT

Medkit: A portable first aid kit containing spray-on bandages and autoinjectors of antishock, antitoxin, antibiotic, stimulant, and anaesthetic. Given medical skill, the Medkit contains everything needed to treat minor injuries and stabilize serious conditions. *Weight:* 1 kg *Price:* Lv500

Lightweight Automed: This unit is popular with emergency teams and is often used in large numbers for disaster relief. It is reasonably portable and inexpensive. *Weight:* 300 kg *Med Skill:* 1 *Price:* Lv2,000

Static Automed: This static automed is designed for permanent emplacement in a hospital ward on a starship. *Weight:* 1,000 kg *Med Skill:* 3 *Price::* Lv8,000

COMMUNICATORS

Hand Communicator: A battery-powered hand-held radio which broadcasts voice signals at relatively low power. *Weight:* 1 kg *Range:* 20 km *Signature:* +1 *Price:* Lv50

Backpack or Vehicle Communicator: A heavier version of the hand communicator. In a vehicle it is generally linked to the vehicle's powerplant. *Weight:* 3 kg *Range:* 200 km *Signature:* +3 *Price:* Lv100

Tight Beam Up-Link Communicator: A tight beam communicator designed to provide secure communication between a ship in orbit and a ground party. The communicator must be emplaced to work (it cannot be used while moving). The communicator's microprocessor is programmed with the ship's orbit prior to landing and its inertial locator will constantly update its position relative to the ship's. When activated it will point its dish antenna toward the location of the ship and establish a tight beam communication link, provided the ship is above the horizon and in effective communication range. (In most orbits the ship will be in an acceptable commlink position roughly 20% of the time. The higher the orbit the longer the period of possible commlink, but the greater the time between commlink periods.) Two up-link communicators can be used for secure ground communication if a communication satellite is overhead and if both communicators are linked to the satellite at the same time. *Weight:* 15 kg *Range:* orbital *Signature:* 0 *Price:* Lv500

SATELLITES

Satellites are generally placed in orbit by ships already in orbit around a world. Survey and exploratory ships routinely use satellites to augment information gained by ground parties.

Communication Satellite: A solar-powered orbital receiver and retransmitter of tight beam or broadcast communication. Each provides 20% coverage (see discussion of up-link communicators) while five satellites evenly spaced in the same orbit will provide 100% coverage. *Weight:* 20 kg *Signature:* -3 *Price:* Lv50,000

Navigation Satellite: A solar-powered orbital broadcast transmitter. Five satellites are required to provide good coverage of a planetary surface. Each satellite continuously broadcasts its identification and current position. A down-link receiver and microprocessor in a vehicle or carried by a person can, by triangulation with the satellites currently transmitting, establish its correct surface location to within 10 meters. *Weight:* 100 kg *Signature:* auto detection *Price:* Lv100,000 (each)

Down-Link Navigation Receiver: *Weight:* 5 kg *Signature:* none (receiver only) *Price:* Lv500

Surveillance Satellite: A solar-powered low-orbit satellite designed to detect vehicular movement on the surface or atmosphere of a world. Each satellite will orbit an earth-sized planet roughly three times a day and will scan the area directly below and 50 kilometers either side of its orbit. (This amounts to scanning each 100-kilometer hex along its orbit three times a day.) *Weight:* 150 kg *Signature:* +4 *Sensor Range:* orbital (surface targets count as regular range, airborne targets count as half range) *Price:* Lv500,000

Survey Satellite: A solar-powered orbital photographic satellite used for mapping and collection of meteorological data. It is placed in geosynchronous orbit and used to provide surface mapping of increasing detail as well as continuous updates on atmospheric conditions and developing weather patterns. *Weight:* 50 kg *Signature:* -1 *Price:* Lv250,000

COMPUTERS

Portacomp: A small hand-held programmable computer, usually carried in a plastic case on the belt or on a shoulder strap. A wide variety of makes and models are available, of which the following is a representative model. The keyboard is a one-handed five-key hemisphere, roughly 10 cm in diameter, designed to be held in the right hand. The monitor is on the back of the hemisphere and is touch-sensitive allowing an expanded range of inputs while programs are running. Voice input and output are also used, but the keyboard and monitor are useful for a variety of precision inputs and graphic outputs. A flexible 30 cm x 20 cm monitor expansion (also touch-sensitive) is carried rolled in a tube in a carrying case. The machine has 10 megabytes of internal memory and is designed to run off of a single 200 megabyte memory/program chip. *Weight:* 0.5 kg *Price:* Lv500

PORTACOMP PROGRAM/MEMORY CHIPS

A 200 megabyte chip contains roughly the same volume of data as a good encyclopedia. This is sufficient to provide a good working linguistic translation program or a fairly comprehensive reference guide for a single area of scientific specialization. A scientific reference chip does not make the user an expert in a field, however, any more than a pile of chemistry reference books makes the owner an expert chemist.

Translation Chip: The chip will translate spoken or written known languages. It is purchased with two complete languages on the chip (English-German, or Taijik-Farsi, for example) and will translate from one to the other at command. *Price:* Lv10

Reference Guide: A fairly comprehensive reference guide on any one subject is available on chip for a modest price. Possible subjects include (but are not limited to): biochemistry, physical chemistry, geology of the Earth (or any other well-explored world), political history of the Earth (or any other inhabited world), etc. *Price:* Lv50

Language Cracker: A program which will analyze a spoken or written language and attempt to discover contextual similarities between it and the native language of the program. This is generally a slow and painstaking process with considerable trial and error involved. *Price:* Lv600

PERSONAL POWER

Fuel Station: A solar-powered processor that produces electricity from light and then uses it to crack water into hydrogen for vehicle fuel.

The complete station consists of a central unit and ten panels. A tank in the unit can hold 20 kg of liquid hydrogen. The oxygen vent can be connected to a separate oxygen storage tank.

Each solar panel unfolds into a flat square 10 m by 10 m. In sunlight (average intensity in the life zone), each panel generates 0.2 MW and produces 1 kg of liquid hydrogen per hour (about 40 kg of oxygen are also produced and normally vented). The station only works during daylight hours.

The station can also be used to produce direct electric power (at 0.2 MW per panel deployed). *Weight:* 20 kg (with tank empty) *Price:* Lv1200

MISCELLANEOUS

Burrowvarg: Easily domesticated omnivorous hunters indigenous to Beta Canum Venaticorum. Trained burrowvargs are used for tracking and as security and guard animals. Although tempermental and cross, they are fiercely loyal and protective of their handlers. *Initiative:* 4 *Hit:* Routine *Size:* 20 kg *Speed:* 100 *Armor:* 0.1 *Wound Potential:* −3 *Consciousness:* 1 *Life:* 2 *DPV:* 0.2 *Signature:* −6 *Price:* Lv500
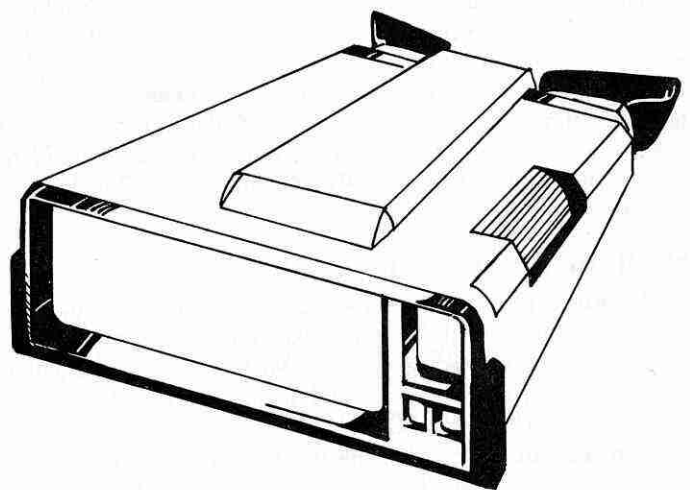
Weapons

RIFLES

There are three general types of rifles in use: conventional rifles, binary propellant rifles, and Gaus rifles.

Conventional rifles fire fixed cartridge rounds which consist of a bullet embedded in a solid rectangular block of propellant. The bullet is generally constructed of a dense metallic core and a nonmetallic composite sheath. The bullet itself is smaller than the caliber of the rifle and is encased in a low-friction ablative sabot. The bore of the rifle constricts toward the muzzle and the sabot abrades away as the round approaches the muzzle. The remains of the sabot fall away from the round as it emerges from the barrel. Virtually all civilian rifles are conventional rifles, but they have mostly been replaced in military service by Gaus and binary propellant rifles.

Binary propellant rifles fire a bullet identical in design to that fired from a conventional rifle, but there is no propellant directly associated with the round. Much of the bulk of the propellant in a conventional round is a stabilizer which makes the ammunition safe to store and use in the field. The binary propellant rifle eliminated this bulk and instead uses two gases (a variety of types are used) which separately are stable but, when combined, are extremely volatile. Stored apart they are completely safe, and are not combined until injected into the ignition chamber.

Gaus rifles are linear magnetic accelerators which fire fin-stabilized flechettes. Usually the magazine for the Gaus rifle also contains a battery pack which powers the gun.

Virtually all rifles incorporate optic sights to assist in aimed fire. Also, as muzzle velocities have increased, weapons have incorporated more elaborate recoil-absorbing features, such as telescoping stocks. Most combat weapons capable of automatic fire have gyrostabilization to assist the soldier in keeping the weapon on target. Most long-range rifles also have a gunner-activated laser range finder.

CURRENT SERVICE WEAPONS
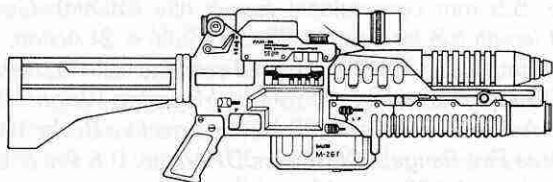
FAM-90 (Fusil Automatique Magnetique-2090)

The standard infantry weapon of first-line French infantry, the FAM-90 is among the most up-to-date Gaus weapons in service. It incorporates variable projectile velocity keyed to the fire selector. Single shots are fired at high velocity for aimed fire accuracy while velocity is much lower for bursts giving the rifle excellent controllability on automatic fire. The optic sights provide excellent low-light performance and incorporate a low-power laser range finder for aimed fire. The inclusion of an HR-17 30 mm grenade launcher below the barrel completes the weapon system.

Type: 4.5 mm Gaus rifle with integral 30 mm grenade launcher *Country:* France *Weight (empty):* 4.5 kg *Length:* 76 cm (bulk = 2) *Action:* SS or bursts *Ammunition:* 4.5x20mm flechettes *Muzzle Velocity:* 1600 mps (area fire 550 mps) *Magazine:* 60-round box magazine with integral power cell *Magazine Weight:* 0.3 kg *ROF:* 3 (area fire 5) *Aimed Fire Range:* 900 meters *Area Fire Burst:* 10 rounds (AF = 1.5) *Area Fire Range:* 400 meters *DP Value:* 0.6 (area fire 0.3) *Price:* Lv490 (Lv2 for 60-round disposable magazine)
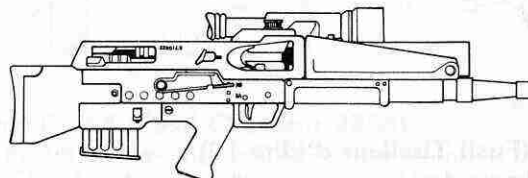
AS-89 (Avtomat Segetov 2289)

The standard Soviet Russian infantry weapon. The AS-89 incorporates a reliable optic sight with moderate-to-good low-light performance and an integral 30 mm G-2 grenade launcher built into the stock above the barrel.

The AS-89 found a home for a time in the hands of hired mercenaries of the French Arm. In fact, this weapon of choice became the trademark of men who were for hire, and as such is an institution in and of itself.

Type: 4.54 mm Gaus rifle with integral 30 mm grenade launcher *Country:* RSFSR *Weight (empty):* 4 kg *Length:* 73 cm (bulk = 2) *Action:* SS or burst *Ammunition:* 4.54x21 mm flechette *Muzzle Velocity:* 1530 mps *Magazine:* 60-round box magazine with integral power cell *Magazine Weight:* 0.3 kg *ROF:* 3 *Aimed Fire Range:* 800 m *Area Fire Burst:* 10 rounds (AF = 1) *Area Fire Range:* 480 m *DP Value:* 0.5 *Price:* Lv420 (Lv2 for 60-round disposability).
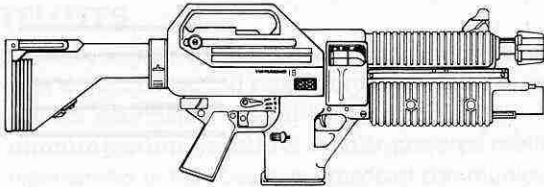
SK-19 (Sturmkarabiner-19)

Now the standard service weapon in the German Army, the SK-19 is clearly a progressive development of the Traylor Arms M-2 Assault Rifle. The main improvements over the M-2 consist of the substitution of a reliable binary propellant system for fixed cartridges and the inclusion of an integral 30 mm grenade launcher in the stock below the barrel. The binary propellant system includes a muzzle velocity governor keyed to the fire select switch, patterned after that on the French FAM-90. When on the burst setting, muzzle velocity is considerably reduced giving an extremely controllable autofire weapon. The resulting combination of a high rate of fire, ease of control, the shattering punch of the 9 mm APHE round, and the option of 30 mm grenade fire makes the SK-19 the most devastating close-in assault weapon in service anywhere.

Type: 9 mm binary propellant assault rifle (with integral 30 mm grenade launcher) *Country:* Germany *Weight: (empty):* 4 kg *Length:* 75 cm (Bulk = 2) *Action:* SS or bursts *Ammunition:* 9x12 mm APHE *Muzzle Velocity:* 700 mps (area fire 400 mps) *Magazine:* 50-round box magazine, with integral propellant gas bottle. Separately loaded internal catalyst gas bottle with charge for 600 aimed shots or 200 bursts. *Magazine Weight:* 0.5 kg *Recharge Bottle Weight:* 0.1 kg *ROF:* 3 (area fire 5) *Aimed Fire Range:* 600 meters *Area Fire Burst:* 10 (AFV = 1.5) *Area Fire Range:* 300 meters *DP Value:* 1 (aimed fire and area fire) *Price:* Lv440 (Lv2 for 50-round disposable magazine; Lv1 for recharge bottle)
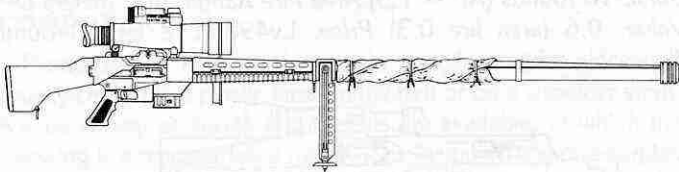
FTE-10 (Fusil Tiralleur d'Elite-10)

This is the standard French sniper rifle in squad service. Generally each squad contains one heavy sniper rifle such as this designed for long-range aimed fire. It is a very low-noise weapon and difficult to locate, which makes it an excellent harassment fire weapon without violating the squad's concealment. In addition to attacks on unit commanders and key gunners, the FTE-10 is also used to destroy exposed antennae and can penetrate light armor at reasonable ranges.

Due to its great physical length, the FTE-10 has gained the nickname "Kentucky long rifle" among American soldiers. Soldiers assigned to use the FTE-10 often carry it under protest.

Type: 10 mm Gaus sniper rifle *Country:* France *Weight (empty):* 12.5 kg *Length:* 184 cm (bulk = 6) *Action:* single shot *Ammunition:* 10x37 mm flechette *Muzzle Velocity:* 1400 mps *Magazine:* 10-round box magazine. Separately loaded 30-round power cell. *Magazine Weight:* 0.2 kg *Power Cell Weight:* 0.2 kg *ROF:* 1 *Aimed Fire Range:* 1400 meters *DP Value:* 3 *Price:* Lv450 (Lv2 for box of 100 flechettes; Lv1 for disposable power cell)
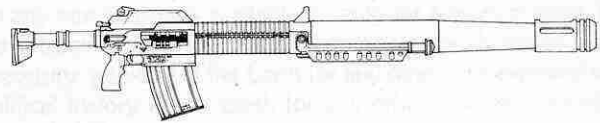
Type-81 Storm Gun

Shortly before the Central Asian War there was a flurry of interest in man-carried heavy caliber "storm guns," mostly brought on by Manchuria's adoption of the Type-81. The storm gun was intended to provide light anti-vehicle and anti-bunker fire and the exploding round was expected to give a good area fire capability. In service, however, the weapon proved disappointing and although the Type-81 continues in service there is no replacement for it on the horizon when it reaches the end of its expected service life and private interest in this type of weapon has largely dried up. One particularly troublesome problem with early versions of the weapon was the exposed recoil cylinder of the telescoping shock absorbing shoulder stock. In field conditions sand and grit tended to cling to the lubricants of the cylinder and foul it eventually, to the point that Manchurian troops (those who did not simply discard the weapon altogether) were often forced to brace the shoulder stock against a convenient rock or tree when firing. After the Central Asian War most Type-81s were fitted with a flexible fabric stock cover to prevent this.

Type: 20 mm binary propellant storm gun *Country:* Manchuria *Weight (empty):* 12 kg *Length:* 163 cm (Bulk = 5) *Action:* SS *Ammunition:* 20x31 mm APHE *Muzzle Velocity:* 840 mps *Magazine:* 10-round box magazine; separately loaded internal gas bottles with charge for 100 rounds *Magazine Weight:* 2 kg *Recharge Bottle Weight:* 2 kg *ROF:* 1 *Aimed Fire Range:* 700 meters *DP Value:* 4 *Price:* Lv520 (Lv2 for box of 20 rounds; Lv2 for recharge bottle)

SURPLUS SERVICE WEAPONS
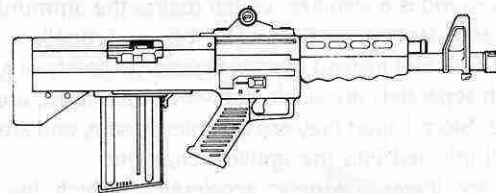
SG-77 (Sturmgewehr-2277)

Now replaced by more modern types in Germany's arsenal, the SG-77 was widely exported and is still to be found both in private hands and in many smaller armed forces and militias. The SG-77 was produced under license in Japan as the Type-79 assault rifle and remains Japan's standard service weapon, although Kurita Arms is now rumored to be developing a Gaus rifle of exceptional performance as a replacement. In fact, this newer model is rumored to have approximately the same performance, though with considerably decreased weight and overall length. It remains to be seen if this model will be put on the world market and made generally available.

Type: 5.5 mm conventional assault rifle *Country:* Germany *Weight (empty):* 3 kg *Length:* 75 cm (Bulk = 2) *Action:* SS or bursts *Ammunition:* 5.5x40 mm fixed cartridge ball *Muzzle Velocity:* 1200 mps *Magazine:* 40 rounds *Magazine Weight:* 0.3 kg *ROF:* 3 *Aimed Fire Range:* 700 meters *Area Fire Burst:* 10 (AFV = 1) *Area Fire Range:* 500 meters *DP Value:* 0.6 *Price:* Lv280 (Lv2 for box of 100 rounds)
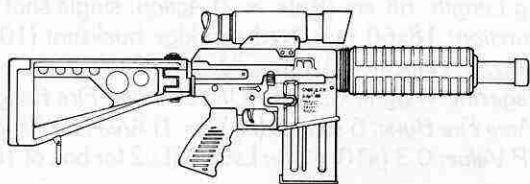
Wu-Beijing Type-49 Assault Rifle

Unique among modern military arms, the Type-49 uses a trigger-magazine-barrel design layout rather than the more efficient "bullpup" layout (magazine-trigger-barrel). This results in a longer rifle with no gain in effective barrel length, a shortcoming the Type-95 dealt with by shortening the barrel to carbine length and providing the weapon with a folding stock. With the stock folded the weapon is very handy, but aimed fire is effectively impossible.

Type: 7.5 mm conventional assault rifle *Country:* Manchuria *Weight (empty):* 3 kg *Length:* 86 cm (Bulk = 3); 58 cm with stock folded (Bulk = 1) *Action:* SS or bursts *Ammunition:* 7.5x32 mm fixed cartridge ball *Muzzle Velocity:* 880 mps *Magazine:* 25 rounds *Magazine Weight:* 0.4 kg *ROF:* 2 *Aimed Fire Range:* 700 meters (stock must be extended for aimed fire) *Area Fire Burst:* 10 (AFV = 1) *Area Fire Range:* 500 meters *DP Value:* 0.7 *Price:* Lv210 (Lv2 for box of 100 rounds)

Ramirez-Abruggo BF-1

The first mass-produced binary propellant rifle, the BF-1 has now been replaced by more modern designs. Even when in first-line service the weapon's performance was considered disappointing and remains widely used only because it was produced in large numbers. While the weapon was initially quite expensive to produce, surplus models are now available fairly inexpensively.

Type: 7.5 mm binary propellant assault rifle *Country:* Brazil *Weight (empty):* 3.5 kg *Length:* 81 cm (Bulk = 3) *Action:* SS or bursts *Ammunition:* 7.5x11 mm ball *Muzzle Velocity:* 900 mps *Magazine:* 40-round box magazine with separately loaded internal gas bottles with charges for 200 aimed shots or 20 bursts. *Magazine Weight:* 0.3 kg *Recharge Bottle Weight:* 0.3 kg *ROF:* 2 *Aimed Fire Range:* 800 meters *Area Fire Burst:* 10 (AFV = 0.5) *Area Fire Range:* 560 meters *DP Value:* 0.7 *Price:* Lv200 (Lv2 for box of 100 rounds)
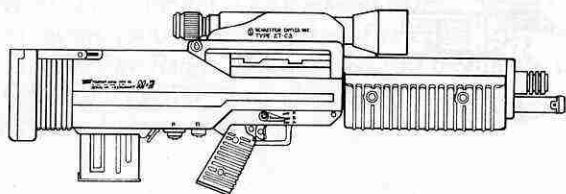
M-2 Assault Rifle

The Traylor Arms M-2 "nine-forty-four" assault rifle was one of the most popular weapons of its day in U.S. service and is still a favorite among paramilitary organizations on the fringes of human space. Simple and reliable, the M-2 was the first mass-produced weapon to use a 9 mm APHE round, and formed the basis of the successful German SK-19 binary propellant design.

Type: 9 mm conventional assault rifle *Country:* USA *Weight (empty):* 3 kg *Length:* 79 cm *Action:* single shot or bursts *Ammunition:* 9x44 mm fixed cartridge APHE *Muzzle Velocity:* 800 mps *Magazine:* 30 rounds *Magazine Weight:* 0.4 kg *ROF:* 3 *Aimed Fire Range:* 500 meters *Area Fire Burst:* 10 (AFV = 1) *Area Fire Range:* 400 meters *DP Value:* 1 *Price:* Lv260 (Lv4 for box of 100 rounds)

CIVILIAN AND HUNTING WEAPONS

Stracher SS-7 (Scharfshutzen Model 7)

The Stracher SS-7 is the only mass-produced air rifle currently in use as a hunting weapon (although a variety of low-power air rifles are used for recreation target shooting). The weapon is powered by compressed air from a central reservoir, which holds sufficient pressure for 20 shots at high pressure and thirty more at low pressure. The weapon can be recharged by hand, but only to the low pressure level.

Type: 4 mm sporting rifle *Country:* Austrovenia *Weight (empty):* 1 kg *Length:* 72 cm (Bulk = 2) *Action:* single shot *Ammunition:* 4 mm flechettes *Muzzle Velocity:* 480 mps *Magazine:* 20-round box *Magazine Weight:* 0.1 kg *Air Recharge Bottle:* 0.5 kg *ROF:* 5 *Aimed Fire Range:* 400 meters (high pressure), 200 meters (low pressure) *Area Fire Burst:* 5 (AFV = 0.5) *Area Fire Range:* 300 meters (high pressure), 200 meters (low pressure) *DP Value:* 0.2 (high pressure), 0.1 (low pressure) *Price:* Lv140 (Lv1 for box of 1000 rounds; Lv1 for recharge bottle)

Giscard FC-68 (Fusil Chasseur 2268)

The FC-68 was designed with the frontier colonist in mind, and is widely used by French civilians on a variety of worlds. It combines a bullpup configuration (giving it a distinctly military look—one of its strongest selling features) with full-automatic fire.

Type: 5 mm sporting rifle *Country:* France *Weight (empty):* 1 kg *Length:* 75 cm (Bulk = 2) *Action:* single shot or bursts *Ammunition:* 5x15 mm fixed cartridge ball *Muzzle Velocity:* 630 mps *Magazine:* 70 round box magazine *Magazine Weight:* 0.3 kg *ROF:* 5 *Aimed Fire Range:* 500 meters *Area Fire Burst:* 10 (AFV = 1.5) *Area Fire Range:* 400 meters *DP Value:* 0.2 *Price:* Lv240 (Lv2 for box of 300 rounds)
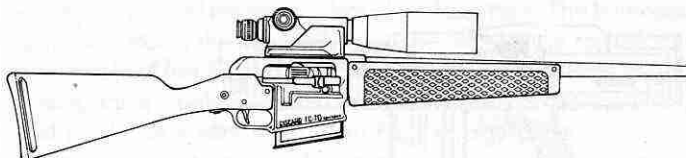
Giscard FC-70 (Fusil Chasseur 2270)

The FC-70 was designed to make use of the large quantities

of 7.5 mm surplus ammunition available on the open market, and low firing cost has made it (and other similar rifles) popular. It is widely used both as a target rifle and for medium-sized game hunting.

Type: 7.5 mm hunting rifle *Country:* France *Weight (empty):* 3 kg *Length:* 102 cm (Bulk = 3) *Action:* single shot *Ammunition:* 7.5x40 mm fixed cartridge ball *Muzzle Velocity:* 910 mps *Magazine:* 5 round box magazine *Magazine Weight:* 0.2 kg *ROF:* 2 *Aimed Fire Range:* 800 meters *Area Fire Burst:* 3 (AFV = 0.25) *Area Fire Range:* 600 meters *DP Value:* 0.7 *Price:* Lv220 (Lv2 for box of 100 rounds)
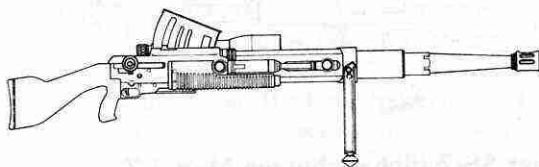
Rockwell "Twelve-Eighty-One Magnum"

Deservedly enjoying a reputation as the most powerful sporting rifle in known space, the 12-81 can only be fired from a rest with the integral bipod extended, and even then the provision of an in-stock shock absorber is necessary to avoid injury to the firer. The rifle was originally designed to provide a weapon with a high first-round killing capability against the giant lizards of Wolf-424B-1 but has since enjoyed wide use in the armed forces of several nations as a long-range sniper rifle. The French FTE-10 Gaus rifle is in many ways a more modern version of the Rockwell 12-81 Magnum.

Type: 12 mm big game and sniper rifle *Country:* United Kingdom *Weight (empty):* 14 kg *Length:* 144 cm (bulk = 5) *Action:* single shot *Ammunition:* 12mmx81mm fixed cartridge ball *Muzzle Velocity:* 1100 mps *Magazine:* 6 rounds *Magazine Weight:* 0.5 kg *ROF:* 1 *Aimed Fire Range:* 1100 meters *DP Value:* 4 *Price:* Lv400 (Lv5 for box of 100 rounds)

SHOTGUNS

Traylor Model 10 Riot Gun

Type: 18 mm pump shotgun *Country:* USA *Weight (empty):* 3 kg *Length:* 96 cm (Bulk = 3) *Action:* single shot *Ammunition:* 18x60 mm fixed cartridge buckshot (10 6 mm slugs) *Muzzle Velocity:* 428 mps *Magazine:* 8-round tubular magazine *ROF:* 2 *Aimed Fire Range:* 120 meters *Area Fire Burst:* 3 rounds (AFV = 0.5) *Area Fire Range:* 80 meters *DP Value:* 0.3 (x10) *Price:* Lv300 (Lv2 for box of 100 rounds)
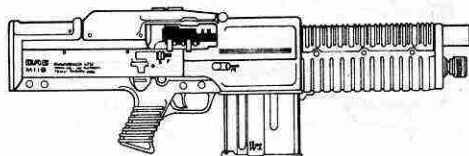
DunArmCo Close Assault Gun

Type: 18 mm automatic shotgun *Country:* Australia *Weight*

(empty): 4 kg *Length:* 68 cm (Bulk = 2) *Action:* single shot or bursts *Ammunition:* 18x60 mm fixed cartridge buckshot (10 6 mm slugs) *Muzzle Velocity:* 410 mps *Magazine:* 10-round box magazine *Magazine Weight:* 0.5 kg *ROF:* 2 *Aimed Fire Range:* 100 meters *Area Fire Burst:* 5 rounds (AFV = 1) *Area Fire Range:* 80 meters *DP Value:* 0.3 (x10) *Price:* Lv330 (Lv2 for box of 100 rounds)

HANDGUNS

There are two principal types of handguns: revolvers and automatics. Revolvers, as the name indicates, are fed from a revolving cylinder while automatics are clip-fed. While automatics are generally more efficient, revolvers remain in use due to their greater safety. (A revolver is generally carried with the firing pin resting on an empty chamber. This is not possible with an automatic unless the pistol is carried without a round in the chamber, in which case it must have the slide worked before firing to chamber a round from the magazine.)

All handguns listed below fire conventional fixed cartridge ammunition. Although some experimental work has been done with binary propellant and even Gaus pistols, the expense was not deemed worth the results and no large-scale production has been undertaken. Referees are free to include a few limited issue (and therefore quite expensive) binary or Gaus pistols for players.

Because of their short range and limited stopping power, pistols are not generally issued to combat troops. Officers often carry a pistol, but its purpose is to serve as a badge of rank more than an actual weapon, and a combat rifle is generally carried as well. A few troops purchase heavy pistols and value them for their handiness at close range, their low bulk often enabling the firer to get off the critical first round.

Arno Five-Fifteen

Type: 5 mm automatic *Country:* Brazil *Weight (empty):* 1 kg *Length:* 24 cm (Bulk = 0) *Action:* single shot *Ammunition:* 5x15 mm *Muzzle Velocity:* 600 mps *Magazine:* 14-round box magazine *Magazine Weight:* 0.1 kg *ROF:* 5 *Aimed Fire Range:* 50 meters *Area Fire Burst:* 3 rounds (AFV = 0.25) *Area Fire Range:* 30 meters *DP Value:* 0.2 *Price:* Lv130 (Lv2 for box of 300 rounds)

Hancock Nine-Twenty-Three Enforcer

Type: 9 mm police revolver *Country:* USA *Weight (empty):* 0.5 kg *Length:* 21 cm (Bulk = 0) *Action:* single shot *Ammunition:* 9x23 mm fixed cartridge ball *Muzzle Velocity:* 390 mps *Magazine:* 6-round cylinder *Weight of 6 rounds in reloader:* 0.1 kg *ROF:* 4 *Aimed Fire Range:* 40 meters *Area Fire Burst:* 3 rounds (AFV = 0.25) *Area Fire Range:* 20 meters *DP Value:* 0.3 *Price:* Lv170 (Lv2 for box of 100 rounds)

Traylor Model 57 (Chip Traylor Special)

Type: 9 mm automatic *Country:* USA *Weight (empty):* 0.6 kg *Length:* 20 cm (Bulk = 0) *Action:* single shot *Ammunition:* 9x24 mm fixed cartridge ball *Muzzle Velocity:* 460 mps *Magazine:* 10-round box magazine *Magazine Weight:* 0.1 kg *ROF:* 3 *Aimed Fire Range:* 60 meters *Area Fire Burst:* 3 rounds (AFV = 0.25) *Area Fire Range:* 30 meters *DP Value:* 0.4 *Price:* Lv150 (Lv2 for box of 100 rounds)

Stracher P-11 m (Pistole 11 mm Magnum)

Type: 11 mm automatic *Country:* Austrovenia *Weight (empty):* 1.5 kg *Length:* 35 cm (Bulk = 0) *Action:* single shot *Ammunition:* 11x35 mm fixed cartridge ball *Muzzle Velocity:* 580 mps *Magazine:* 7-round box magazine *Magazine Weight:* 0.2 kg *ROF:* 1 *Aimed Fire Range:* 80 meters *Area Fire Burst:* 3 rounds (AFV = 0.25) *Area Fire Range:* 40 meters *DP Value:* 0.8 *Price:* Lv350 (Lv4 for box of 100 rounds)

AUTO GUNS

Auto guns are a broad category of crew-served light automatic weapons. Generally they are fed from large capacity drums or flexible cassettes and are fired from mounts (such as vehicles or tripods). In operating principle they are similar to rifles, but are generally of heavier construction to enable them to sustain a higher rate of fire over time.

The following examples of auto guns are generally representative of the various types in service.

MG-7 (Maschinengewehr Model 7)

Type: 5.5 mm conventional machine gun *Country:* Germany *Weight (empty):* 4 kg *Length:* 107 cm *Action:* SS or bursts *Ammunition:* 5.5x40 mm fixed cartridge ball *Muzzle Velocity:* 1200 mps *Magazine:* 75-round drum or 200-round casette *Magazine Weight:* 0.6 kg (drum), 1 kg (cassette) *ROF:* 5 *Aimed Fire Range:* 700 meters (900 on mount) *Area Fire Burst:* 20 rounds (AFV = 2) *Area Fire Range:* 500 meters (700 on mount) *DP Value:* 0.6 *Price:* Lv870 (Lv2 for box of 100 rounds; Lv5 for empty drum or cassette)
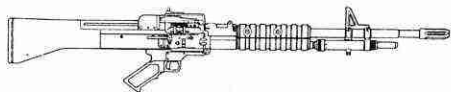
Wu-Bejing Type 381 Machinegun

Type: 7.5 mm conventional machine gun *Country:* Manchuria *Weight (empty):* 7 kg *Length:* 122 cm *Action:* single shot or bursts *Ammunition:* 7.5x32 mm fixed cartridge ball *Muzzle Velocity:* 940 mps *Magazine:* 150-round casette *Magazine Weight:* 2 kg *ROF:* 5 *Aimed Fire Range:* 800 meters (1000 on mount) *Area Fire Burst:* 20 (AFV = 2) *Area Fire Range:* 600 meters (760 meters on mount) *DP Value:* 0.7 *Price:* Lv870 (Lv2 for box of 100 rounds; Lv5 for empty cassette)
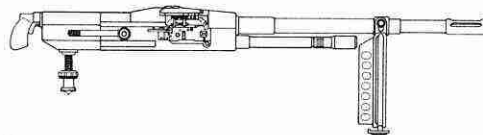
DunArmCo Mini-12

Type: 12 mm conventional machine gun *Country:* Australia *Weight (empty):* 24 kg *Length:* 144 cm *Action:* single shot or bursts *Ammunition:* 12x95 mm fixed cartridge ball *Muzzle Velocity:* 940 mps *Magazine:* 100-round cassette *Magazine Weight:* 7 kg *ROF:* 5 *Aimed Fire Range:* 800 meters (1000 on mount) *Area Fire Burst:* 15 (AFV = 1.5) *Area Fire Range:* 600 meters (760 on mount) *DP Value:* 3 *Price:* Lv910 (Lv3 for box of 100 rounds; Lv5 for empty cassette)

Type 12 Autocannon

Type: 25 mm conventional autocannon *Country:* Japan *Weight (empty):* 600 kg on field mount *Length:* 190 cm *Action:* single shot or bursts *Ammunition:* 25x161 mm fixed cartridge APHE *Muzzle Velocity:* 1100 mps *Magazine:* 50-round drums *Magazine Weight:* 15 kg *ROF:* 5 *Aimed Fire Range:* 1000 meters *Area Fire Burst:* 10 (AFV = 1) *Area Fire Range:* 800 meters *DP Value:* 6 (+ fragmentation burst radius = 5 meters) *Price:* Lv1,000 (Lv2 for box of 50 rounds; Lv5 for empty drum)
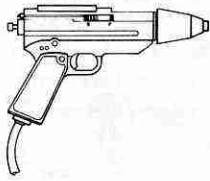
LASERS

Explanatory Note: Lasers emit beams of coherent light which, if sufficiently powerful, can cause damage to a target. By way of comparison, a kilogram of TNT explosion equals about 5 million joules of energy (5 megajoules). Since one watt for one second equals one joule, a 5 megawatt beam focused on a target for one second would produce the energy equivalent of one kilogram of TNT exploding.

In a combat situation it is very difficult, however, to get a target to stand still for a second, and in any event, generation of a 5 megawatt beam for one second requires a tremendous amount of power, more than a man can carry with him. It was discovered fairly early, however, that a very high energy beam for a very short duration would produce such a rapid temperature change in the surface of the target that the surface would explosively vaporize and cause shock damage to the target. Combat lasers work on this principle.

Lasers are powered by high efficiency liquid metallic suspension (LMS) battery packs. Since the discharge rate of a battery is not high enough to generate a sufficiently powerful beam directly, the battery "pumps" a fast discharge homopolar generator, which comprises most of the mechanism of the laser itself. The homopolar generator stores the electricity from the battery in a rapidly spinning flywheel (on the order of 50,000 rpm) until it stores enough energy for a single pulse. At that time it discharges the energy and produces a very short, very high energy pulse.

Lasers are generally referred to by their output power (in megawatts) and their pulse duration (in hundredths of a second). Thus a 40-01 laser would have an output power of 40 megawatts and a pulse duration of one one-hundredth of a second. Actual

beam energy is a function of the power output multiplied by the pulse duration. Since one watt for one second produces one joule of energy, a 40 megawatt pulse for one one hundredth of a second would produce four tenths of a megajoule of delivered energy.

Mueller-Rivera P-3 (Pistole-3)

The P-3 is a very handy lightweight laser. The combination of a low power output combined with the high discharge rate of the Quinn 7 megajoule FDLMS power cell makes for a high cyclic rate of fire, giving the weapon a reasonable area fire capability.

The pistol's power cell is worn on the belt and connected to the pistol by means of a 50-gauge teleflex photonic link cable.

Type: 20-01 laser pistol *Country:* Argentina *Weight:* 1 kg *Length:* 27 cm (Bulk = 0) *Action:* single shot *Pulse Energy:* 0.2 megajoules *Muzzle Velocity:* C *Magazine:* 7 mj FDLMS cell (35 pulses) *Magazine Weight:* 1 kg *ROF:* 5 *Aimed Fire Range:* 200 meters *Area Fire Range:* 100 meters *Area Fire Burst:* 4 pulses (AFV = 0.5) *DP Value:* 0.6 *Price:* Lv750 (Lv5 for disposable power cell)
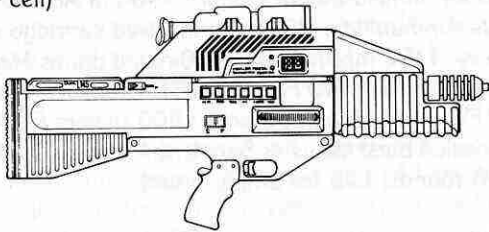
Mueller-Rivera F-7 (Fusile-7)

The F-7 was one of the first practical hand-held laser weapons, and the first to use the now-standard 0.01-second pulse. Although now superceded by more modern types in the armed forces of the major powers, it remains in widespread use by second-line troops.

Type: 30-01 laser rifle *Country:* Argentina *Weight:* 2 kg *Length:* 76 cm (Bulk = 2) *Action:* single shot *Pulse Energy:* 0.3 megajoules *Muzzle Velocity:* C *Magazine:* 5 mj LMS cell (16 pulses) *Magazine Weight:* 1 kg *ROF:* 5 *Aimed Fire Range:* 1000 meters *DP Value:* 0.9 *Price:* Lv760 (Lv5 for disposable power cell)
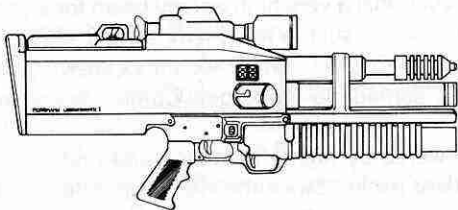
Rorttmann LK-1 (Laserkarabiner-1)

A very modern and deadly assault weapon, the LK-1 uses the now-popular combination of a 30 mm grenade launcher for area fire and a precision weapon for aimed fire. The 35-01 power laser is optimized for maximum damage consistent with a reasonable power cell duration.

Type: 35-01 laser rifle *Country:* Germany *Weight (empty):* 2.5 kg *Length:* 65 cm (Bulk = 1) *Action:* single shot *Pulse Energy:* 0.35 megajoules *Muzzle Velocity:* C *Magazine:* 7 mj FDLMS cell (20 pulses) *Magazine Weight:* 1 kg *ROF:* 5 *Aimed Fire Range:* 1000 meters *DP Value:* 1 *Price:* Lv850 (Lv5 for disposable cell)

Rorttmann LK-1fKz (Laserkarabiner-1 fur Kampfanzug)

The Rortmann LK-1fKz is a variant of the LK-1 mounted in the right arm of the Kz-7 combat walker. The laser operates off of the walker's own power supply. Each pulse fired reduces the walker's remaining power duration by 2 minutes.

Type: 35-01 laser rifle *Country:* Germany *Action:* single shot *Pulse Energy:* 0.35 megajoules *Muzzle Velocity:* C *ROF:* 5 *Aimed Fire Range:* 1000 meters *DP Value:* 1
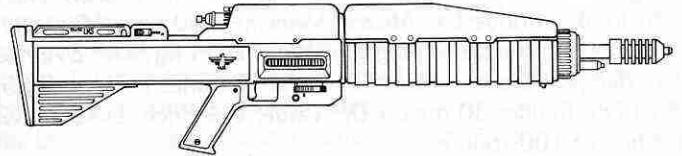
Gonzalves-Brazilia "Luce-3"

One of the oldest laser weapons still in service the Luce-3 was a fairly clumsy and inefficient design which remains in use primarily because very large numbers were produced. Captured Luce-3's, for example, are the main sniping weapon used by the armed forces of the Incan Republic.

Type: 45-02 laser rifle *Country:* Brazil *Weight:* 4 kg *Length:* 95 cm (Bulk = 3) *Action:* single shot *Pulse Energy:* 0.9 megajoules *Muzzle Velocity:* C *Magazine:* 5 mj LMS cell (5 pulses) *Magazine Weight:* 1 kg *ROF:* 3 *Aimed Fire Range:* 1000 meters *DP Value:* 1 *Price:* Lv620 (Lv5 for disposable power cell)

Gonzalves-Brazilia "Luce-7B"

The Luce-7B is a progressive development of the Luce-4, and replaced that model in Brazilian service. Although lower powered than most laser rifles, it still has adequate punch to deal with most targets and the addition of an integral 30 mm GB-30B grenade launcher under the stock gives it a good area fire capability.

Type: 40-01 laser rifle with integral 30 mm grenade launcher *Country:* Brazil *Weight (empty):* 3 kg *Length:* 69 cm (Bulk = 2) *Action:* single shot *Pulse Energy:* 0.4 megajoules *Muzzle Velocity:* C *Magazine:* 5 mj LMS cell (12 pulses) *Magazine Weight:* 1 kg *ROF:* 5 *Aimed Fire Range:* 1000 *DP Value:* 1 *Price:* Lv720 (Lv5 for disposable power cell)
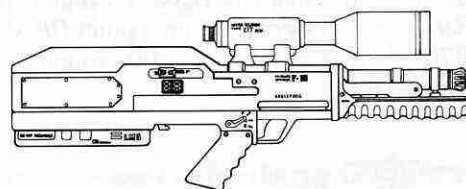
Mueller-Rivera F-19 (Fusile-19)

The Mueller-Rivera F-19 is the current service laser with Argentine troops and is widely exported as well. It pioneered the use of the Quinn Optronics fast-discharge 7-megajoule LMS cell and is a powerful, accurate, and efficient weapon.

Type: 70-01 laser rifle *Country:* Argentina *Weight:* 1.5 kg

Length: 69 cm (Bulk = 2) *Action:* single shot *Pulse Energy:* 0.7 mj *Muzzle Velocity:* C *Magazine:* 7 mj FDLMS cell (10 pulses) *Magazine Weight:* 1 kg *ROF:* 5 *Aimed Fire Range:* 1200 *DP Value:* 2 *Price:* Lv730 (Lv5 for disposable power cell)
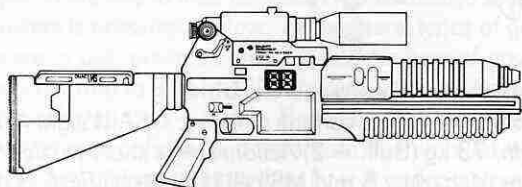
### SVB (Snayperskaya Vintovka Belnikarpov)

Although the Belnikarpov is the highest energy man-portable laser in service with any army, more modern designs produce the same damage at lower power levels. Nevertheless, the SVB remains effective and is the standard service laser in use by the RFSFR, where it serves as the squad sniper weapon.

Type: 80-01 laser rifle *Country:* RFSFR *Weight:* 2 kg *Length:* 83 cm (Bulk = 3) *Action:* single shot *Pulse Energy:* 0.8 megajoules *Muzzle Velocity:* C *Magazine:* 5 mj LMS cell (6 pulses) *Magazine Weight:* 1 kg *ROF:* 3 *Aimed Fire Range:* 1400 *DP Value:* 2 *Price:* Lv770 (Lv5 for disposable power cell)

PLASMA GUNS

Explanatory Note: The plasma gun contains a laser ignition system in the weapon which super-heats a hydrogen fuel pellet to a plasma state. The plasma is contained in the ignition chamber briefly and then allowed to escape through a magnetically focused field along the weapon's barrel. The high velocity plasma bolt is initially about 2 mm in diameter but tends to begin to dissipate at once. Dissipation is minimized by having the bolt ride a "tunnel" of heated air generated by a laser beam from the weapon. Because the plasma bolt rides a laser beam to its target, plasma guns are also sometimes referred to as plasers.

The ammunition for the weapon consists of photonic core plaser cells, each containing a fast discharge battery to pump the weapon's laser ignition and pathfinder beam and the fuel pellet for the plasma bolt. After firing, the spent cells are ejected, and are not reusable. Some care must be exercised in the selection of the location of the plasma gunner as the ejected cells are extremely hot with semi-molten centers, and can cause minor burn injuries to other troops in the way.
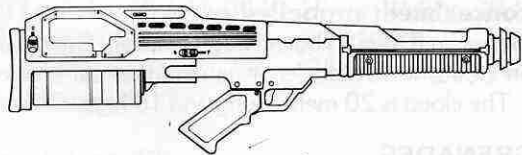
Jaschonek Fabrikant A-9 Sturmgewehr

The A-9 is the most recent man-portable plasma gun to enter service, and departs from most previous designs in its intended use as an assault rifle instead of squad support weapon. While not yet seriously considered as a replacement for the SK-19 in general service, the A-9 is being issued on an experimental basis and is intended to back up the SK-19 when a weapon with greater penetration is required.

Type: man-portable 5 megawatt plasma gun *Country:* Germany *Weight (empty):* 4.5 kg *Length:* 83 cm (Bulk = 3) *Action:* single shot *Ammunition:* 10x70 mm 5 megawatt photonic core plaser cell *Ammunition Weight:* 0.3 kg *Magazine:* 6 cells in rotating

cylinder magazine. *ROF:* 3 *Aimed Fire Range:* 900 meters *DP Value:* as tamped explosion (EP = 1) *Price:* Lv1,600 (Lv8 per disposable cell)
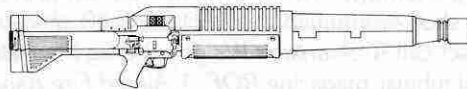
Type 1 High Energy Assault Gun

The first man-portable plasma gun to see service was the Manchurian Type 1, which received its baptism of fire in the Central Asian War. Although many more modern types now outclass the Type 1, it remains a formidable weapon and has been extensively exported.
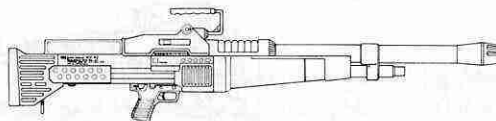
Type: man-portable 10 megawatt plasma gun *Country:* Manchuria *Weight (empty):* 12 kg *Length:* 137 cm (Bulk = 5) *Action:* single shot *Ammunition:* 12x120 mm 10 megawatt photonic core plaser cell *Ammunition Weight:* 0.4 kg *Magazine:* 4 cells in internal tubular magazine *ROF:* 2 *Aimed Fire Range:* 750 meters *DP Value:* as tamped explosion (EP = 2) *Price:* Lv1,300 (Lv12 per disposable cell)
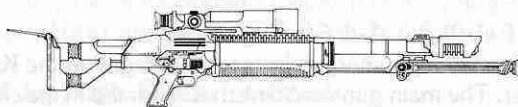
Kurita Type-21F

The Type-21F is the classic second-generation man-portable plasma gun, incorporating more punch in a much more efficient design. It currently is the standard squad heavy support weapon with the Japanese Army and will probably continue in that role in the foreseeable future. The Type-21F has been extensively exported and serves in numerous armies, and Sumatro-Fabrique recently concluded a license production agreement with Kurita for the purpose of equipping the Indonesian Army with the weapon.

Type: man-portable 15 megawatt plasma gun *Country:* Japan *Weight (empty):* 9 kg *Length:* 121 cm (Bulk = 4) *Action:* single shot *Ammunition:* 12x121 mm 15 megawatt photonic core plaser cell *Ammunition Weight:* 0.4 kg *Magazine:* 4 cells in internal tubular magazine *ROF:* 2 *Aimed Fire Range:* 1000 meters *DP Value:* as tamped explosion (EP = 3) *Price:* Lv1,400 (Lv14 per disposable cell)

Quinn-Darlan Mk 2-A2 PGMP (Plasma Gun, Man-Portable)

The result of a joint technology venture by Quinn Optronics, Inc. and Darlan Optophysique, the Mk 2-A2 is the heaviest of the various man-portable plasma weapons now in service with armed forces. Used by both countries as a heavy point fire weapon against hard targets at the squad level, the impact of the plasma bolt can

also cause considerable concussion and fragmentation effects, giving it a reasonable area fire capability.

Type: 20 megawatt man-portable plasma gun *Country:* France/USA *Weight (empty):* 12 kg *Length:* 166 cm (Bulk = 6) *Action:* single shot *Ammunition:* 17x91 mm 20 megawatt photonic core plaser cell *Ammunition Weight:* 0.8 kg *Magazine:* 10 cells in internal tubular magazine *ROF:* 1 *Aimed Fire Range:* 1700 meters *DP Value:* as tamped explosion (EP = 4) *Price:* Lv1800 (Lv18 per disposable cell)

Quinn-Darlan Mk 4-A1 PGCW (Plasma Gun, Combat Walker)

The Mark 4-A1 is a variant of the Quinn-Darlan Mark 2-A2 PGMP for use in the BH-21 combat walker. It is mounted in the left arm of the suit, which must be extended and locked to fire the weapon. The internal drum magazine is extended around the outer bicep of the walker and is protected by its armored shell. It is not possible for the occupant of the walker to reload the magazine.

Type: 20 megawatt man-portable plasma gun *Country:* France/USA *Action:* single shot *Ammunition:* 17x91 mm 20 megawatt photonic core plaser cell *Ammunition Weight:* 0.8 kg *Magazine:* 30 cells in internal drum magazine. *ROF:* 1 *Aimed Fire Range:* 1700 meters *DP Value:* as tamped explosion (EP = 4) *Ammo Price:* Lv18 per disposable cell

Jaschonek Fabrikant A-4 Sturmgewehr

The A-4 is a very high energy plasma gun integral to the Kz-7 combat walker. The main gun mechanism is mounted in the chest of the walker and the weapon itself fires from over the right shoulder. The walker must be stationary to fire the weapon due to the high recoil. The high capacity magazine is reloaded from a port located on the front of the suit's left hip and can be reloaded by the suit operator.

Type: 30 megawatt man-portable plasma gun *Country:* Germany *Action:* single shot *Ammunition:* 20x107 mm 30 megawatt photonic core plaser cell *Ammunition Weight:* 1 kg *Magazine:* 40 cells in internal magazine *ROF:* 1 *Aimed Fire Range:* 1700 meters *DP Value:* as tamped explosion (EP = 6) *Ammo Price:* Lv24 per disposable cell
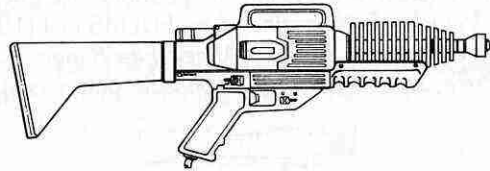
SONIC STUNNERS

Explanatory Note: Sonic stunners project focused sound energy, usually in the ultra high frequency range, with sufficient energy to stun the target. They are only effective in atmospheres and against targets not wearing heavy armor (particularly airtight armored helmets). As a result, they are of limited combat value but are highly-effective non-lethal control weapons and are extensively used by police and security forces.
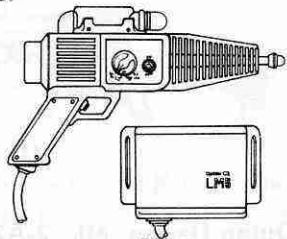
Brandt Audionique AS-3

Type: sonic stun pistol *Country:* France *Weight (empty):* 2 kg *Length:* 47 cm (Bulk = 1) *Action:* single shot *Muzzle Velocity:* 330 mps *Magazine:* 5 mj LMS cell (40 pulses) *ROF:* 3 *Aimed Fire Range:* 40 meters *Area Fire Burst:* 1 (AFV = 0.5) *Area Fire Range:* 20 meters *DP Value:* 0.5 (0.2 area fire), stun damage only *Price:* Lv140 (Lv5 for 1 5-mj disposable LMS cell)

Quinn Optronics Restraint Carbine

Type: sonic stun police carbine *Country:* USA *Weight (empty):* 4 kg *Length:* 73 kg (Bulk = 2) *Action:* single shot *Muzzle Velocity:* 330 mps *Magazine:* 5 mj LMS cell (15 pulses) *ROF:* 3 *Aimed Fire Range:* 100 meters *Area Fire Burst:* 3 pulses (AFV = 1) *Area Fire Range:* 40 meters *DP Value:* 0.8 (0.4 area fire), stun damage only *Price:* Lv150 (Lv5 for 1 5-mj disposable LMS cell)

GRENADE LAUNCHERS

A variety of 30 mm grenade launchers are mounted integral to combat rifles, all of which have roughly similar performance. In addition, a few older magazine-loading grenade launchers are also available, although they are seldom used now by first-line troops.

Combat Rifle Integral Grenade Launcher

Type: 30 mm grenade launcher (integral to rifle) *Country:* generic *Action:* single shot *Ammunition:* any 30 mm propelled grenade *Muzzle Velocity:* 400 mps *Magazine:* 3-round internal tubular magazine *ROF:* 1 *Aimed Fire Range:* 500 meters *DP Value:* dependent on grenade used.

GW-12 Grenade Launcher

The GW-12 (Granatenwerfer-12) is typical of several magazine-fed grenade launchers.

Type: 30 mm grenade launcher *Country:* Germany *Action:* single shot *Ammunition:* any 30 mm propelled grenade *Muzzle Velocity:* 400 mps *Magazine:* 6-round box magazine *ROF:* 2 *Aimed Fire Range:* 500 meters *DP Value:* dependent on grenade used.

30 mm high explosive propelled grenade
DP: as explosion (EP = 4) *Price:* Lv5
30 mm high explosive armor piercing propelled grenade
DP: as tamped explosion (EP = 4) *Price:* Lv6
30 mm flechette propelled grenade
Area Fire Value: 2 *DP:* 0.5
30 mm concealment propelled grenade
DP: as explosion (EP = 1) but no fragmentation. Creates a thick obscuration cloud, which blocks visual and thermal images, for 4 minutes. The cloud is 20 meters long and 10 high. *Price:* Lv10

HAND GRENADES

The following generic hand grenades are representative of the myriad types of grenades in service.

High Explosive Fragmentation Grenade
Weight: 0.3 kg *DP:* as explosion (EP = 2) *Price:* Lv3
Concussion Grenade
Weight: 0.2 kg *DP:* as explosion (EP = 2) but no fragmentation. *Price:* Lv3
Concealment Grenade
Weight: 0.3 kg *DP:* as explosion (EP = 1) but no fragmentation. Creates a thick obscuration cloud which blocks visual and thermal images for 2 minutes. The cloud is 10 meters long and 10 meters high. *Price:* Lv6

GUIDED ORDNANCE

Virtually every major power produces a variety of guided ordnance. These weapons incorporate means to make mid-course changes on the way to their targets. A representative selection from two powers is presented below. Two general types of guided ordnance are in use: powered and free-fall. An item of powered ordnance is referred to as a missile while an item of unpowered ordnance is referred to as a bomb. Both obey the same rules except that bombs may only be launched from aircraft relatively close to the target and glide to it rather than fly to it under their own power. Referees may generate more types of missiles and bombs using the statistics presented below as they are needed.

Guiscard Martel

Type: hand-carried light air defense missile *Nation:* France *Launcher Weight:* 6 kg *Missile Weight:* 2 kg *Range:* 7,000 meters *Guidance:* automatic following gunner lock on *Homing Value:* 23 *Attack Angle:* direct *Damage:* EP = 3 *Launcher Price:* Lv2,000 *Missile Price:* Lv8,000

Guiscard Blindicide-9

Type: hand-carried light anti-vehicle missile *Nation:* France *Launcher Weight:* 12 kg *Missile Weight:* 3 kg *Range:* 1,500 meters *Guidance:* automatic following gunner lock on *Homing Value:* 14 *Attack Angle:* selectable *Damage:* EP = 25 *Launcher Price:* Lv3,000 *Missile Price:* Lv2,000

Guiscard Blindicide-3

Type: obsolete hand-carried light anti-vehicle missile *Nation:* France *Launcher Weight:* 15 kg *Missile Weight:* 3 kg *Range:* 1,000 meters *Guidance:* automatic following gunner lock on *Homing Value:* 12 *Attack Angle:* overhead *Damage:* EP = 20 *Launcher Price:* Lv1,500 *Missile Price:* Lv1,000

Guiscard Manta-1

Type: vehicle-mounted anti-vehicle missile *Nation:* France *Launcher Weight:* 100 kg *Missile Weight:* 20 kg *Range:* 8,000 meters *Guidance:* automatic *Homing Value:* 16 *Attack Angle:* selectable *Damage:* EP = 40 *Launcher Price:* Lv4,500 *Missile Price:* Lv6,000

Guiscard Aero-12

Type: obsolete vehicle-mounted anti-vehicle missile *Nation:* France *Launcher Weight:* 90 kg *Missile Weight:* 30 kg *Range:* 14,000 meters *Guidance:* automatic *Homing Value:* 15 *Attack Angle:* overhead *Damage:* EP = 35 *Launcher Price:* Lv3,000 *Missile Price:* Lv4,000

Guiscard Aero-27

Type: vehicle-mounted air defense missile *Nation:* France *Launcher Weight:* 90 kg *Missile Weight:* 200 kg *Range:* 400 kilometers (flight time to maximum range 5 minutes) *Guidance:* automatic following gunner lock on *Homing Value:* 27 *Attack Angle:* direct *Damage:* EP = 10 *Launcher Price:* Lv3,000 *Missile Price:* Lv25,000

Panzerfaust 93

Type: hand-carried anti-vehicle missile *Nation:* Germany *Launcher Weight:* 12 *Missile Weight:* 11 *Range:* 4,000 meters *Guidance:* automatic following gunner lock on *Homing Value:* 15 *Attack Angle:* selectable *Damage:* EP = 30 *Launcher Price:* Lv3,000 *Missile Price:* Lv3,000

Luchs

Type: vehicle-mounted anti-vehicle missile *Nation:* Germany *Launcher Weight:* 120 kg *Missile Weight:* 18 kg *Range:* 7,000 meters *Guidance:* automatic *Homing Value:* 17 *Attack Angle:* selectable *Damage:* EP = 40 *Launcher Price:* Lv4,000 *Missile Price:* Lv5,000

Hornisse

Type: man-carried light air defense missile *Nation:* Germany *Launcher Weight:* 6 kg *Missile Weight:* 17 kg *Range:* 9,000 meters *Guidance:* automatic or automatic following gunner lock on *Homing Value:* 24 *Attack Angle:* direct *Damage:* EP = 4 *Launcher Price:* Lv2,000 *Missile Price:* Lv7,000

Ohu

Type: vehicle-mounted air defense missile *Nation:* Germany *Launcher Weight:* 90 kg *Missile Weight:* 100 kg *Range:* 200 kilometers (flight time to maximum range 3 minutes) *Guidance:* automatic following gunner lock on *Homing Value:* 29 *Attack Angle:* direct *Damage:* EP = 10 *Launcher Price:* Lv3,000 *Missile Price:* Lv20,000

200-kg WASP Bomb

Type: aircraft guided bomb *Nation:* generic *Launcher Weight:* 0 *Bomb Weight:* 200 kg *Range:* 5 km *Guidance:* automatic following gunner lock on *Homing Value:* 10 *Attack Angle:* direct *Burst radius:* 1000 meters *DPV:* 7 *Price:* Lv3,000

200-kg High Explosive Bomb

Type: aircraft guided bomb *Nation:* generic *Launcher Weight:* 0 *Bomb Weight:* 200 kg *Range:* 5 km *Guidance:* automatic following gunner lock on *Homing Value:* 10 *Attack Angle:* direct *Damage:* as explosion (EP = 150) *Price:* Lv2,000

MELEE WEAPONS

Axe

Length: 100 cm (Bulk = 4) *Weight:* 4 kg *Melee Range:* long *Melee Skill Modifier:* -2 *DP:* 0.6 *Price:* Lv4

Machete

Length: 60 cm (Bulk = 1) *Weight:* 2 kg *Melee Range:* long *Melee Skill Modifier:* +1 *DP:* 0.3 *Price:* Lv4

Bayonet

Length: 25 cm (Bulk = 0) (unless attached to rifle, in which case use bulk of rifle) *Weight:* 0.5 kg *Melee Range:* long (if attached to rifle, otherwise as knife) *Melee Skill Modifier:* +1 (if attached to rifle, otherwise as knife) *DP:* 0.2 (if attached to rifle, otherwise as knife) *Price:* Lv4

Knife

Length: 25 cm (Bulk=0) *Weight:* .2 kg *Melee Range:* short *Melee Skill Modifier:* +2 (if using blade, +0 if attempting knuckle strike) *DP:* 0.1 *Price:* Lv5

Hatchet

Length: 40 cm (Bulk = 1) *Weight:* 2 kg *Melee Range:* short *Melee Skill Modifier:* -1 *DP:* 0.4 *Price:* Lv3

Club

Length: variable (average Bulk = 2) *Weight:* variable *Melee Range:* long *Melee Skill Modifier:* -1 *DP:* 0.4 (blunt trauma only) *Price:* none (generally found lying around)

Vehicles

An even wider variety of vehicles are produced by the factories of Earth and its colonies than are available today. A complete catalog would exceed the page count of this entire game and would probably make for some very tedious reading. The listings below give a broad sample of the types of vehicles available and establish the rough performance parameters of different varieties to enable referees to make up additional ones.

Vehicles travel by interacting with one of three media: land, air, or water. Ground vehicles interact through means of wheels, tracks, rails, or air cushions. Air vehicles remain aloft by means of dynamic lifting surfaces (such as rotors or airfoil wings) or lifting cells filled with a gas lighter than the background atmosphere. Vessels rely on air-filled hulls for buoyancy in water. These hulls may be designed either to travel completely submerged, (as in a submarine), partially submerged, or lifted from the water by hydrofoils.

LAND VEHICLES

Family Car

This represents a typical family ground car of the type in use on most worlds. It is usually a hydrogen-burner, although a few worlds with abundant petrochemicals have found it more economical to build or import gasoline-burners. In many urban areas battery-powered commuter cars (with considerably lower endurance) are used. *Type:* Wheeled Ground Car *Crew:* driver *Weight:* 800 kg *Armor:* *Suspension:* 0.2 *All faces:* 0.4 *Signature:* 2 *Evasion:* 1 *Cargo:* 4 passengers & 200 kg cargo *Max Speed:* 150 kph *Cruising Speed:* 100 kph *Combat Movement:* 300 meters *Off-Road Mobility:* quartered *Power Plant:* 0.06 MW hydrogen fuel cell *Fuel Capacity:* 32 kg H_2 *Fuel Consumption:* 2 kg/hr *Endurance:* 16 hours *Price:* Lv2,500

Range Truck

This vehicle, similar to contemporary jeeps and landrovers, is a cross-country vehicle designed to carry passengers and light cargo off-road. *Type:* Cross-Country Light Truck *Crew:* driver *Weight:* 800 kg *Armor:* *Suspension:* 0.3 *All faces:* 0.4 *Signature:* 2 *Evasion:* 2 *Cargo:* 5 passengers & 300 kg cargo *Max Speed:* 140 kph *Cruising Speed:* 100 kph *Combat Movement:* 300 meters *Off-Road Mobility:* halved *Power Plant:* 0.1 MW hydrogen fuel cell *Fuel Capacity:* 48 kg *Fuel Consumption:* 3 kg/hr *Endurance:* 16 hours *Price:* Lv3,000

Utility Van

This is a general-purpose passenger or cargo hauler used for light loads on roads. *Type:* Wheeled *Van Crew:* driver *Weight:* 1,200 kg *Armor:* *Suspension:* 0.2 *All faces:* 0.4 *Signature:* 4 *Evasion:* 3 (full speed) *Cargo:* 6 passengers & 500 kg cargo *Max Speed:* 140 kph *Cruising Speed:* 100 kph *Combat Movement:* 300 meters *Off-Road Mobility:* quartered *Power Plant:* 0.1 MW hydrogen fuel cell *Fuel Capacity:* 48 kg *Fuel Consumption:* 3 kg/hr *Endurance:* 16 hours *Price:* Lv3,000

Heavy Truck

This is a specialized cargo hauler for use on frontier worlds. While at its best on roads, its large tires, high ground clearance, and all-wheel drive give it a reasonable off-road capability as well. In military service the vehicle is often equipped with a heavy ring mount on the left side of the cab for either a machine gun or autocannon. *Type:* Wheeled Cargo Truck *Crew:* driver *Weight:* 4,000 kg *Armor:* *Suspension:* 0.3 *All faces:* 0.4 *Signature:* 6 *Evasion:* 0 *Cargo:* 2 passengers & 8,000 kg *Max Speed:* 130 kph *Cruising Speed:* 100 kph *Combat Movement:* 250 meters *Off-Road Mobility:* quartered *Power Plant:* 0.13 MW hydrogen fuel cell *Fuel Capacity:* 96 kg *Fuel Consumption:* 4 kg/hr *Endurance:* 24 hours *Price:* Lv10,000
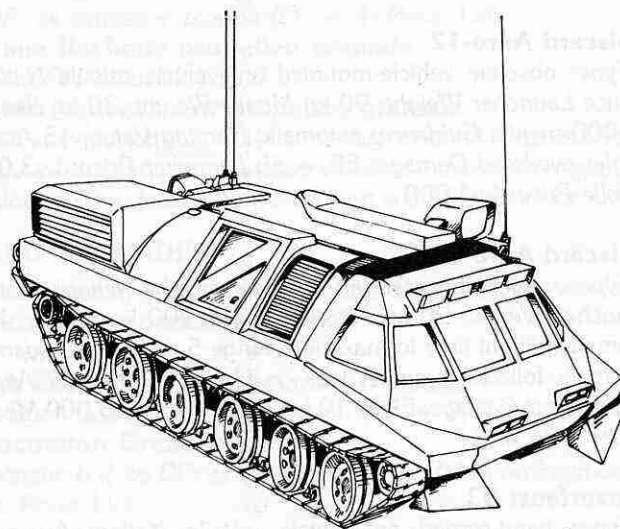

Explorer ATV

A tracked wilderness vehicle popular with scientific parties. It

is spacious enough to double as living quarters in hostile environments and can negotiate most types of terrain. *Type:* Tracked All-Terrain Vehicle *Crew:* driver *Weight:* 3,000 kg *Armor: Suspension:* 1 *All faces:* 1 *Signature:* 8 *Evasion:* 0 *Sensor Range:* none *Cargo:* 8 passenger & 3,000 kg *Max Speed:* 100 kph *Cruising Speed:* 50 kph *Combat Movement: 200 meters Off-Road Mobility:* full *Power Plant:* 0.2 MW hydrogen fuel cell *Fuel Capacity:* 192 kg *Fuel Consumption:* 6 kg/hr *Endurance:* 32 hours *Price:* Lv20,000
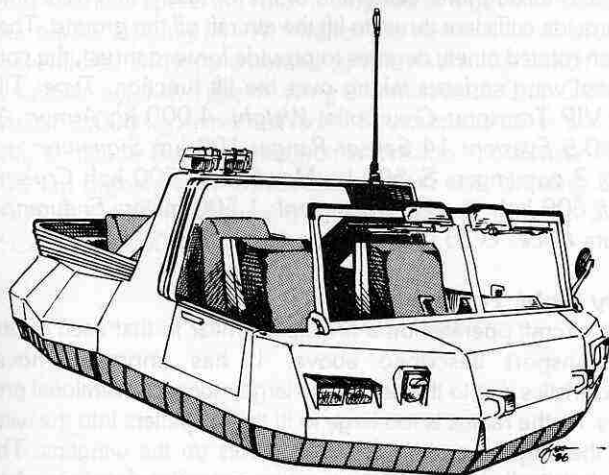
Bridgeport Swift Songbird

This is typical of any of a number of light hovercraft in civilian and military use. It has exceptional performance over both water and most types of land terrain, although its performance in dense woods is limited to established roads and paths, and performance in heavily broken ground is nil. *Type:* Utility Hovercraft *Crew:* driver *Weight:* 1,000 kg *Armor: Plenum:* 0.3 *All faces:* 1 *Signature:* 1 *Evasion:* 9 *Cargo:* 6 passengers & 1,000 kg *Max Speed:* 240 kph *Cruising Speed:* 200 kph *Combat Movement: 500 meters Off-Road Mobility:* full *Power Plant:* 0.25 MW hydrogen fuel cell *Fuel Capacity:* 100 kg *Fuel Consumption:* 8 kg/hr *Endurance:* 12 hours *Price:* Lv20,000

Military ACV-APC

A typical air cushion armored personnel carrier, the extra weight of the vehicle is carried at high speed by jet-assisted vectored thrusters. These also give the vehicle a limited jump-jet capability enabling it to negotiate cliffs and similar obstructions. Each minute in jump-jet mode uses ten minutes of fuel and speed is quartered. *Type:* Hover APC *Crew:* driver, gunner, commander *Weight:* 3,000 kg *Armor: Plenum:* 2 *All faces:* 6 *Armament:* (all carried in a single overhead unmanned turret) 1 Guiscard Aero-12 missile launcher with 6 missiles carried internally, 1 25 mm autocannon, 1 5.5 mm machine gun *Signature:* 4 *Evasion:* 7 *Sensor Range:* 10 kilometers *Cargo:* 8 passengers & 2,000 kg *Max Speed:* 220 kph *Cruising Speed:* 200 kph *Combat Movement:* 460 meters *Off-Road Mobility:* full *Power Plant:* 0.5 MW hydrogen fuel cell *Fuel Capacity:* 270 kg *Fuel Consumption:* 15 kg/hr *Endurance:* 18 hours *Price:* Not generally available outside of military channels. The average open market price is around Lv40,000 exclusive of armament.
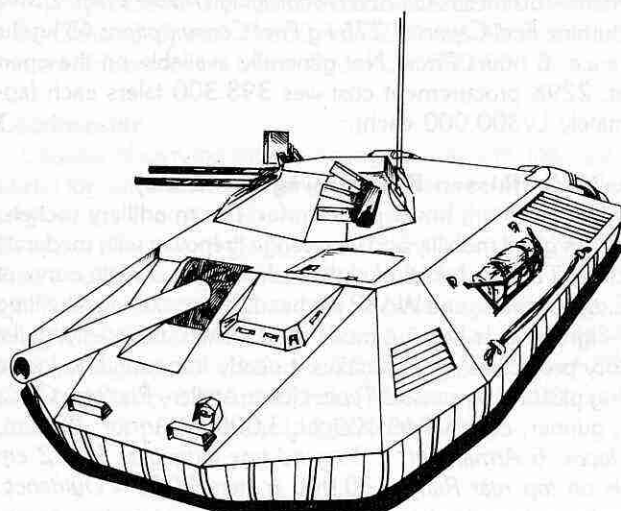
AC-8 (Aero-Char, 8-ton)

Often called "gunplats" or "gunsleds," hovertanks are the cutting edge of heavy ground force units. The Aero-Char 8 is representative of many similar tanks of Central Asian War vintage. Mismanaged overproduction at the end of the war coupled with bloc obsolescence has caused the AC-8 to be widely exported and it is still used by many French colonial troops. The vehicle uses vectored-thrust jets which give it a limited jump jet capability enabling it to negotiate cliffs and similar obstructions. Each minute in jump-jet mode uses ten minutes of fuel and speed is quartered. *Type:* Obsolete French Hovertank *Crew:* driver, gunner, commander *Weight:* 8,000 kg *Armor: Plenum:* 5 *Front Overhead:* 80 *Other faces:* 30 *Armament:* 8 cm mass driver gun in hull sponson *Aimed Fire Range:* 2,000 meters *Range Finder* +2 *ROF:* 4 *Rounds Carried:* 60 *DP:* 80 25 mm autocannon in remote turret, 7.5 mm machine gun in remote turret, 1 Guiscard Aero-12 missile launcher in remote turret, with 8 missiles carried internally. *Signature:* 6 *Evasion:* 6 *Sensor Range:* 12 kilometers (+1) *Cargo:* 500 kg *Max Speed:* 210 kph *Cruising Speed: 200 kph Combat Movement: 460 meters Off-Road Mobility:* full *Power Plant:* 1.6 MW MHD turbine *Fuel Capacity:* 240 kg *Fuel Consumption:* 40 kg/hr *Endurance:* 6 hours *Price:* Not generally available on the open market. Last recorded transfer was 56 AC-8's, with armament and spares, to the government of Chile for Lv200,000 each.

LkPz-IX (Luftkissenpanzer, Mark 9)

Hovercraft (Luftkissen) are generally referred to in German service as "Lukis." The Mark IX is the most recent version in service with the German Army and possesses a very modern armament array and sensor suite. A vehicle this sophisticated is rarely encountered on the frontier except in a very hot situation. Like most combat hovercraft, it possesses a limited jump-jet capability which uses 10 minutes of endurance for every minute of flight. Speed is quartered in jump mode. *Type:* Hovertank *Crew:* command driver, gunner *Weight:* 10,000 kg *Armor: Plenum:* 25 *Front:* 90 *All other faces:* 60 *Armament:* 7 cm mass driver gun in remote overhead mount *Aimed Fire Range:* 2,000 meters *Range finder:* +3 *ROF:* 5 *Rounds Carried:* 100 *DP:* 90 5.5 mm machine gun in remote overhead mount (coaxial with main gun) 2 Luchs missile launchers with 10 missiles carried internally. *Signature:* 3 *Evasion:* 8 *Sensor Range:* 12 kilometers (+2) *Cargo:*

500 kg *Max Speed:* 220 kph *Cruising Speed:* 200 kph *Combat Movement:* 460 meters *Off-Road Mobility:* full *Power Plant:* 2 MW MHD turbine *Fuel Capacity:* 275 kg *Fuel Consumption:* 45 kg/hr *Endurance:* 6 hours *Price:* Not generally available on the open market. 2298 procurement cost was 398,300 talers each (approximately Lv300,000 each).

LkRw-12 (Lufkissen Raketenwagen, 12 cm)

The LkRw-12 is a hover platform for 12 cm artillery rockets. It combines good mobility and long-range firepower with moderate protection. The two banks of eight rockets each contain a mix of APHE, obscuration, and WASP warheads. All rockets can be fired in free-flight or laser-homing mode. The rockets are low-flying flat trajectory projectiles, which makes it nearly impossible to locate the firing platform by sensor. *Type:* Hover Artillery Platform *Crew:* driver, gunner, commander *Weight:* 3,000 kg *Armor:* Plenum: 2 All faces: 6 *Armament:* 2 8-round box launchers for 12 cm rockets on top rear *Range:* 30,000 meters *ROF:* 4 *Guidance:* Automatic, automatic after gunner lock on, laser-homing, or free flight. *Warhead:* APHE *DP:* as tamped explosion (EP = 30) *Homing Value:* 14 *Warhead:* WASP *Burst radius:* 500 meters *DP:* 5 *Warhead:* Obscuration *DP:* as explosion (EP = 4), but no fragmentation. Creates a thick obscuration cloud which blocks visual and thermal images for 4 minutes. The cloud is 100 meters long and 20 meters high. *Signature:* 4 *Evasion:* 7 *Sensor Range:* 10 kilometers *Cargo:* 500 kg *Max Speed:* 220 kph *Cruising Speed:* 200 kph *Combat Movement:* 460 meters *Off-Road Mobility:* full *Power Plant:* 0.5 MW hydrogen fuel cell *Fuel Capacity:* 270 kg *Fuel Consumption:* 15 kg/hr *Endurance:* 18 hours *Price:* Not generally available on the open market; 2298 procurement price was 265,520 talers each (approximately Lv200,000) exclusive of armament.

CONVENTIONAL RAILROAD

Railroads are efficient means of moving large quantities of cargo and passengers by land. Each car rides on solid wheels which in turn ride on solid tracks. This allows very high pressure loadings (much higher than for vehicles which ride on open ground). Average speed in open country is 200 kph.

AIR FILM TRAIN

Air film trains also ride on hard rails, but interact by means of a thin high-pressure air film instead of wheels. This allows even higher pressure loadings with very little friction. Average speed in open country is 500 kph.

AIRCRAFT

The following brief listing gives a representative sample of the types of aircraft in widespread use in the year 2300. Virtually all aircraft are made entirely of nonmetallic synthetic components resulting in low overall weight, high structural integrity, and low radar signature. Virtually all civilian aircraft carry, by law, radio transponders to assist air traffic controllers in aircraft location.

Ornithider

The ornithider is a one-man, semi-powered, ultralight glider. The wings are slaved to the pilot's arms and the small battery pack amplifies the strength of the arms sufficiently to power takeoffs and limited maneuvers. The wings can also be locked in flight for extended gliding with trim managed by shifting the weight of the pilot. The upper surfaces of the wings are solar collectors which recharge the battery, and given a good enough thermal updraft for extended nonpowered orbiting to recharge the battery, flight time is

theoretically unlimited. In practice, pilot fatigue limits the endurance to about six or eight hours. The glider is usually stored in the open with its wings deployed (assuming good weather) to recharge the battery. *Type:* Solar Battery-Powered Winged Glider *Crew:* pilot *Weight:* 10 kg *Armor:* none *Evasion:* 8 *Signature:* +1 *Cargo:* 110 kg (including pilot) *Max Speed:* 100 kph *Cruising Speed:* 60 kph *Combat Movement:* 200 meters *Endurance:* 10 minutes of maneuvering (60 minutes of sunshine recharges 1 minute worth of powered flight) *Price:* Lv2,000

Military Liaison and Civilian Light Transport

This aircraft combines a vertical takeoff and landing capability with efficient level flight by means of two propfans which rotate on an axis through the centerline of the wings. When horizontal they provide sufficient thrust to lift the aircraft off the ground. They are then rotated ninety degrees to provide forward thrust, the conventional wing surfaces taking over the lift function. *Type:* Tilt-Rotor VIP Transport *Crew:* pilot *Weight:* 4,000 kg *Armor:* All faces: 0.5 *Evasion:* 14 *Sensor Range:* 100 km *Signature:* +1 *Cargo:* 3 passengers & 500 kg *Max Speed:* 700 kph *Cruising Speed:* 600 kph *Combat Movement:* 1,500 meters *Endurance:* 4 hours *Price:* Lv35,000

Utility Light Transport

This aircraft operates on a principle similar to that used on the VIP transport described above. It has improved hover characteristics due to the use of two large-radius conventional propellers. As the radius is too large to fit the propellers into the wing itself, the engines are mounted on pivots on the wingtips. The characteristically high wing is to ensure propeller clearance when landed. *Type:* Tilt-Rotor Utility Transport *Crew:* pilot *Weight:* 8,000 kg *Armor:* All faces: 1 *Evasion:* 12 *Sensor Range:* 100 km *Signature:* +2 *Cargo:* 3,000 kg *Max Speed:* 600 kph *Cruising Speed:* 500 kph *Combat Movement:* 1,200 meters *Endurance:* 3 hours *Price:* Lv300,000
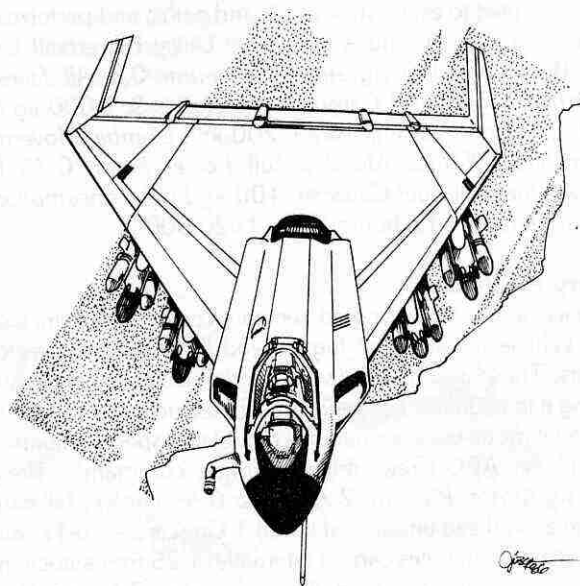
Conventional Frontier Fighter

This aircraft is optimized to perform best under primitive conditions, a feature extremely useful on frontier worlds where massive paved airstrips are infrequent except at starports. Its vectored thrust engines, in addition to giving it a vertical takeoff capability, also make it extremely maneuverable. *Type:* Vectored Thrust VSTOL

Fighter/Bomber *Crew:* pilot *Weight:* 8,000 kg *Armor:* All faces: 4 *Armament:* twin 25 mm autocannons, 4 missile launcher hardpoints, 4 bomb hardpoints *Evasion:* 20 *Sensor Range:* 400 km (+2) *Signature:* -2 *Max Speed:* 1,500 kph *Cruising Speed:* 1000 kph *Combat Movement:* 3,000 meters *Endurance:* 5 hours *Price:* Lv2,000,000

Close Support Gunship

This aircraft uses the X-Wing concept to achieve good level flight performance and a vertical takeoff and landing capability and excellent hover characteristics. The aircraft is lifted aloft by the overhead, large diameter, four-bladed rotor. Forward thrust is provided by a shrouded conventional turbine. Once airborne and at close to cruise speed the rotor is stopped in flight and locked (the four blades forming an "X," hence the name X-wing) providing conventional lift (supplemented by the stub wings which double as weapon pylons). *Type:* X-Wing Ground Attack Craft *Crew:* pilot *Weight:* 6,000 kg *Armor:* All faces: 3 *Armament:* 25 mm autocannon, 8 missile launcher hardpoints *Evasion:* 16 *Sensor Range:* 200 km *Signature:* +1 *Max Speed:* 800 kph *Cruising Speed:* 600 kph *Combat Movement:* 1,600 meters *Endurance:* 3 hours *Price:* Lv500,000

First-Line Multi-Purpose Fighter

This is representative of the best Mach-2 fighters available. Although it does not have a vertical takeoff capability, its vectored thrust engines give it a very short takeoff run and excellent maneuverability. It carries an excellent sensor suite and is designed to have a very low signature on enemy sensors. *Type:* Supersonic Fighter-Bomber *Crew:* pilot *Weight:* 8,000 kg *Armor:* All faces: 6 *Armament:* 2 25 mm autocannon, 4 missile hardpoints, 6 bomb hardpoints *Evasion:* 19 *Sensor Range:* 500 km (+3) *Signature:* -5 *Max Speed:* 2,000 mph *Cruising Speed:* 1,600 mph *Combat Movement:* 4,000 m *Endurance:* 5 hours *Price:* Lv3,000,000

Continental Interceptor

This aircraft sacrifices a certain amount of stealth for a very high (Mach 3+) speed, enabling it to make long-range interceptions of hostile aircraft. At lower speeds the aircraft is much more difficult to detect since it does not have as pronounced an engine exhaust or the heavy IR emissions from heated wing leading edges that result from high-speed flight. *Type:* Hypersonic Air Superiority Craft *Crew:* pilot *Weight:* 9,000 kg *Armor:* All faces: 7 *Arma-*

ment: 6 missile hardpoints *Evasion:* 16 *Sensor Range:* 500 km (+4) *Signature:* +1 (-4 at half cruise speed) *Max Speed:* 4,000 kph *Cruising Speed:* 3,000 kph *Combat Movement:* 8,000 meters *Endurance:* 4 hours *Price:* Lv4,000,000

Loadmaster

Capable of carrying either passengers or freight, this type is very useful for quick transfer of large cargo loads on most worlds. The engines are mounted above and ahead of the wings increasing lift at low speeds and giving the aircraft a shorter takeoff distance than would be expected from an aircraft of this size. *Type:* Heavy Lift Transport Aircraft *Crew:* pilot, copilot, engineer, cargo master *Weight:* 50,000 kg *Armor:* All faces: 1 *Evasion:* 11 *Sensor Range:* 300 km *Signature:* +8 *Cargo:* 70,000 kg *Max Speed:* 900 kph *Cruising Speed:* 800 kph *Combat Movement:* 1,800 meters *Endurance:* 12 hours *Price:* Lv2,500,000
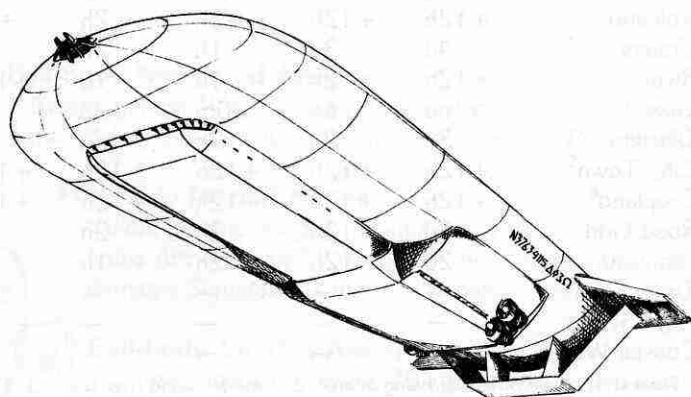
Cargo Zep

This helium-filled rigid airship is an efficient and cost-effective means of hauling large cargo to inaccessible areas. Although slower than conventional aircraft, its cost efficiency approaches that of railroads and ships without the need for rails or a navigable waterway, and thus is in widespread use. A far cry from the hydrogen-filled blimps and dirigibles of the early Twentieth century, airships are still nicknamed "Zepps" (short for Zeppelins). *Type:* LTA Cargo Carrier *Crew:* pilot, copilot, engineer, cargo master *Gas Cell Volume:* 70,000 m³ *Armor:* 0.5 *Evasion:* 4 *Signature:* +2 *Cargo:* 32,000 kg *Max Speed:* 250 kph *Cruising Speed:* 200 kph *Combat Movement:* 500 meters *Endurance:* 10 days *Price:* Lv600,000

Light Passenger Zep

This handy little airship features a spherical, semi-rigid gasbag which, in flight, rotates around a central axis giving it additional lift. The spherical gasbag also eliminates the tendency of larger cigar-shaped airships to "weathervane" in high winds, giving it a much better all-weather flight capability. *Type:* LTA Passenger Craft *Crew:* pilot *Gas Cell Volume:* 8,000 m³ *Armor:* 0.5 *Evasion:* 7 *Sensor Range:* 200 km *Signature:* -2 *Cargo:* 3,000 kg *Max Speed:* 300 kph *Cruising Speed:* 250 kph *Combat Movement:* 500 meters *Endurance:* 7 days *Price:* Lv70,000

Travel

TYPICAL TRAVEL TIMES
(per 100 km hex)

Terrain Type	Foot[7]	Horse[1,7]	Hover	Wheel	Tracked	Aircraft[11]	LTA[9]	Ship[9]	Hydrofoil[9]	Boat[9]
Flat	2d	1d	30m	1h	2h	10m	4h	—	—	—
Hilly	2d	1d	1h	2h	3h	—	—	—	—	—
Broken	3d	2d	3h	5h	6h	—	—	—	—	—
Mountain	5d	4d	no	no	no	—	—	—	—	—
Savannah	2d	1d	1h	5h	6h	—	—	—	—	—
Woods	2d	1d	8h	6h	8h	—	—	—	—	—
Forest	3d	2d	No	10h	12h	—	—	—	—	—
Swamp	2d	1d	3h	No	6h	—	—	—	—	—
Desert	2d	1d	30m	2h	2h	—	—	—	—	—
Volcano	+12h	+12h	+2h	+2h	+2h	—	—	—	—	—
Craters	4d	3d	1h	2h	4h	—	—	—	—	—
River[3]	+12h	+12h	1h[2]	+1d	+12h	—	—	—	30m[2]	10h[4]
Lake	no	no	30m	no	no	—	—	4h	1h	8h
Glacier	3d	2d	3h	no	8h	—	—	—	—	—
City, Town[5]	+12h	+12h	+12h	+12h	+12h	+6h	+6h	+6h	+6h	+6h
Cropland[6]	+12h	+12h	+12h	+12h	+12h	—	—	—	—	—
Road Grid	2d	−12h[8]	2h	2h	2h	—	—	—	—	—
Highway	2d	−12h[8]	12h	1h	2h	—	—	—	—	—
Calm Seas	—	—	—	—	—	—	—	4h	1h	8h
High Seas	—	—	—	—	—	—	—	5h	1h	—
Coastal Waters	—	—	—	—	—	—	—	6h	1h	8h

Notes: 1. Horse or similar riding animal. 2. Time following river route. 3. Time shown is to cross river. 4. Time shown is drifting downstream; double time to go upstream. 5. Assumes passing through settlement, stopping for lunch, etc. 6. Assumes skirting crop fields. 7. Assumes 12 hours walking/riding and 12 hours resting per day. 8. Decrease in usual time to traverse hex when using a highway. 9. Weather may increase time spent by up to one day. 10. Use the following special travel times per 100 km hex: Railroad 30m, Airfilm 10m, Maglev 10m. 11. Supersonic aircraft travel at twice this rate; hypersonic and scramjets travel at four times this rate.

MAXIMUM SPEEDS

Vehicle Type	Max Speed kph	per hex
Foot, walking	5	40h
Horse	10	20h
Hovercraft	200	30m
Airfilm	600	10m
Maglev	600	10m
Wheeled Car	150	40m
Tracked Vehicle	80	75m
Subsonic Air	900	6m
Supersonic Air	1800	3m
Scramjet	4000	90s
Dirigible (LTA)	30	3h
Ship	30	3h
Hydrofoil	150	36m
Boat	15	6h

Note: Walking and riding specify double travel time, assuming half the time is spent in rest/meals/sleep. Others assume constant driving and shifts of drivers.

Airfilm is common on garden worlds; maglev is common on vacuum worlds.

TIMES

1d = 1 day; 1h = 1 hour;
1m = 1 minute; 1s = 1 second.

TRAVEL TIME—INTERFACE

Going Into Orbit

Craft	Preparation	Travel Time	Cleanup	Turn Around
Rocket	1d	1h	2h	6h
Rocket Plane	6h	1h	1h	immediate
Scramjet	3h	2h	1h	immediate
Catapault	1h	2h	none	as lifting body

Returning to Surface

Scramjet	none	1h	2h	3h
Parachute	1h	2h	4h	no
Deadfall	1h	1h	none	no
Rocket	none	1h	12h	1d
Lifting Body	1h	1h	2h	no

Preparation includes fuelling, pre-flight checks, and boarding.
Travel Time includes actual flight time and maneuvering to position in orbit.
Cleanup includes post-flight checks and equipment shutdown.
Turn Around is the minimum time required for a vessel to leave its destination and begin its return to its starting point.

INTERSTELLAR TRAVEL TIME

Depending on mass and drive, between 0.15 and 9.5 ly per day.

Speed Limit: Maximum 7.7 ly travel between stars; a stop in a gravity well is required for drive safety and performance. The stop requires about 40 hours.

INTERPLANETARY TRAVEL TIME

Within a gravity well (where G is greater than 0.0001) stutterwarp operates at about 0.01% efficiency. Multiply interstellar speed (in ly per day) by 0.645 for insystem speed in au per day.
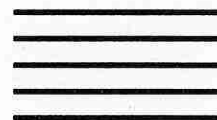
Armor

The following examples of body armor are available for characters who expect to need it. Several different items may be worn at one time (for instance, a helmet and a vest).

Helmet
Nation: generic *Weight:* 0.5 kg *Area Protected:* head *Armor Value:* 2 *Initiative Penalty:* none *Price:* Lv5

High Threat Combat Helmet
Nation: generic *Weight:* 1 kg *Area Protected:* head *Armor Value:* 5 *Initiative Penalty:* none *Price:* Lv20

Steel Helmet
Nation: primitive generic *Weight:* 2 kg *Area Protected:* head *Armor Value:* 0.2 *Initiative Penalty:* none *Price:* Lv1

Chainmail Vest
Nation: primitive generic *Weight:* 8 kg *Area Protected:* torso *Armor Value:* 0.1 (non rigid) *Initiative Penalty:* 1 *Price:* Lv1

Rigid Breastplate
Nation: generic *Weight:* 8 kg *Area Protected:* torso *Armor Value:* 4 *Initiative Penalty:* -1 *Price:* Lv20

Non Rigid Vest
Nation: generic *Weight:* 2 kg *Area Protected:* torso *Armor Value:* 0.8 *Initiative Penalty:* none *Price:* Lv20

Inertial Armor Vest
Nation: generic *Weight:* 3 kg *Area Protected:* torso *Armor Value:* 1 (counts as rigid for blunt trauma damage) *Initiative Penalty:* none *Price:* Lv100

Full-body Non Rigid Armor
Nation: generic *Weight:* 10 kg *Area Protected:* torso and limbs *Armor Value:* 0.8 *Signature:* -1 *Initiative Penalty:* -1 *Price:* Lv60

Full-body Inertial Armor
Nation: generic *Weight:* 10 kg *Area Protected:* torso and limbs *Armor Value:* 1 (counts as rigid for blunt trauma damage) *Signature:* -2 *Initiative Penalty:* -1 *Price:* Lv350

Full-body Combat Armor
Nation: generic *Weight:* 20 kg *Area Protected:* limbs (usually worn with breastplate) *Armor Value:* 4 *Signature:* -2 *Initiative Penalty:* -2 *Price:* Lv100

POWERED COMBAT ARMOR

Powered combat armor, or combat walkers, are articulated powered exoskeletal machines with a tough armored covering. They stand about 3 meters tall.

BH-21 Combat Walker
Nation: France *Weight:* 380 kg *Crawl:* not allowed *Walk:* 10 meters *Trot:* 20 meters *Run:* not allowed *Power Supply:* Internal rechargeable power cell *Power Duration:* 24 hours *Integral Armament:* Quinn-Darlan Mk 4-A1 PGCW *Sensor Range:* 6 kilometers *Signature:* 2 *Area Protected:* all *Armor Value:* 8 *Sig:* 2 *Init Pen.:* -4 *Price:* Lv17,000

Kz-7 (Kampfanzug-7) Combat Walker
Nation: Germany *Weight:* 455 kg *Crawl:* 2 meters *Walk:* 15 meters *Trot:* 30 meters *Run:* 50 meters *Power Supply:* Internal rechargeable power cell *Power Duration:* 18 hours *Integral Armament:* Jaschonek Fabrikant A-4 Sturmgewehr in torso LK-1fKz 35-01 laser in right arm *Sensor Range:* 8 kilometers (+1) *Signature:* 1 *Area Protected:* all *Armor Value:* 10 *Signature:* 1 *Initiative Penalty:* -3 *Price:* Lv33,000
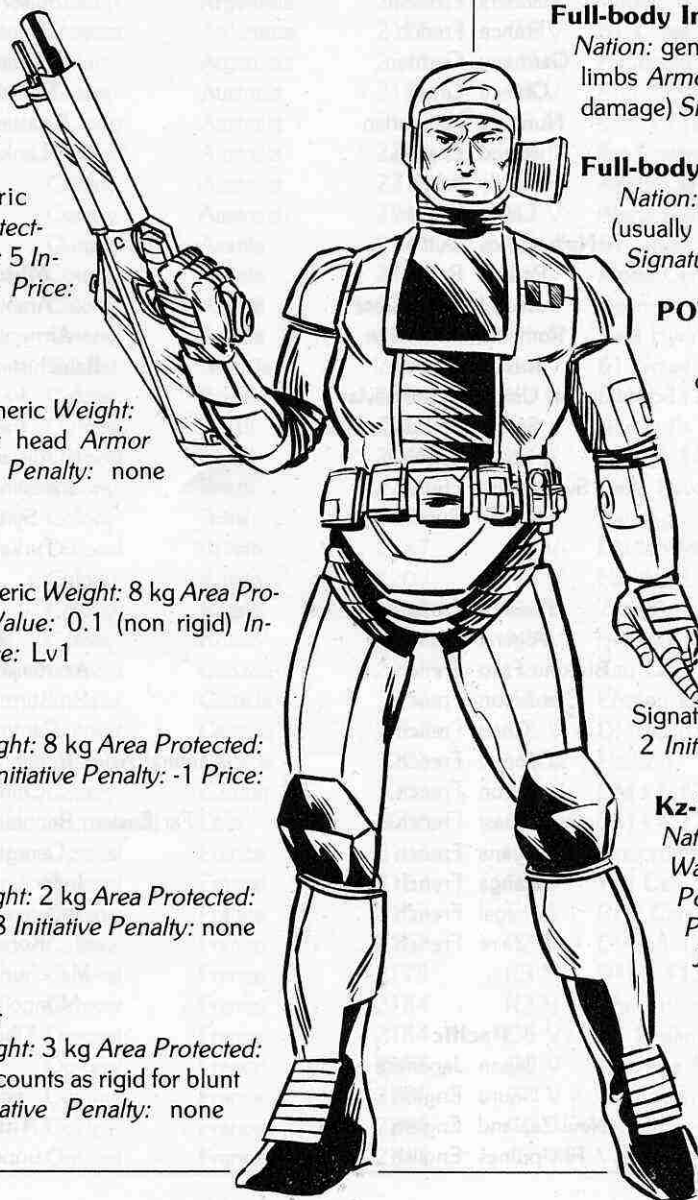
The Nations of Earth

Africa

Angola	Portuguese
Azania	English
Biafra	English
Ethiopia	Amharic
Kenya	English
Madagascar	French
Malawi	English
Mali	French
Mozambique	Portuguese
Nigeria	English
Somalia	Somali
Tanzania	English
Ubangi Shari	French
Zambia	English
Zimbabwe	English

North Africa

Berbera	Arabic
Eritrea	French
Kanuri	Kanuri
Mauritania	French
Morocco	Arabic
Polisaria	Arabic
Tunisia	Arabic
United Arab Republic	Arabic

North America

America	English
Canada	English
Mexico	Spanish
Texas	English and Spanish

South America

Argentina	Spanish
Bolivia	Spanish
Brazil	Portuguese
Chile	Spanish
Inca Republic	Spanish
Paraguay	Spanish
Uruguay	Spanish
Venezuela	Spanish

Australia

Australia	English
Papua	English
Tasmania	English

Europe

Albania	Albanian
Austrovenia	German
Britain	English
Bulgaria	Bulgarian
Catalonia	Catalan
Croatia	Serbo-Croatian
Czechoslovakia	Czech
Flanders	Flemish
France	French
Germany	German
Greece	Greek
Hungary	Hungarian
Ireland	English
Italy	Italian
Latvia	Latvian
Netherlands	Dutch
Poland	Polish
Portugal	Portuguese
Romania	Romanian
Russia	Russian
Scandinavian Union	Scandinavian
Serbia	Serbo-Croatian
Spain	Spanish
Switzerland	French
Ukraine	Russian

French Empire

Algeria	French
Burkina Faso	French
Cameroon	French
Chad	French
Djibouti	French
Gabon	French
Guinea Coast	French
Guyana	French
Katanga	French
Senegal	French
Zaire	French

Pacific

Japan	Japanese
Nauru	English
New Zealand	English
Philippines	English

India

Afghanistan	Farsi
Bengal	English
Bhutan	Dzongkha
Bihar	English
Bombay	English
India	English
Madras	English
Mysore	English
Nepal	Nepali
Pakistan	Urdu
Punjab	English
Rajastan	English
Sri Lanka	Tamil

Middle East

Arabia	Arabic
Armenia	Armenia
Baluchistan	Farsi
Iran	Farsi
Iraq	Arabic
Kurdistan	Kurdish
Palestine	Hebrew and Arabic
Syria	Arabic
Turkey	Turkish

Asia

Azerbaijan	Azerbaijani
Burma	Burmese
Canton	Cantonese
Central Asian Republic	Russian
China	Mandarin
Far Eastern Republic	Russian
Georgia	Russian
Indochina	French
Indonesia	Malay
Korea	Korean
Manchuria	Manchurian
Mongolia	Mongolian
Tibet	Mandarin

Antarctica

unpopulated

The Colonies of Earth

Star	Star Name	Type	Nationality	Year	Star	Star Name	Type	Nationality	Year
M5 V	Barnard's Star	Outpost	America	2160	G0 V	Beta Comae	Colony	France	2220
M5 V	Broward	Outpost	America	2172	K4 V	Kimanjano	Colony	France	2231
K7 V	King	Colony	America	2194	K3 V	Vogelheim	Colony	France	2244
M1 V	New Melbourne	Outpost	America	2199	G0 IV	Eta Bootes	Colony	France	2246
G5 IV	Mu Herculis	Colony	America	2215	M3 V	DM+27 28217	Outpost	France	2274
A0 V	Vega	Outpost	America	2224	M2 V	DM+36 2393	Colony	Germany	2224
M3 V	Red Speck	Outpost	America	2225	K6 V	Hochbaden	Colony	Germany	2231
G8 V	Ellis	Colony	America	2229	K7 V	Neubayern	Colony	Germany	2169
G8 VI	Beta Hydri	Colony	Arabia	2245	G0 V	Beta Canum	Colony	Germany	2207
G2 V	Alpha Centauri	Colony	Argentina	2168	K3 V	Vogelheim	Colony	Germany	2231
K1 V	DM-26 12026	Outpost	Argentina	2175	G8 V	61 Ursae Majoris	Colony	Germany	2241
K1 V	Omicron2 Eridani	Colony	Argentina	2245	M2 V	Augereau	Outpost	Germany	2268
K7 V	King	Colony	Australia	2196	K2 V	Rho Eridani	Colony	Inca	2289
M1 V	New Melbourne	Outpost	Australia	2196	K3 V	DM-3 1123	Colony	Inca	2294
M3 V	Ross 863	Outpost	Australia	2201	G0 IV	Eta Bootes	Colony	Independent	2257
K7 V	Botany Bay	Colony	Australia	2212	G2 V	Alpha Centauri	Colony	ex-British	2167
G0 IV	Zeta Herculis	Colony	Australia	2217	G2 V	Alpha Centauri	Colony	ex-German	2167
M8 V	Nyotekundu	Outpost	Azania	2141	G8 V	61 Ursae Majoris	Colony	ex-French	2248
G2 V	Alpha Centauri	Colony	Azania	2167	G2 V	Alpha Centauri	Colony	Japan	2172
K4 V	Kimanjano	Colony	Azania	2205	M5 V	Davout	Outpost	Japan	2211
G8 V	61 Ursae Majoris	Colony	Azania	2280	G1 IV	Beta Hydri	Colony	Japan	2213
K2 V	Rho Eridani	Colony	Bavaria	2228	G8 V	61 Ursae Majoris	Colony	Japan	2257
G2 V	Alpha Centauri	Colony	Brazil	2184	K3 V	DM-3 1123	Colony	Life Foundation	2258
M1 V	DM-21 1377	Outpost	Brazil	2258	M5 V	Barnard's Star	Outpost	Manchuria	2153
M7 V	Ross 614	Outpost	Brazil	2267	K1 V	DM-26 12026	Outpost	Manchuria	2172
F5 IV	Procyon	Colony	Brazil	2284	G8 V	Delta Pavonis	Colony	Manchuria	2201
K4 V	Queen Alice's Star	Colony	Britain	2178	M1 V	Xiuning	Outpost	Manchuria	2204
M4 V	Clarkesstar	Outpost	Britain	2187	K5 V	Epsilon Indi	Colony	Manchuria	2208
G0 V	Beta Canum	Colony	Britain	2207	M4 V	Hunjiang	Outpost	Manchuria	2213
G8 VI	Henry's Star	Colony	Britain	2217	G2 V	Zeta Tucanae	Colony	Manchuria	2214
G8 V	61 Ursae Majoris	Colony	Britain	2254	M4 V	Serurier	Outpost	Manchuria	2218
M4 V	DM+19 5116	Outpost	Canada	2255	G8 V	Tau Ceti	Colony	Manchuria	2219
K2 V	DM+3 123	Enclave	Canada	2257	K2 V	Epsilon Eridani	Colony	Manchuria	2235
M2 V	DM+15 4733	Outpost	Canada	2267	M5 V	DM-15 6290	Outpost	Manchuria	2238
K5 V	DM+20 5046	Colony	Canada	2273	M8 V	Haifeng	Outpost	Manchuria	2238
G2 V	Zeta Tucanae	Colony	Canton	2259	M2 V	DM+1 4774	Outpost	Manchuria	2247
G5 V	82 Eridani	Homeworld	Eber	0000	K2 V	DM+4 123	Enclave	Manchuria	2255
M2 V	Bessieres	Outpost	France	2145	K1 V	Omicron2 Eridani	Colony	Mexico	2245
M2 V	Augereau	Outpost	France	2152	G8 V	Tau Ceti	Colony	Mexico	2265
M4 V	Serurier	Outpost	France	2159	G0 V	Beta Canum	Enclave	Pentapod	2267
G2 V	Alpha Centauri	Colony	France	2167	K2 V	DM+4 123	Homeworld	Sung	0000
K1 V	DM-26 12026	Outpost	France	2175	K3 V	DM-3 1123	Colony	Texas	2258
M5 V	Davout	Outpost	France	2184	K2 V	Rho Eridani	Colony	Texas	2258
M8 V	Nyotekundu	Outpost	France	2184	G8 V	82 Eridani	Enclave	Texas	2269
M0 V	D'Artagnon	Outpost	France	2185	G0 V	Xi Ursae Majoris	Colony	Trilon Corp	2260
K4 V	Queen Alice's Star	Colony	France	2196	G5 V	82 Eridani	Colony	UAR	2261
G0 V	Beta Canum	Colony	France	2205	G0 IV	Eta Bootes	Colony	Ukraine	2244
M1 V	DM+36 2219	Outpost	France	2211	G1 VII	Van Maanen's Star	Outpost	Unmanned	2245
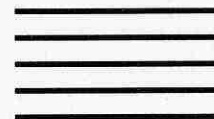
Upkeep

There is no universal currency in use throughout human space in 2300 AD, but exchanging one currency for another is a routine transaction that can be managed by any bank or currency exchange, and these are located almost everywhere. As French colonial and commercial interests are far-flung, the livre is the most useful currency with which to work, and all game prices are given in livres. The livre is divided into 100 centimes, and thus a price of Lv17.47 would be 17 livres and 47 centimes. Other currencies in widespread use include the American dollar, the German taler, and the Manchurian ruble.

TYPICAL PRICES

The following can be expected as typical prices.

Goods and Services: Restaurant food varies considerably in price depending on quality, service, and atmosphere of the establishment. Short-order convenience restaurants located almost everywhere provide nourishing meals for about Lv1. Better restaurants provide personal service and higher quality food for about Lv5. The most exclusive restaurants provide rare and exotic meals for up to Lv30.

Accommodations: Overnight accommodations range from Lv10 for a single bed in an austere but clean hostel to Lv60 for a luxury suite at an exclusive resort or metropolitan hotel. Monthly rent for a single-unit apartment runs from Lv100 in rural areas to Lv250 in metropolitan areas where housing is at a premium.

Goods: For prices of manufactured goods in general, a convenient rule of thumb for referees is to take the current 1980's price in dollars of an item and divide it by 3 to get a rough base price in livres. On frontier worlds which do not have local manufacturing facilities, manufactured goods must be imported and are consequently more expensive. Multiply their cost by two or three, depending on how far away from a major manufacturing center the world is located. On the other hand, locally produced goods tend to be much cheaper if produced further from another manufacturing facility. Colonies tend to price these goods lower to encourage their export in order to obtain the currency to purchase needed imports. Multiply the price of local goods by 0.9 down to 0.5 to reflect this.

Wages: The average unskilled laborer earns Lv1 per hour. Skilled workers make from Lv5 to Lv10 per hour, while workers with rare or particularly valuable skills make up to Lv50 per hour. Office workers, enlisted soldiers, and starship crews earn between Lv10,000 and Lv15,000 per year. Middle management, commissio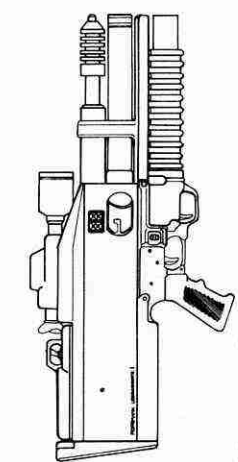ned officers, and senior officers on starships earn between Lv20,000 and Lv50,000 per year. Upper echelon management types earn up to Lv200,000 per year.

Travel: Commuter train service within a metropolitan area generally costs less than a livre. Travel between cities is calculated in price per 100 kilometers travelled. Train or surface ship service costs Lv5 per 100 kilometers travelled. Airship service costs Lv10, aircraft service Lv15, supersonic air service costs Lv20, and trans-atmospheric high speed service costs Lv25 per 100 kilometers. Cargo costs per ton per 100 kilometers are twice the cost for one passenger.
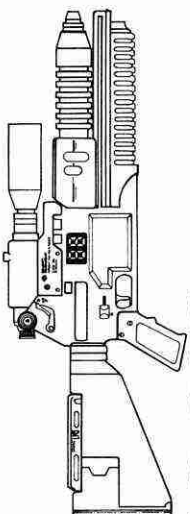
Getting into orbit is a reasonably expensive proposition on most worlds. Where a beanstalk is available, the price to orbit is Lv500 for 1 ton of cargo. If a beanstalk is not available, there are three means of moving from the ground to orbit: slingshots, shuttles, and scramjet spaceplanes. On low gravity worlds the price per ton of cargo to orbit is Lv600 for a slingshot, Lv2,000 for a rocket plane or scramjet, and Lv3,000 for a shuttle. These prices are multiplied by 1.5 on average gravity worlds and by 2 on high gravity worlds. Price per passenger is the same as the price per ton, except that slingshots may not be used to put passengers in orbit. Spaceplanes cannot be used on airless worlds.

Getting cargo and passengers down to a world surface from orbit costs 10% of the price of getting into orbit. This varies slightly from world to world, depending mostly on commerce patterns. Worlds which experience a high level of immigration and imports will multiply their cost-to-orbit by 0.5 and their cost-from-orbit by 2. Worlds which have few imports or immigrants but massive exports multiply their cost-to-orbit by 1.5 and their cost-from-orbit by 0.5. Economic pressures are such, however, that on most worlds movement to and from orbit remains fairly balanced.
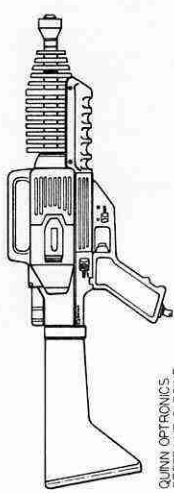
Travel between the stars is, by comparison, cheap. The average cost per ton per light year is Lv5. This will climb to as much as Lv20 per ton on high-volume, low-density cargos (such as carefully packed objects of art), and can drop as low as Lv3 per ton for high-density bulk cargo such as ore. Passenger accommodations average Lv100 per light year, but cheap, crowded accommodations can sometimes be purchased on merchant vessels for as little as Lv50 per light year while sumptuous accommodations on a luxury liner can run as much as Lv500 per light year.
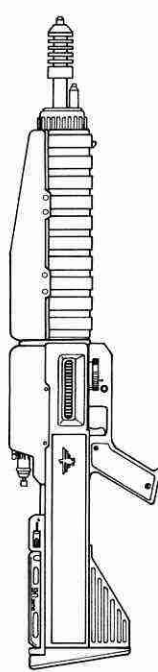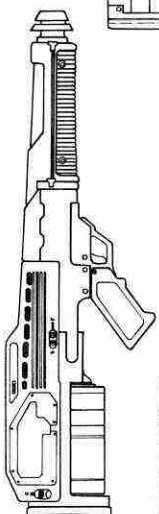
QUINN OPTRONICS
RESTRAINT CARBINE
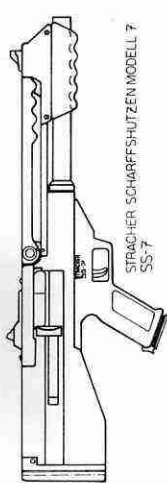
STRACHER SCHARFFSHUTZEN MODELL 7
SS-7

ARNO FIVE-FIFTEEN

JASCHONEK FABRIKANT
A-9 STURMGEWEHR

HIGH ENERGY ASSAULT GUN
TYPE 1

KURITA
TYPE-21F

BRANDT AUDIONIQUE
AS-3

SNAYPERSKAYA VINTOVKA BELNIKARPOV
SVB

FORTTYMMANN LASERKARABINER 1
LK-1
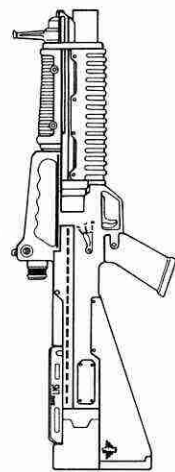
GONZALVES-BRAZILIA
LUCE 3

GONZALVES-BRAZILIA
LUCE 7B
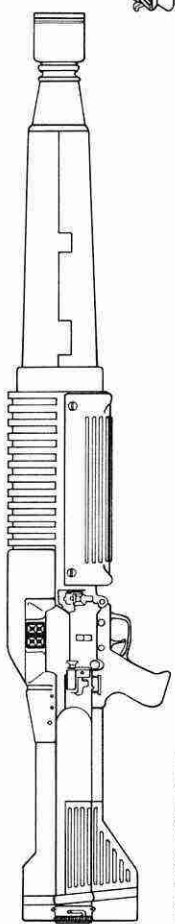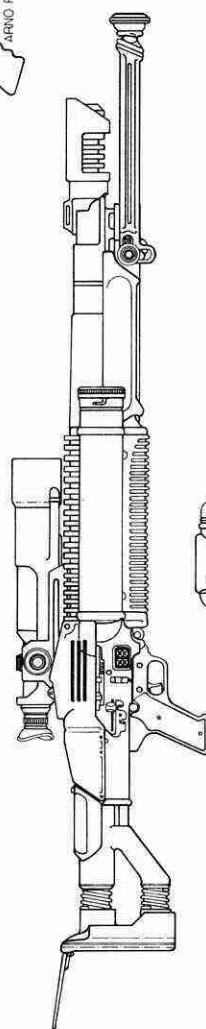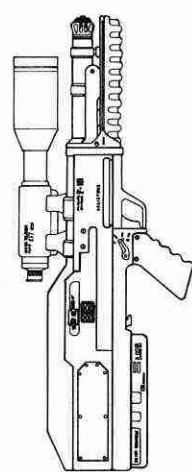
MUELLER-RIVERA FUSILE 19
F-19
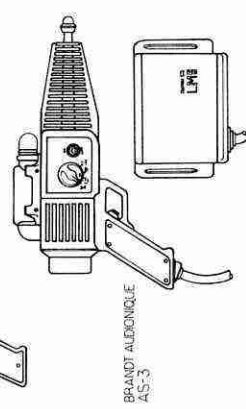
The distance between any two stars can be determined using the formula:

$$D = \sqrt{(X_1 - X_2)^2 + (Y_1 - Y_2)^2 + (Z_1 - Z_2)^2}$$

X_1 is the X coordinate of the first star; X_2 is the X coordinate of the second star. By finding the square root of the sum of the differences in X, Y, and Z coordinates, it is possible to determine the distance separating the stars.

NEAR STAR MAP

CC-1000/R