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TWILIGHT: 2000

By Air or By Sea

[Handwritten note:] COMBAT EXAMPLES

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From the Management

The blanket genre of science-fiction covers a terrific variety of topics and writers. Everything from the humorous Hitchhiker's Guide series to the starfaring Foundation series to the chaotic realms of Hell can all be on the shelves so casually marked as science-fiction. For the romance and bestseller readers, keeping all that space tripe out of the way must seem like the thing to do. Only science-fiction fans realize the genre contains infinite subject matter, characterization, writing style, histories, societies—you name it!

It would, therefore, be ludicrous to assume that a single science-fiction role-playing game could possibly be sufficient to recreate all of these different areas of science-fiction. Certain assumptions about the universe have to be made when the game is designed, and with each decision made, thousands of possible science-fiction environments are ruled out. For example, if a game system calls for hyperspace starship travel, that pretty much rules out recreating Niven's universe which envisions no such devices, not to mention such environments

Issue 30 feedback was as follows:

JUST DETECTED

CONVENTIONS

DUNDRACON XII

February 12-15, Oakland, Calif. Events include games, seminars, a figure-painting contest, SCA demos, a flea market, and a dealers' room. We have added a play-by-mail mini-con featuring guests and live versions of several of your favorite pbm games. Rates: $20 until Feb. 1, $10 and $25 at the door. Write DUNDRACON XII, 386 Alcatraz, Oakland, CA 94618.

MISCONCEPTION, TOO

April 8-10, Auraria Student Center, Ninth and Larimer, Denver, Colo. Events will be AD&D, Battletech, Champions, SFB, and more. Fees: $3 now, $4 at the door, and $1 per tournament. Write Auraria Gamers' Club, Metro State College, 1006 11th St, Box 39, Denver CO 80204.

MINIATURES

1:87 SCALE T-72 MBT

Petner Panzers has released the first in a series of 1:87th scale modern Soviet vehicles and equipment: a T-72 Main Battle Tank. Injection-molded in a dark-green styrene plastic, the model requires a little assembly and is nicely detailed. Contact Petner Panzers, PO Box 1221, Bensalem, PA 19020-0844.

1:87 SCALE T-62A MBT

Armourtec Scale Models has announced the release of the first of a line of 1:87th scale modern Soviet equipment: the T-62A Main Battle Tank. A BMP-1 will be released, followed by a BTR-60PB and a T-54/55 MBT. Contact Armourtec Scale Models, PO Box 51550, Pacific Grove, CA 93950-6550.

COMPUTER PROGRAMS

Marcus L. Rowland is now selling an SFRPG world-generation program for IBM PCs and compatibles. Send a SASE and an international reply coupon to: Marcus L. Rowland, 22, Westbourne Park Villas, London W2 5EA, ENGLAND.

USSR: 2000

In June of 1995, the USSR and the Peoples Republic of China fought a major border skirmish. Although the fighting subsided after a few days, both sides moved more forces to the border. Predictably, more border fighting erupted, and as tension increased, several governments and the UN offered the quarreling parties assistance in negotiating a settlement. The Government of the Soviet Union demanded a ceasefire and a reduction of Chinese forces facing them as a precondition for negotiation. Of course China refused and on August 19, 1995, the Red Army began a full-scale invasion of the Peoples Republic of China. The Presidium declared war on China the next day.

Because the Soviets were able to achieve air superiority and tactical surprise, the first few weeks of the war were conducted in classic blitzkrieg fashion by the Red Army. The Chinese Army and the People's Militia were overwhelmed by the speed and firepower of the Red Army. But the Soviets had not mobilized for the war, and they were operating on the end of a very long logistical network. As Chinese resistance stiffened and supply and manpower became a problem for the Soviets, the pace of the invasion slowed to a crawl. To the complete surprise of everyone, including the Soviet Union, China counterattacked in early October.

In early December 1995, the Presidium, acting under the request of the Politburo, ordered a general mobilization of the Red Army and declared martial law in the Far East, Siberian, and Transbaikal military districts. The government also convened a meeting of the Warsaw Pact countries and requested military assistance from the member nations. Most of the Pact nations reluctantly agreed to supply some troops to the Far East Front. Romania, however, had always had better relations with China than most of the other Pact members and refused to allow any of her troops to be committed to the war in China. As the "volunteer troops" from the Warsaw Pact moved to the Far East Front, the Red Army planned its spring offensive.

In January 1996, the Presidium called for an extraordinary meeting of the Supreme Soviet of the USSR. Represen-

tatives of the Warsaw Pact nations were also invited to attend. At this emergency meeting, the government announced plans to put the economy on a wartime footing. The Soviet leadership also told its allies that it was very unhappy over their reluctance to fulfill their obligations under the various mutual defense treaties and that further resistance would be met by action. The meeting concluded with a general statement of solidarity and a warning to the rest of the world that they had no business in the quarrel between the USSR and China.

In April, a new offensive started off well enough but soon ran out of steam. The Chinese were much better equipped and had an inexhaustible supply of manpower. Several more divisions were shattered, including two East German divisions that were totally annihilated. Red Army units that had been withdrawn from the front because of heavy losses were ordered back into action. A few mutinies broke out, mainly among the native Siberian and Asian troops, but these were swiftly and harshly suppressed. Again, high casualties forced the Soviets to commit more of its manpower to the war in an effort to force a conclusion. By late June, the Soviets were pressing the Warsaw Pact with demands for more troops, and Category II divisions from all over the Soviet Union were being fed into the war in China.

During the summer of 1996, the government of the Soviet Union faced the first of what would become many crises. The war in the East was still going poorly, and several generals had been fired. Because of heavy losses, the East Germans had joined the Romanians in refusing to send any further troops to the fighting in the East; they did, however, agree to activate some reserve units to take the place of Soviet forces in Germany so the Soviets could go to China. The inability of the Soviet leadership to resolve the crisis caused several members of the Presidium to lose their jobs, and two members of the Politburo 'resigned." A peace faction arose in the Politburo and gained enough support in the Presidium that the Government of the Soviet Union attempted to send peace feelers through Sweden and Italy. The Chinese did not view the whole

process as a legitimate attempt at peace, and by mid-July the half-hearted negotiations had totally collapsed. The war continued.

By September, the economic dislocation caused by the war was making itself felt in the civilian sector of the Soviet Union. The loss of manpower to the Armed forces, coupled with the demand for increased production of military goods, stretched the economy to the breaking point. Strikes broke out in several major factories, some of which had to be suppressed by force. Agricultural production also suffered from the shortage of manpower; the harvest was far behind schedule during the fall of 1996. The strain on the transportation network resulted in the inability to distribute essential goods to where they were needed. Gas, coal, food and medical supplies sat in terminals and warehouses waiting for transportation. Food riots broke out in many cities, and in at least two cities, Kiev and Tashkent, troops fired on the crowds causing heavy loss of life. The army detailed troops to certain key factories and transportation centers in order to insure the reliability of the workers.

On October 7, 1996, West German Army units (the Bundeswehr) crossed the interGerman border. Soviet forces in East Germany, although surprised, fought well, but to the anger and indignation of the Soviets, the East Germans failed to resist at all. It was discovered later that an agreement had been worked out between the East and West Germans. Germany was going to reunite.

Frantic over the developments in Europe, the Presidium declared martial law in effect for the entire USSR and ordered a speed-up of the mobilization of army units. All categories down to Mobilization Only units were now to report to their mobilization centers. However as these Category III and Mobilization Only troops began to reach their assembly points, they found that little or no equipment was available for many of them. The mobilization plan called for the opening of stockpiles of equipment and the commandeering of civilian motor vehicles. It was found that much of the stockpiled equipment was worthless and that the removal of motor

vehicles from the civilian sector only exacerbated the supply and distribution problem. In spite of all the problems, several low-readiness divisions were in training by the end of the year.

Another call went out to the Warsaw Pact that October to bring all their manpower up to combat readiness, and a very stern warning was given to Romania and East Germany—if they did not live up to their agreements, it would be considered a hostile act. By late October, the Czechs and the Poles had sent forces into East Germany. The Bulgarians and the Hungarians were assembling with some Soviet forces along the Romanian border. The Soviet government was not having as much trouble convincing its allies to fight a war in Europe. Age-old hatreds, territorial disputes, and a fear of a reunited Germany were reason enough for many of the Pact members to take up arms against each other.

By late November, Soviet and Warsaw Pact forces had not only stopped the Bundeswehr but were counterattacking. The East Germans joined the fray against the Soviet Union and within days, so had the US. Both sides took heavy casualties in the confused and desperate fighting in East Germany. The Poles were particularly hard-hit as the initial US attack destroyed one Polish division and severely damaged two others. However, shortly after the US joined the conflagration, the war spread. The demands of fighting from Finland to Austria made it difficult for either side to muster huge forces in any one area, and the battle in Germany subsided while NATO forces battled the Soviets for control of the sea lanes.

December of 1996 found the Soviet Union engaged along two huge fronts: one in the Far East, and one in western Europe. If this fighting was not enough, trouble had also broken out in Iran, and the Soviet Union was now fighting in Iran against US and Iranian forces. Finally, on December 20, the Soviets, along with Bulgarian and Hungarian forces, invaded Romania. The Jugoslavians , sensing that a rapid collapse of Romania would put them in jeopardy next, quickly came to the aid of Romania. Both Romania and Jugoslavia requested membership in NATO, and that organization quickly granted both countries membership.

1997 began with a series of uprisings in Poland brought on by the lack of fuel for heating and serious shortages of food. Airstrikes by NATO forces had caused much damage in Poland, and many cities were often without electricity and water for long periods of time. Some Polish army units stopped trains on the way to the front in Germany and seized food and coal and began to distribute those items to the civilian population. Loyal Soviet and Polish forces put down the uprising with great difficulty.

In April and May, several remnants of divisions in Siberia and Transbaikal mutinied. Loyal forces fought sharp engagements with rebels, including a major engagement with rebel troops around Khabarovsk which lasted several days. Eventually the trouble was put down, but at least two divisions went off on their own and became marauders who were interested only in their own welfare. Other units in the Far East just melted away under the pressure of desertion and disease. Units which were to mobilize in the eastern military districts often mutinied or deserted soon after being armed. The rear areas were seldom secure, and deserters, rebels and armed civilians, all in need of food and fuel, constantly harassed the supply line to the front lines. The situation in the Far East was becoming

critical. Several officers were shot for suspected disloyalty, and more and more forces were needed not only to fight the war but to maintain order. Soviet officers at the front asked the Presidium to authorize the use of nuclear weapons—it was now the only way they could win.

In June the combined armies of NATO launched a major offensive in Germany and had soon crossed the border to Poland. The success of Soviet and Pact forces in Romania and Turkey allowed the Soviets to switch some forces to shore up the crumbling line in Poland, but it was too little too late. By July, the Germans had reached the border of the Soviet Union and Warsaw was under siege. A free Polish government was set up in Poznan under the tutelage of the NATO forces and gained some support from Polish civilians and deserters. As more and more of Poland was occupied by the NATO armies, the Polish army became less reliable and whole regiments began to desert. Many simply resorted to marauding.

On July 7, the Presidium of the Soviet Union authorized the use of nuclear weapons. On July 9, the first tactical strikes against the NATO armies in Poland were launched. In the Far East much less discrimination was used against the Chinese. The large scale use of nuclear weapons ended the war in China. The Chinese were literally blasted back to the Middle Ages. With civilian and military authority gone, the Chinese slipped back into a system of warlord-type states. The end of the war in the East allowed the Soviets to release forces that were badly needed back in Europe.

With the war over in the East, many of the divisions there did not look kindly on the new orders committing them to another round of combat. A wave of desertion and rebellion again swept the Soviet forces in the East. Whole divisions became law unto themselves. By late in the year most of the military districts of Siberia, Transbaikal and the Far East were no longer under the control of the Soviet government. Deserters, marauders and other armed bands set up various warlord-style governments and the first "free city," Barnaul, was set up in Siberia. The Soviet government did not have the capability to deal with such large scale civil disorder. The best the government could do was to detail a few loyal troops to guard vital areas in the Far East and send the rest of the loyal forces to the West and Iran. For the time being, Soviet control of the eastern part of its empire was broken.

In the west, the Soviet nuclear strikes were met in kind by NATO, but the Soviet strikes had had the element of surprise and had been more effective. The Soviets were able to regain most of Poland and stabilize the situation to some degree, but the slowly escalating spiral of nuclear warfare did much to reduce the already reeling capabilities of the Soviet Union to conduct the war. Desertion rose sharply in the armies engaged in Europe, and civilian unrest mounted again in the Ukraine and the Baltic states.

In December of 1997, several Soviet cities were hit by nuclear attack. Among them were Moscow, Leningrad, Kiev, Minsk, and Kharkov. Most of the Politburo escaped but much of the Soviet government was not so lucky. The loss of much of the civilian government did not really hamper the high-level operation of government since the Politburo had been running things since the beginning of the war anyway. The loss of local civilian control, however, had a terrible effect on the local level. Local party apparatuses were the last vestiges of authority, and

as they perished, so did law and order. At least two coups were attempted, one led by the party boss of Moscow, but the government was able to muster enough loyal troops to deal with them. The Ukraine, Latvia and Estonia all announced that they intended to exercise their constitutional rights and secede from the Soviet Union. Loyal forces arrested the leaders and had them shot. On the very last day of 1997, a Soviet division in Alma- Ata in the Central Asian Military district deserted and declared the city a "free city."

The new year of 1998 was ushered in with famine and epidemic. The nuclear exchange had ruined almost the entire harvest of the Soviet Union. Fuel shortages, coupled with the extremely cold winter, lack of water and medical care, and the breakdown of civilian control all contributed to the huge number of deaths between January and April of 1998. Over one-half of the civilian population in the Ukraine, Byelorussia, the Baltic states, and White Russia perished in those three months. Thousands of refugees fleeing the destruction of the cities scavanged the countryside. Many tried to flee to western Europe, while others joined with deserters or marauders to form enclaves of security. The Soviet Government tried desperately to maintain control, but the only real authority and order was in those areas where Soviet troops were present. Most field armies were in control of their own destinies, and even though many remained loyal to the Soviet government, many had little contact with that government.

Army Front commanders took over the role of civilian authority as well as military authority and reestablished some sense of order in the western areas of the Soviet Union, but control was very limited. The Government of the Soviet Union, now centered in Ryazan, actually only controlled the Strategic Reserve Forces and still had some authority over the forces engaged in Iran. The Politburo's interaction with the forces in the west were more like dealings with foreign powers rather than their own army. The men of the Politburo began to act more and more like Hitler had in the Fuhrer Bunker during the last days of World War II, giving orders to units that either no longer existed or no longer had any intention of responding to those orders.

In June 1998, the Red Army began an offensive in Germany. After a very short time, the attack petered out and NATO counterattacked. The front in southern Germany was shattered, and a round of desperate fighting broke out in southern Germany, Austria, and Czechoslovakia. The results were more casualties and another small exchange of nuclear weapons, and by September both sides were exhausted.

In the last three months of 1998, Estonia, Latvia, and Lithuania all formed independent governments supported by rebel army units and armed civilians. At least two Category III divisions that had just finished mobilizing joined the revolt in Lithuania. Loyal Front commanders ordered troops to suppress these rebellions. Soviet troops fought Soviet troops. The Latvians were crushed by the 3rd Baltic Front and mass executions took place, but Estonia and Lithuania were able to resist and the rebels were able to form a government of sorts. Immediately, however, the two new countries were overwhelmed with refugees from Latvia, northern Russia, and Poland. The fledgling governments, held together by little more than a sense of national identity, were quickly buried by the immense problems they had to bear.

In the military districts of Central Asia, Turkestan, and Transcaucasus, the long suppressed Moslem sentiments surfaced, and many Soviet units refused to fight in Iran. Fighting broke out between loyal Soviet forces and forces sympathetic to Iran. Parts of three divisions seized Baku and declared the city the capital of an independent Azerbaijan. The rebel forces attracted little attention for their cause, but by the end of the year Baku was still in their hands, and the commander of the Transcaucasus Front had decided not to waste forces trying to retake the city.

It was symptomatic of the state of the Red Army that these revolts were successful. Troops sent to fight the rebels often lost large numbers of soldiers to the rebellion. Soldiers were tired of fighting and many just wanted to go home. Many commanders discovered that their armies were quite loyal while fighting what was perceived as an external threat, particularly an American or German threat, but not so willing to fight soldiers, or worse, civilians on the same side. Front commanders decided it was not worth the effort or the casualties to try to deal with all of these uprisings.

By the end of 1998, the Soviet Union was in sad shape. The Far Eastern areas were completely lost to Soviet control, and the Central Asian areas were nominally under control, but only because the army in Iran was still powerful and in the main, loyal. The Baltic states were in rebellion, but they were so depopulated, it made little difference. The Ukraine was in a state of unrest, but the presence of loyal Soviet forces prevented outright rebellion for the time being, and Soviet forces in eastern Europe were loyal but only to their Front commanders. The high loss of life due to war, pestilence, and famine had reduced many areas to unpopulated wilderness being ravaged and plundered by marauding army units, deserters, and various armed bands.

In late January of 1999, a group known as the New Red Legion, which consisted of some members of the Presidium and a few 'retired" army officers, gained the support of the commander of the 9th Soviet Army at Ryazan and arrested the remnants of the Politburo. Brief skirmishes took place with the 106th Guards Air Assault division and with some KGB units, but by the end of the month, what remained of the civilian government had passed into the hands of the New Red Legion. About all this new government actually controlled was the Urals, an area bounded by Tula, Moscow and Ryazan, and the area around Leningrad. The New Red Legion immediately ordered the Front commanders to suppress all revolts and to renew the war against the enemies of the Soviet Union. Many of the Front commanders never even bothered to reply; those that did asked for the means to fulfill the demands being made on them.

By April of 1999, the Ukraine had again declared independence; in fact, several rebellious army units had set up free cities and were proclaiming themselves as the Ukrainian government. These various Ukrainian separatist movements not only fought Red Army forces, who were not so much interested in keeping the Ukraine a part of a now non-existent Soviet Union as they were in maintaining control of the farmland in the Ukraine, but each other as well. Marauders, also lured by the agricultural prospects of the area, fought the Red Army and the Ukrainian freedom fighters. By the end of May, two groups, one calling themselves New Ukraine and

another calling themselves the 1st Ukrainian Liberation Army, were both controlling large parts of the Ukraine and nearby territory. Also at least three 'free cities'' were set up, each more or less allied to one or the other of the Ukrainian movements. Loyal Soviet forces in Byelorussia and the northern Ukraine simply tried to hold what they could and rarely initiated any hostile action against the rebel forces.

Although the southern areas of the Soviet union had not suffered nuclear damage as great as the rest of the Soviet Union, the food shortages and breakdown of civilization had done its share of damage. In the Uzbek, more predominately Moslem units were deserting, and in mid-1999 Samarkand and Bukara were declared free Islamic cities. Moslems from all over the area came to these cities: deserters from the Soviet Army, deserters from the Iranian armies, and civilians, all who were related in the religion of Mohammed. In July of 1999, an Islamic State was proclaimed whose borders coincided roughly with that of the Uzbek and a large part of Turkmen.

Loyal Soviet forces in the area marched on Ashkhabad and drove off the rebels there. They then marched toward Charzhou, meeting little resistance along the way. In September of 1999, a major battle was fought near Charzhou between loyal Soviet forces and the assembled forces of the new Islamic state. The results were bloody but inconclusive. The Soviet forces lost most of two divisions to desertion, and the Islamic forces were hurt badly enough that they had to content themselves with maintaining order in the large cities and leaving much of the countryside to marauders.

In September of 1999, a shadowy figure calling himself "King Kutseyev" rallied together several armed bands in the Crimea and seized Sevastopol. By October, the whole of the Crimean peninsula was under the control of Kutseyev. Kutseyev, who claimed that he was a descendant of the Romanovs, announced the establishment of the New Russian Empire with its Capital being Sevastopol. The armed forces of this new monarchy were reasonably powerful and had little trouble defending the territory it had staked out. The Crimea became a haven which represented at least some degree of law and order, and the government there welcomed refugees.

The war in Europe during the summer and early fall of 1999 staggered along in a series of fits and starts. Both sides fought over areas that represented means of survival during the coming winter. Villages and towns that were relatively undamaged were fought over for the shelter they would provide, as well as the small scale manufacturing that was now essential to the armies in the field. Agricultural areas that could grow food the following spring were also hotly contested. In many occupied areas, particularly in Romania and Poland, partisan warfare sapped the strength of the Soviet armies who were already losing heavily to disease and desertion. As fall faded, all the combatants in Europe prepared for the siege of winter.

January of 2000 saw the rise of two more new "states" in what was once the USSR. In the Trancaucasus, two Soviet divisions deserted and joined with the rebels who held the city of Baku. They called themselves the Transcaucasus Republican Army and formed the Transcaucasus People's Republic. Based roughly on socialist principles, they had a mixture of nationalistic sentiments and religious feeling (Greek Orthodox). Terror swept the area as the army seized and executed people suspected of being politically or religious different.

Although the Transcaucasus People's Republic seemed to be a potentially viable state, its fanaticism drove civilians in the area to other newly arisen states. By April, the new state consisted mainly of the army and a few religious fanatics.

In April of 2000, the 1st Ukrainian Liberation Army achieved predominance among the separatist movements in the Ukraine. A regular Soviet Army still held part of the northern Ukraine, but many of the armed bands became more a part of the 1st Ukrainian Liberation Army. On April 28, 2000, the Ukraine proclaimed itself a separate and independent nation. A series of sharp actions against the Soviet forces in the north convinced the Soviet Front commander that the new government was too strong for his forces and he decided to leave them alone. In the south the New Russian Empire attacked units of the Ukrainian Army, and soon the two new governments were conducting their first affairs of state—a war.

Also in April, the flu swept through Europe. People who had lived through famine, radiation sickness, and war were struck down by this rampaging virus. Again the armies of the various combatants were hit less hard than the remaining civilian population because those armies had more of the basic necessities than anyone else and the means to protect them. The end result of this newest scourge was the further depopulation of the world and another step backward in history.

The armies facing each other in Europe continued to fight each other but only in a haphazard manner. They were no longer fighting for political beliefs; the governments those beliefs were based on no longer existed. The armies fought each other out of habit and a deeply ingrained suspicion fostered by the long years of war. Soviet armies stayed together because staying with the army represented the greatest chance of survival. Many of the officers and soldiers of the Soviet armies were still, in a manner, loyal to the Soviet idea of government, and they thought that maybe someday they could help reestablish that form of government. Until that time they would fight to survive. Soviet armies were scattered throughout the old borders of the Soviet Union, but they were isolated from each other. Many of those armies formed a protective barrier around certain cities and areas which for all practical purposes became small nations. Outside of these enclaves and new states the countryside was ruled by bandits and marauders.

In June of 2000, the New Red Legion and the Strategic Reserve army moved into the Urals. This was what was left of the USSR of old. The New Red Legion issued orders declaring nearly all surviving front commanders traitors and condemning them to death in absentia. They also called upon the workers and peasants throughout the old Soviet Union to rise against the revisionist and bourgeoisie forces that had betrayed the Marxist-Leninist revolution. The New Red Legion then disappeared into the Urals where it is reported that they are actively trying to rebuild the Soviet Union along the same lines as it existed in 1995.

In August of 2000, the Ukraine defeated the New Russian Empire and absorbed the Crimea. Also, negotiations with Soviet armies in or around the Ukraine began with an end towards either incorporating them into the new government or at least to stop fighting each other. The events of the summer have shown that the Ukraine is the most stable force in the area of western Russia and a power to be dealt with in the future.

—*brad r. hay*

Combat Examples

Among the many letters we are sent, it is not uncommon for us to receive questions about this or that aspect of the combat rules in **Twilight: 2000** or **Traveller: 2300**. **Twilight**, of course, has been around since 1984, and those who have been playing it are old hands with its combat system. But the game is constantly drawing new players, and occasionally they need some help. As for **2300**, it is a recent enough release that almost everyone who plays it is a novice to its rules. This article describes a major combat encounter in each game, noting the relevant rules as they arise during the encounters. It is recommended that readers take the time to look up any unfamiliar rules as they come up. (All page numbers in parentheses refer to each game's referee's manual unless specifically stated otherwise.)

Each encounter begins with vehicle combat and proceeds through individual fire combat to melee combat.

TWILIGHT: 2000

In this scenario, a body of marauders has bushwacked a small party of former soldiers now holed-up in an abandoned farm brewing fuel alcohol. The farmhouse has been burnt out and provides no shelter, so the soldiers' group has set up operations in the barn. It is late afternoon of a day in early December of 2000. The weather is cool but clear, and there is a slight breeze from the northeast.

Allen Bates and Carl Denton are on sentry duty walking around the perimeter. Ellen Frolich and Greg Hinman are asleep in the barn (Greg in the loft, while Ellen is downstairs). Isaac Jaworski, Katrin Lester, and Mike Nichols are tending the still, cleaning weapons, and dressing game respectively. Allen, Carl, Katrin, and Mike are player characters. The rest are NPCs, but the referee has generated them as PCs and administers them as such. This is so that an infrequent or guest player can be accomodated.

The group's M2 Bradley APC is parked in the ruins of the farmhouse and is partly camouflaged. A motorcycle, a still trailer, and a couple of bicycles are parked inside the barn.

Marauder one is an *Elite* NPC; marauders two and four are *Experienced* NPCs; and marauders three and five are *Veteran* NPCs. Marauder one has the SVD and the Armbrust, marauder four has the AKR, the rest have AK-74s. All marauders have two fragmentation hand grenades. Hit capacities are as follows: marauder one's is 34, marauder two's is 32, marauder three's is 22, marauder four's is 22, marauder five's is 28.

The characteristics of the ex-soldiers are:

Allen: CRM 80, CON 11, STA 8, AGL 12.

Carl: CON 11, STA 11, CRM 80.

Ellen: CON 16, STA 9, STR 9, BC 30, MC 40.

Greg: CON 7, STA 16, CRM 90.

Isaac: CON 11, STA 12, CRM 60.

Katrin: CON 15, STA 11, STR 10, CRM 80, BC 50.

Mike: CON 14, STA 10, CRM 50, MC 35.

Mike has a double-barreled shotgun, and everyone else is armed with M16s. Everyone has four fragmentation grenades.

The marauders are a mixed bag of deserters, local criminals, and other ne'er-do-wells taken from the encounter statistics table in the basic game. There is one base unit, (result 5) yielding one *Elite*, two *Veteran*, and two *Experienced* NPCs armed with one AKR submachinegun, three AK-74 assault rifles and one SVD sniper rifle. The marauders also have a single, captured Armbrust. The marauders are more interested in arms, ammunition, food, and personal equipment than they are vehicles. A vehicle is still a very valuable treasure, so the marauders will not use their Armbrust unless they absolutely have to.

Tactically, the marauders have achieved surprise, and have been watching the farm for a couple of hours. They have a rough idea how many people are in the barn, but they do not know what they are armed with. In the time since they came upon the farm, they
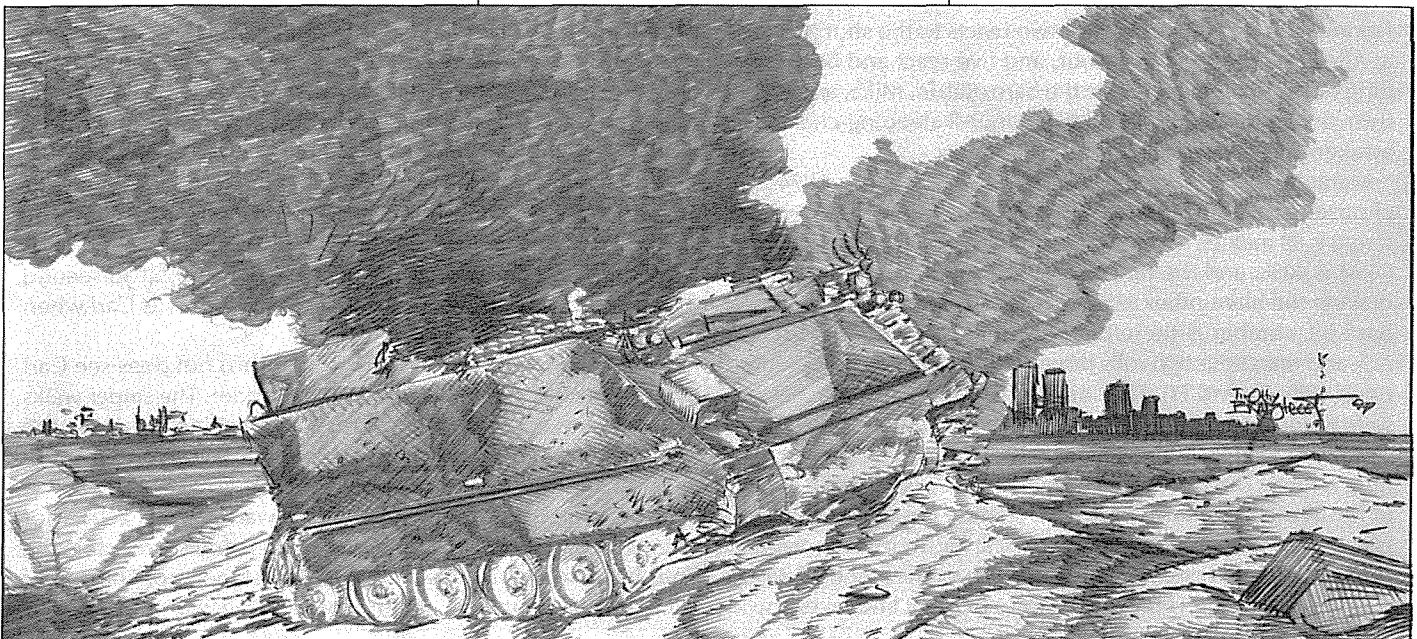
have carefully maneuvered themselves into position for the attack. They hope to speedily overwhelm their victims and capture them outright. The signal to attack will be a shot fired by marauder one, who has the sniper rifle and the Armbrust.

The referee has already determined that Carl and Allen have not spotted the marauders as they set up their ambush. The referee has decided that these two characters are the only ones that will be allowed to react in the first three rounds of the first 30-second combat turn, but the others will not be required to hesitate in the first turn of combat.

Before the combat starts, the referee decides to allow the sniper (marauder one) to have aimed during the previous round. His target will be Carl.

First Turn, Round One: The sniper fires at Carl. The shot is at 300 meters, and is at long range (referee's charts). The sniper is *elite*, and thus has CRM 60% (page 16). His base hit number at long range is 6% ($60 \times .1 = 6$). Aimed fire doubles this, making it 12% (*Play Manual*, page 21). The SVD's ROF is 3, but the sniper chooses to fire only once. The referee rolls for the sniper (since all the marauders are NPCs) and makes a percentile roll of 11, scoring a hit. The referee rolls a 1 on the hit location chart (referee's charts), indicating a hit in the head. Carl is wearing a helmet, and it is necessary to determine if it protects him. The referee makes a percentage roll of 80, so Carl gets no benefit from his helmet (*Play Manual*, page 23). At long range the SVD does 14 points of damage (base damage of 4, multiplied by 2 plus a 2D6 roll of 6). Since Carl is a PC, his head's hit capacity is equal to his CON (in Carl's case, 11). His STA is 10, and he is knocked down. Since Carl's damage qualifies as a serious injury (hits in excess of an area's hit capacity but less than twice hit capacity), he would normally roll against his CON to avoid losing consciousness. Serious wounds to the head, however, result in automatic unconsciousness. A roll of 3 on a D10 determines that Carl is out for three 30-second turns. However, even when he recovers consciousness, he must roll against his CON to stay awake if he tries to do anything other than remain still.

Everyone else hears the sniper's shot this round, but the referee rules that no one can take action until next round.

First Turn, Round Two: Allen reacts to the shot by running towards the Bradley. Marauder two reacts to the shot and fires at Allen. Marauders three, four, and five react and begin running towards the barn. Inside the barn, Katrin, Mike, and Oliver hear the shot but cannot take action. All sleeping characters awaken but cannot act.

Marauder two is *Experienced* and is armed with an AK74. She chooses to fire at Allen as he runs towards the Bradley. The range is 80 meters, medium range for an AK74. Marauder two's CRM is 40%, and the range multiplier at medium range is .3, making the hit number 12% ($40 \times .3$). Allen is running, and the base hit number is therefore halved to 6%. The AK74's ROF is 3, and marauder two rolls three times to hit, missing all three times (100, 53, and 11). The sniper (marauder one) chooses not to fire since Allen is running and his hit number would drop to 3% (no longer doubled for aimed shot, and halved for running target). The remainder of the marauders cover 30 meters of the 80 meter distance from their starting position to the barn. Isaac, Katrin, and Mike can now pick up their weapons and do so. Mike has a double-barreled shotgun, the rest have M16s.

First Turn, Round Three: Allen slows to a trot and takes a wild

shot at marauder two. Allen's CRM is 80%, and the range is medium for his M16. Allen's base hit number is 24%, halved for trotting (see *Movement by Firer, Play Manual*, page 21), or 12. Allen fires the M16's full ROF of 4, missing with all four shots (21, 13, 87, and 49). Marauder two fires at Allen again, but her hit number is not halved this time because Allen is moving less than 30 meters. One shot hits (50, 96, and 9) and strikes Allen in his left leg. An AK74 has a base damage number of 2, which (at this range) is then doubled and added to a 2D6 roll (5) for a total of 9 damage points ($2 \times 2 + 5 = 9$). Since Allen's CON is 11 and his STA is 8, his left leg has a hit capacity of 19 (CON + STA, per the *Play Manual*, page 5). Allen receives a light wound (damage points less than the area's hit capacity) and is knocked down (receiving damage points greater than STA in one round).

At this time, it becomes important to determine whether Allen makes it to the cover provided by the farmhouse rubble before he is hit. Since no rules are given for this eventuality, it is up to the referee to determine what happens by application of common sense. The referee reasons that since Allen was hit by the marauder's third shot, he is knocked down in the last third of his total move that turn. Allen was headed towards the farmhouse rubble, and started 40 meters away. He covered 30 meters in the second round (the first one he could move) and therefore had 10 meters to go. During his second round of movement, he was he was trotting at 15 meters/round, and the referee reasons that 2/3 of 15 is 10, and that therefore Allen was hit just as he arrived. The referee rules that Allen lands in the farmhouse rubble, and must spend one round there hesitating (*Knockdown, Play Manual*, page 19).

The remaining marauders (three, four, and five) continue to run towards the barn; they cover another 30 meters and end the round 20 meters away from the door. Isaac, Katrin, and Mike can now move and do so. Katrin goes toward the sound of gunfire, Isaac decides to climb up to the loft for a better vantage point, and Mike decides to check the side of the barn opposite the firing. Mike and Katrin arrive in position with time to spare.

First Turn, Round Four: Mike fires on the nearest approaching marauder (marauder four, determined randomly). The range is 20 meters or close range for the shotgun. Mike's CRM is 50, and his base hit number for close range is thus 15% ($50 \times .6$, halved for running target). Mike fires both barrels and hits once (12 and 97). At close range the shotgun's base damage of 4 is multiplied by 4 and added to a 4D6 roll ($4 \times 4 + 15 = 23$), giving a result of 23 damage points. Marauder four has a single hit capacity of 2D10 × 2, or 22 and takes it in the abdomen (*Play Manual*, page 24). He takes a serious wound, is knocked down, and fails his consciousness roll. He is out for eight 30-second turns and will be subject to the same conditions as Carl when he awakens.

Katrin sees no movement in the farmyard but does see Carl lying in the dirt. Isaac continues up the ladder. The sniper walks through the cover of the woods to a position closer to the Bradley. The sleeping characters can now pick up their weapons. Marauder two takes a hesitation.

First Turn, Round Five: Mike yells a warning (his action for the round). Isaac reaches the top of the ladder and enters the loft, but also hears Mike's shout. Ellen stands up. The sniper closes on the Bradley. Allen crawls to the rear hatch of the

Barn and Fence

Farmhouse Ruins

Hill

Bradley

100m
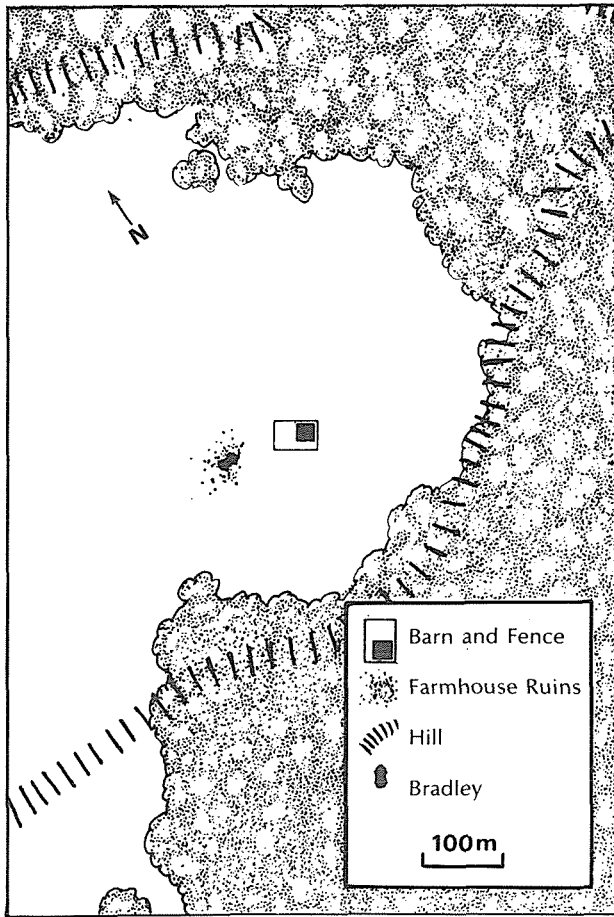
Bradley, using the rubble for concealment. Greg moves to a previously prepared firing port in the side of the barn facing the farmhouse. Marauders three and five arrive at the side of the barn. The referee decides that five will hesitate just outside the door, and three will hit it at full speed.

First Turn, Round Six: Marauder three bursts through the door, firing his AK74 wildly. The referee counts this as firing on the move and randomly picks one of the four characters in the barn as a target (Katrin is chosen). The range is close, and the marauder's CRM is 50, so he has a base hit number of 15% (50 × .6/2 = 15). The marauder fires the full ROF of 3, and scores one hit (38, 6, and 58). Katrin is hit in the right leg, taking 26 hits (base damage of 2 × 4 + 4D6, or 2 × 4 + 18). Katrin's CON is 15 and her STA is 11, making the hit capacity of her leg 26. She is lightly wounded but is also knocked down because the hits exceed her STA. Mike wants to hit the marauder with his shotgun, which would be a long-range melee attack (Play Manual, page 20). The referee determines the shotgun counts as a rifle butt for melee purposes and cannot be used for long range attacks. Mike chooses to close the range instead. Ellen is unarmed, but she makes a diving attack on the marauder. This takes place simultaneously, so the attack does not interfere with the shots at Katrin. Marauder three is occupied with firing, so he doesn't defend against Ellen's attack, which automatically succeeds (Play Manual, page 20).

Marauder three is a veteran, and all his attributes are 9. His STR + STA is 18, and he would ordinarily withstand Ellen's div-

ing blow, but he counts as surprised and only his STA is used. Ellen's STA is 9, and this plus 1D6 is 15. Marauder three is therefore knocked down and takes hits equal to the difference between his STA and Ellen's number (15 − 9 = 4), or 4 damage points. His total hit number (2D10 × 2) is 22, and this is a light wound. The knockdown requires a turn of hesitation. Outside, the sniper settles into a new position closer to both the barn and the Bradley. Allen crawls to the Bradley's driver's seat and starts it. Marauder two trots from her position at the edge of the woods towards the front of the barn. The sniper hears the Bradley's engine.

Isaac cannot decide whether to stay in the loft or go back down and help out. The referee rules that he takes a hesitation (a PC would not have this problem).

It is now the end of the first turn, and the referee requests each player to note their upcoming hesitations. The referee notes those for the marauders. All players decide to delay their hesitations as much as possible, placing all of them towards the end of the six rounds of the turn.

Second Turn, Round One: Marauder five steps to the door and and finds only Mike left standing. Mike is close enough to the door to melee marauder five, which is his sole combat option (his shotgun is unloaded). The Order of Attacks rule (Play Manual, page 19) comes into effect. The marauder's CRM 40 (he is Experienced) beats out Mike's MC 35, and he gets off one shot before Mike can swing the empty shotgun. At close range, Marauder five's basic hit number is 30 and an AK74 has an ROF of 3, but he gets only one shot before Mike's swing. He rolls 96 and misses. Mike needs to make a percentile roll of 35 or less; he rolls 81, and also misses (strange things happen in the heat of battle!). Ellen disarms marauder three while he is stunned, and she is now armed with an AK74.

Greg fires on Marauder two, who is running across the barnyard. His CRM is 90, and the range is close. His base hit number is 27 (90 × .6, halved for a running target). Greg fires the M16's full ROF of 4 and hits on his third shot (73, 39, 23, and 50). Marauder two is hit in her right arm (result 2, hit location table). The M16 does 17 points of damage (2 × 4 + 4D6). Her STA is 10, so this shot knocks her down, but her hit capacity is 32, and she sustains a light wound. While this is happening, Allen crawls to the Bradley's turret, and the sniper prepares to fire the Armbrust. Katrin must take a hesitation this round, since she was knocked down last round.

The referee rolls randomly to determine if Isaac will stay in the loft, go back down, or hesitate again. Isaac hesitates again.

Second Turn, Round Two: Ellen clubs the prone Marauder three with the AK74 butt, but the marauder has recovered from his hesitation and fights back. (Ellen is close enough to disarm the marauder, so she is close enough for him to fight. Again, the order of attacks is determined by the various skill levels involved (Play Manual, page 19). Marauder three has BC 50, and Ellen has MC 40, so the marauder's blow lands first. In addition, both may attempt to block the other's blow regardless of the outcome of their own attack (Blocks, Play Manual, page 19). The marauder has the option of trying for an aimed attack, but the referee decides that the marauder will be anxious not to reduce his chances of hitting and will choose a normal strike instead. This strike is a task (AVG:BC), and the marauder must roll to make a percentile roll of 50 to hit. He rolls 41 and hits. A 1 on the hit location table means Ellen will be hit in the head

unless she blocks successfully. This is also a task (DIF:MC in Ellen's case), and she must make a percentile roll of 20. She rolls 69 and the blow lands. Body combat damage is determined according to the body combat rule (*Play Manual*, page 8), (STR + STA × BC)/200. The marauder's damage is (10 + 10 × 50)/200, or 5. Ellen's head has a hit capacity of 16, and she sustains a slight wound. The referee decides that this means Ellen cannot aim her melee attack (she just took a fist in the face, after all). Facing a AVG:MC task with MC 40, Ellen needs to make a percentile roll of 40. She rolls 62 and misses.

Mike and marauder five melee. The marauder has MC 50 compared to Mike's 35 and strikes first. He rolls 70 and misses. Mike rolls 45 and also misses.

Isaac decides to stay in the loft. There is no other firing port available, however, so he moves to the loft door (this is the door high in the wall of a barn through which hay is hoisted *directly into the loft*), opens it, and takes up a firing position.
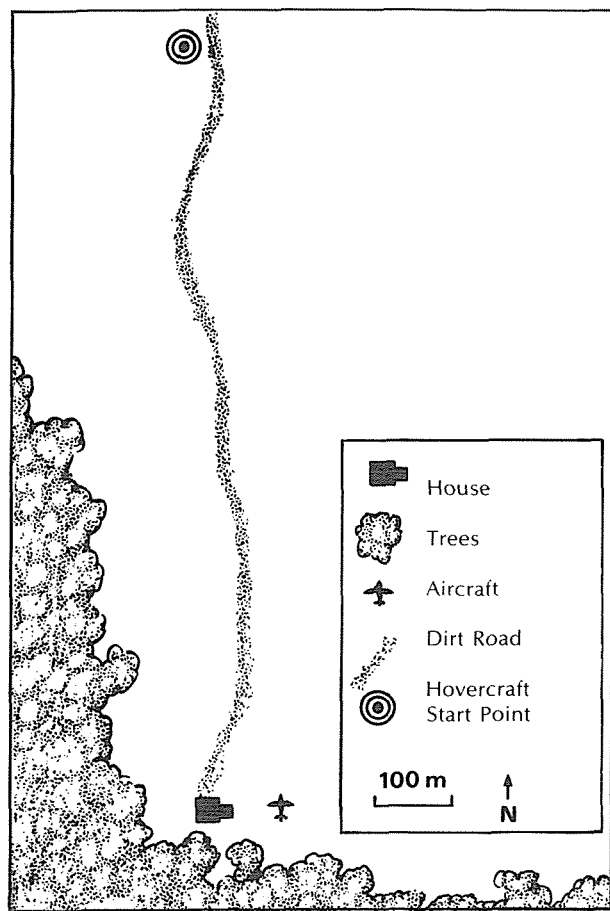
Greg, seeing marauder two fall, scans the woods for other marauders. The referee chooses to resolve this as a AVG:RCN task since the sniper is not taking any great care to conceal himself as he prepares to fire the Armbrust. Greg's RCN 60 means he must make a percentile roll of 60. He rolls 5 and spots the sniper. He cannot fire this round, however, since his action was used up spotting. Katrin decides to fire at marauder five. The referee warns her that he will randomly split any hits between five and Mike, since they are so close together. Katrin decides to hold fire. (This is another example of the referee applying common sense to a situation not dealt with in the rules, thereby presenting added complexities to the players.)

Second Turn, Round Three: The sniper fires the Armbrust. At 100 meters (close range) his HW 60 means he needs to make a percentile roll of 36. He rolls 34 and hits. It is a left front oblique shot, and the *oblique* column of the vehicle hit location chart is used. A die roll of 5 is a *F:HS* or center hull side result (per the notes to the aforementioned chart). Consulting the vehicle damage location list for the M2 Bradley APC, the referee notes that the armor at that point is 15 (the number in parens after the F:HS). The referee then determines damage (per pages 8-10). According to these rules, the damage of the weapon is compared to the target's armor at the location of the hit (15 in this case). The Armbrust damage is × 20C. The × means the damage (20) is multiplied by a die roll. The C (for constant) means this die roll does not vary with range and is always 4D6. A 4D6 roll of 17 multiplied by 20 is 340 damage points for the Armbrust. Since the Armbrust's damage is greater, the weapon penetrates with 325 damage points remaining. The component list for the Bradley at location F:HS is *D,E,F*. This is the order in which the components take damage if the vehicle is hit from the right side. For a left side hit (such as this one) the order is reversed, and becomes F,E,D. In the notes to the vehicle damage hit location tables, we see that these letters represent the vehicle's fuel, engine, and driver. The damage points remaining after penetration hit each of these in sequence, with fuel first. This follows the procedure outlined in the *component damage* rule (page 9). First, the referee consults the damage multiplier table (referee's charts) and notes that the damage multiplier of fuel is × 10 or 10. Second, the two numbers (remaining damage and damage multiplier) are compared. Since 325 is greater than 10, the shot damages the component. The referee subtracts the multiplier from the

damage, leaving 315 damage points. Third, the damage points left over are multiplied by 10 to determine the percent damage (315 × 10 = 3150%). Fourth, the actual number of hits taken by the fuel is determined. For every 10% damage the component takes, it receives actual damage points equal to its damage multiplier. In this case, that is 3150/10 = 315 × 20 = 6300. This is subtracted from the remaining damage figure to determine if any energy goes on to other components; 315-6300 = −5985, (page 9). The Armbrust has expended its energy, and no other component is hit. There is a special case for the referee to consider, however: fuel can catch fire. The *fuel hits* rule (page 10) states that if the percent damage to the fuel is greater than or equal to the flashpoint for that particular type of fuel (taken from the fuel flashpoint table in the referee's charts) the fuel catches fire. The referee looks up the flashpoint for the ethanol fuel the Bradley is carrying (30%) and tells Allen that the Bradley is on fire. Allen must now try to escape. Ordinarily this would be a AVG:AGL task, but the referee rules that Allen is wounded and increases it to DIF:AGL. This means that Allen must make a percentile roll less than or equal to half his converted AGL. Allen's AGL is 12, which converts to 60. Allen must roll 30 or less to escape unharmed. He rolls a 41 and escapes, but he is burned in the process. Per the *escape* rule (page 10) the referee rolls 1D6 for the number of locations burned (getting a result of 3), rolls each location on the hit location chart, and finally rolls 1D6 × 1D6 for damage to each area. Allen receives 12 points of damage to his left arm, 8 points of damage to his abdomen, and 16 points of damage to his left leg. Since his left leg has already taken 9 points, this is a total of 25 points, which is greater than the left leg's hit capacity of 19, but not more than twice that capacity. This is a serious wound, and Allen must roll against his CON to remain conscious (55 or less). He rolls 23 and can still move (a good thing, since remaining next to a burning Bradley is not a good thing), but only at a crawl since his left leg is seriously wounded (all that is stated in the rules is that he would lose use of the limb, but the referee uses his common sense, and restricts Allen's movement in this way). Allen must make the roll to stay conscious each turn he crawls away from the burning Bradley.

Simultaneously, Greg and Isaac fire at the sniper. Greg's hit number is 27 (at 100 meters, the sniper is at medium range, and Greg's CRM of 90 is multiplied by .3). Isaac has CRM 60, and his hit number is 18. Isaac rolls 2, 67, 18, and 9, for three hits. Greg rolls 14, 22, 86, and 47, for two hits. Damages from all five hits at medium range are 87 (17, 15, 22, 17, and 16). The sniper's single hit capacity is 34. Since 87 is more than twice 34, the sniper is critically injured and loses consciousness automatically (*Play Manual*, page 24). The sniper will die in 10 minutes if he does not receive medical attention.

Marauder two recovers from her hesitation and decides to try to throw a fragmentation hand grenade through the hay loft door, which is about three meters above her. Marauder two is *experienced* and thus has TW 40 and STR 10 (page 16). This makes her effective range for thrown weapons 20 meters (if the object weighs less than 1 kilogram, such as a hand grenade). Per the *hand grenade* and *thrown weapon* rules (page 24), marauder two would ordinarily need to make a percentage roll of 40 to hit her target (AVG:TW). The referee decides to make this a DIF:TW roll since marauder two is lying down and probably throwing with her left arm (she is wounded in

House

Trees

Aircraft

Dirt Road

Hovercraft
Start Point

100 m

N

Mike and marauder five continue their melee (in the heat of action, marauder five seems to have forgotten his weapon is still loaded). Marauder five swings at Mike, needing a percentile roll of 35 to hit. He rolls 26 and hits. Mike takes damage equal to the marauder's STR (9) plus 1D6, for a total of 14. A hit location roll of 2 indicates the right arm, resulting in a slight injury. Mike is not prevented from a return strike and swings. Mike needs a 35 to hit and rolls a 28. Mike inflicts STR + 1D6 also, resulting in 14 damage points (13 + 1) to marauder 5, a slight injury.

Second Turn, Round Four: The main event this turn is the explosion of the hand grenade. Marauder two is 4 meters away and unprotected. Isaac and Greg are 3 meters away (up) and behind the cover of the wooden barn wall. Katrin, Mike, Ellen, and the two marauders are also 3-4 meters away and behind the wall as well. The provisions of the *explosions* rule (page 6-7) is implemented. First, concussion damage is determined. The knockdown radius of a fragmentation grenade is 2.5 meters, and nobody is inside it. No one is knocked down from concussion. Second, fragmentation effects are determined. It is now important to determine whether the fragments from the grenade penetrate the barn wall. The referee decides that the barn's wall is not as substantial as a house is and assigns it the armor value given for a 2″ wood plank on the Armor Values of Cover table (referee's charts): 1. Fragmentation grenades have a damage rating of × 8C and an armor modifier of × 20, and they therefore inflict 8 × 4D6 damage points to the barn wall. A 4D6 roll of 13 multiplied by 8 is 104, which is well over the modified armor factor of the wall (20 × 1), and the fragments penetrate. Each character within the burst radius of the grenade (10 meters in this case, which includes everyone in the barn and marauder two) has a 60% chance of being hit by fragments (page 6). Rolling less than half this (30%) results in multiple fragmentation hits. Each character rolls as follows: Marauder two, 2 (multiple); marauder three, 79 (miss); marauder five, 98 (miss); Mike, 3 (multiple); Katrin, 94 (miss); Ellen, 41 (hit); Greg, 21 (multiple); Isaac, 61 (miss). Each character with multiple hits rolls 1D6 for number of areas. Hit locations are rolled as follows: Ellen (1 fragment hit): abdomen. Marauder two (4 fragment hits): locations not important. Mike (3 fragment hits): right arm, two abdomen. Greg (4 fragment hits): right arm, left arm, right leg, left leg.

Each fragment inflicts 4D6 damage points. Ellen receives 15 points in her abdomen, resulting in a slight injury. She would be knocked down, but she is already on the ground grappling with marauder three.

Marauder two receives 50 points total, resulting in a serious injury. She is knocked down and must make a percentile roll of 40 to remain conscious. She rolls 20 and succeeds.

Mike receives 13 points in his right arm, resulting in a serious injury when added to the 14 he already had there (14 + 14 = 27, which is more than that areas's hit capacity of 24), and 26 points in his abdomen, resulting in a serious injury. He is knocked down and must make a percentile roll of 70 to remain conscious. He rolls a 92 and fails.

Greg receives 11 points in his right arm, 15 points in left arm, 19 points in his right leg, and 16 points in his left leg— all slight injuries. He is knocked down.

Katrin is holding marauder three and has dropped her weapon. Marauder five is standing over Mike. Ellen is down.

her right arm). The referee rolls a 58, and the grenade misses. The referee decides that this means it bounces off the side of the barn, and deviates (page 24). The referee counts the point of deviation as being directly below the loft door (marauder two is about a meter from this point) and rolls deviation. It deviates 2 meters in the direction of the barn wall, which the referee interprets to mean that the grenade lands on the ground directly under the loft door against the side of the barn. The referee further decides that marauder two was intending to leap to her feet and run anyway, so he allows her to get four meters away before the grenade goes off.

Inside the barn, Katrin decides to help Ellen and moves to enter the fight.

Ellen and marauder three grapple each other over control of the AK74. Grappling is a task (AVG:AGL). The marauder needs a percentile roll of 45, Ellen needs a percentile roll of 72, Katrin needs a percentile roll of 77. The marauder rolls 5, Ellen rolls 11, Katrin rolls 40, so everyone "hits." "Grappling hits" are scored in the same way as strikes (*Play Manual*, page 20), but they become control hits. When a character takes control hits in excess of that character's STR, that character is totally controlled and may not move. Ellen's BC damage (2 + 1D6) is 7 in this round and Katrin's is (5 + 1D6) 9. The marauder's is (2 + 1D6) 8. The result of these calculations is that Katrin has marauder three in a hammerlock and will keep him there as long as she does not move. Ellen can release her hold next turn if she desires.

Conclusion: At this point the battle is effectively over. Marauder five has heard footsteps and gunfire from the loft and does not know how many uninjured enemies are still up there. He can see Ellen will soon be back in action, and Katrin can easily be back in action very soon. He grabs Mike's shotgun and runs.

The referee rules that the Bradley is destroyed, and Allen is not injured further. Marauder one is critically injured. Mike, Allen, Carl, marauder two and marauder four are seriously injured. Isaac, Greg, Ellen (the group's medic), and Katrin are slightly injured, and they spend fifteen minutes carrying the wounded into the barn and gathering up equipment. The loss of the Bradley is very serious, but they have picked up a nice pile of weapons, ammo, and equipment.

Marauder three has a slight injury and an enemy shotgun to show for his efforts. The barn has a opening in it and isn't as warm as it once was.

TRAVELLER: 2300

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Combat Begins

The referee announces that the combat turn sequence begins with the two groups 1000 meters apart. At initiative point 10, no one acts, for no one in the combat has an initiative rating that high. No one acts at initiative point 9 either, for the same reason. At initiative point 8, Georgette (a *Veteran NPC*, hence her initiative level of 8) takes special action: she lifts a Guiscard Blindicide-3 antivehicle missile weapon (*Play Manual*, page 39) to her shoulder and prepares to fire.

No one acts at initiative point 7, but at initiative point 6, Edwin and Frank (both *Experienced* NPCs) run 40 meters toward the plane, which is half of the 80m that can be run in a combat turn (*Movement*, page 18). Angela (a player character with a Coolness of 6), who has been watching the smugglers through binoculars, warns her companions by radio that they are about to be fired upon.

At initiative point 5, Boris (a player character with a Coolness of 5), who is driving the first Songbird, passes until Donna, the other hovercraft's driver, can act. At initiative point 4, Donna (a *Green* NPC) attempts to use evasive driving tactics. The referee assigns her skill level of Hover Vehicle as 1 and rolls

a 6, which is modified by her skill level to 7—she succeeds at this routine task (page 15). Her vehicle advances 500m, its combat speed, and Boris (with a Hover Vehicle 2 skill rating) performs the same maneuver with his vehicle and rolls successfully for evasive movement. During their evasive maneuvers, the two drivers also let their vehicles drift apart from each other a total of 20 m. Georgette takes her second action for the turn (a character's second action occurs at an initiative point equal to half of his or her initiative level, rounded down) and fires her missile at Donna's hovercraft.

The missile has a homing value of 12—subtracting the Songbird's evasion value of 9 means that Georgette must roll a 3 or less to hit. The referee rolls a 2, so Donna's vehicle is hit. This type of missile has an overhead attack angle, so it is automatically a hull hit. Unfortunately for Clifford and Donna, the Songbird has no overhead armor. This missile's full 20 explosion points get into the vehicle's interior. Dividing 20 points by 5 (page 15) yields a +4 modifier to the roll on the vehicle damage chart: a 7 is rolled; plus 4 yields an 11 for a *Catastrophic* hit—the vehicle is destroyed and the crew is killed.

The concussion value (page 16) for the explosion is 40; halving it for every five meters of distance means that the characters in the other hovercraft suffer a concussion value of 2 (they are 20 meters away, remember). The players for Angela and Boris both roll above a 2 on 1D10, so their characters are unaffected by the concussion. The characters are also within the burst radius (page 16) for the explosion (25 meters in this case), so they have a 60 percent chance of being hit by fragments. A 9 is rolled for Angela, so she is safe, but a 6 is rolled for Boris. Rolling 1D6 for the number of fragments yields a 2, and hit location rolls of 5 and 7 mean that he is hit in the upper and lower right leg. Since he is sitting in a hovercraft, the referee rules that he has the benefit of partial cover, and since the armor value of the vehicle (1 on all faces) is higher than the DPV of the fragments (0.4), Boris is unhurt.

At initiative point 3, Edwin, Frank, and Angela take their second actions. The two smugglers run another 40 m toward the plane, completing the 80 m that can be run in a combat turn. Angela readies her DunArmCo close assault gun (see *Play Manual*, page 34).

At initiative point 2, Boris drives his hovercraft another 500 m, closing with Edwin and Frank, and tries to run them over. The referee rules that they must make a task roll as if to avoid a diving blow in melee combat (page 15), and he assigns them an agility modifier of +2. His roll for Frank is successful, but he fails on Edwin's and decides that Edwin automatically receives the stun hit mentioned under that task, with the exception that since the hovercraft is bigger than a human attacker and is moving more than six times as fast, the DPV of the attack is 5 instead of 0.5. A 7 is rolled for hit location, which is a light wound, and Edwin receives one point of stun, lowering his initiative by three. (Note that the higher DPV of the attack didn't make any difference on a light wound, but it certainly would have on a potential serious or kill.)

At initiative point 1 there is no one left to act. The first combat turn is over.

Combat turn two begins. No one acts until initiative point 8, when Georgette changes weapons—she now sports a Jaschonek Fabrikant A-9 Sturmgewehr plasma gun (*Play Manual*, page 37).

At initiative point 6, Angela fires on Frank with her close assault gun, and Frank, who has been carrying an SK-19 (*Play Manual*, page 32) at the ready while running, panics and fires a grenade at the hovercraft. Both weapons have a bulk of 2, so the fire is conducted simultaneously. Angela fires two aimed shots—she has a Combat Rifleman skill of 3 and needs a 4 or better to hit at this range (100 meters is effective range for her weapon, so 50 m is close range, and Frank is standing just a few meters away). She misses with the first shot but hits with the second. Rolling 1D10 for the number of slugs, she gets a 7, and rolling for hit locations she finds that Frank is hit three times in the head, once in the chest, once in the groin, once in the upper left leg, and once in the lower left leg. The DPV for each slug is 0.3, which is doubled to 0.6 for close range (see the revised armor rules in this magazine). A roll of 4 for the first slug to the head is less than the DPV of the weapon times 10, so Frank is dead.

However, his shot went off at the same time as hers. The referee assigns him a skill level of 1 with the weapon, so he needs at least a 6 to hit, and he succeeds with a roll of 8. He rolls a 3 for hit location on the vehicle (*Hit Location*, page 15), so he has hit the suspension (plenum on the hovercraft). His grenade does damage as a tamped explosion with 4 EP, so the DPV is 16 (page 16). This obviously exceeds the plenum's armor value of 0.3. Dividing 16 by 0.3 (*Damage*, page 15), the referee finds that the plenum takes 53 points of damage, five times as much as is needed to destroy the vehicle's movement capability.

Concussion and fragmentation (page 16) have yet to be rolled for. The referee points out that since fragments from the explosion could not penetrate the hovercraft's armor, the players for Angela and Boris need not roll to see if they are hit by fragments. They do have to determine if they are affected by the concussion, however. Concussion for a tamped explosion is equal to the EP, which is in this case 4.

Angela, Boris, and Edwin are all within 5 meters of the blast, so they all must roll for this. Georgette is more than 15 meters away, so concussion for her is below 1—she need not roll. Angela rolls well above the concussion value, as does Edwin, so neither suffers damage. Boris, however, rolls a 3 and is subject to blunt trauma with a DPV equal to the concussion value of 4. A roll of 3 for wound severity yields a potentially serious wound—he is knocked down and suffers the 4 points as 2 points of shock and two points of stun (because every odd numbered shock point is a stun instead).

As a result of being dazed, Boris will be out of the action for the next four combat turns (the combined total of his shock and stun points). When he recovers from being dazed, he will still be suffering a −3 to his initiative for each shock and stun point, a total of −12, but initiative is never dropped below 1.

The referee has yet to roll for the effects of fragmentation on Edwin. Edwin is well within the 4 EP explosion's burst radius of 15 m, and the referee finds that he is hit by four fragments, one of which hits him in the chest and kills him (for the procedure, see the missile explosion, above). Note that since it is a torso hit, he may be eligible for resuscitation (page 17) if the referee so rules after the combat is over.

At initiative point 5, Boris would normally act, but he is dazed for four turns. When initiative point 4 comes up, Georgette runs 40 m toward the plane (and toward the hovercraft which

is between herself and the plane).

At initiative point 3, Angela's player asks the referee if she can perform moving area fire (see *Area Fire*, page 12, and *Moving Area Fire*, page 13) jumping out of the far side of the hovercraft as she fires toward Georgette. The referee agrees to allow this. (Area fire is not, perhaps, the most sensible thing for Angela to do, considering the deadliness of Georgette's weapon, but it does give us a chance to see how area fire works, and maybe she is just trying to keep Georgette pinned until reinforcements can arrive). She fires the remaining eight shells in her magazine—the maximum would have been 10 (ROF × Area Fire Burst) if her magazine were full—and she rolls once to hit for each figure in her 10m diameter target area, as well as for any figures between her and that target area. As she only has one target, Georgette, she only rolls once. Her target is at close range (effective area fire range is 80 meters for Angela's weapon, and Georgette is only 40 meters away). To hit, she must roll a 4 or less—ROF × AFV, and ROF is ×2 for close range (again, see the armor rules revisions in this magazine)—and she rolls a 6, missing.

Since Georgette is an NPC, the referee must roll to see if she ducks as a result of the area fire (see *Area Fire*, page 12). As a *Veteran* NPC, her chance to do so is an 8 or more. The referee rolls 1D10 and adds the AFV of the weapon firing. His total is a 7, so Georgette does not duck.

Instead, Georgette stops running and fires back when her next initiative point comes around: initiative point 8 of turn 3. Her A-9's ROF is 3, and the referee assigns her a skill level of 3 in using it, so she gets three shots off with a 4 or better to hit at close range. Angela's player decides to have Angela duck behind the hovercraft to take advantage of full cover. This will cause her to forfeit her next initiative point (see the ducking rules on page 13 under *Area Fire*). When the referee rolls for Georgette's fire, he finds that she hits twice, but since Angela is out of sight behind the hovercraft, Georgette hits that vehicle. Plasma gun hits produce damage as tamped explosions. The hits therefore have a DPV of 4, and, since the referee decides that the armor on the hovercraft is 1 cm thick, they create holes 3 cm in diameter (*Breaching Barriers*, page 16).

Initiative point 8 is over; point 7 passes; Angela would normally act at point 6, but her ducking action at point 8 negates this. When initiative point 4 comes around, Georgette performs her second action for the turn, which is to run another 40 meters toward the plane, bringing her even with the hovercraft.

At initiative point 3, Angela's player asks the referee if Georgette is within melee combat range, 2 m (page 14). The referee states that she is. Angela takes her second action and jumps from behind the hovercraft, initiating a diving blow at Georgette (page 15). Georgette must make a die roll to avoid the diving blow, but despite the fact that the referee assigns her an agility bonus of 3, she rolls a 2 and fails to avoid. The referee determines that both characters are now tangled together on the ground. To determine who takes damage from the attack, a 1D6 roll is added to each character's size times 2.

The referee decides that Georgette is the same size as Angela, and a 3 is rolled for both characters, so they both take damage from the attack—one stun hit with a DPV of 0.5. A 4 is rolled for Georgette, which is a potentially serious wound, but a 6 is rolled for its effect, yielding one stun point: her initiative is reduced by three for the rest of combat, so she now has an

initiative of 5. A 7 is rolled for Angela, which is a potentially light wound, and a 9 is rolled for its effect, giving her one stun point as well and reducing her initiative to 3. Also, as a result of receiving a stun point, both characters are dazed for one combat turn (the number of stun points they each have). Turn 4 passes, therefore, without either character acting.

Turn 5 begins, and when initiative point 5 comes around, Georgette strikes (page 14) at Angela. The referee assigns Georgette a Melee skill of 3 and rolls a successful strike. Angela, with a Melee skill of 4, rolls to block and succeeds.

At initiative point 3, Angela performs a grappling attack (page 15) in an attempt to pin Georgette. She rolls successfully and causes a stun hit with a DPV equal to her strength of 12 plus her melee skill of 4. The total divided by 30 and rounded down to the nearest tenth results in a DPV of 0.5 for Angela's attack.

A 1 is rolled for wound severity, yielding 4 points of stun to Georgette, but since this is a grappling attack, these points are considered to be points of control instead. When the total control points equal Georgette's strength (which the referee decides is 11), she will be pinned.

At initiative point 2 (half of Georgette's new initiative level of 5, rounded down) Georgette attempts to escape (page 15) Angela's grapple. The referee rolls and determines that she is successful. All control points are negated.

At initiative point 1 (half of Angela's new initiative level of 3, rounded down), Angela attempts to grapple once again and is successful. Only 1 point of control results this time.

During combat turn 6, Georgette continues to try to escape but is unsuccessful both times. Angela is successful with both of her grappling attempts and adds 8 more control points (making lucky rolls for potential wounds and gaining 4 points each time) for a total of 9.

Combat turn 7 begins. At initiative point 5, Georgette attempts to escape again and succeeds! Angela attempts to grapple again at initiative point 3 and fails! At initiative point 2, Georgette makes a successful strike attack, and Angela fails to block it. To determine the DPV of the attack, the referee adds Georgette's strength of 11 to her melee skill of 3 and divides the total by 30, rounding fractions down to the nearest 10th. The result is a DPV of 0.4. Rolling for potential wound yields a 1, for 4 points of stun, a knock down, and a dazed result. Since Angela is already on the ground, the knock down doesn't have much effect, but the dazed result will keep her from acting for the next 5 combat turns, derived from the total of her stun points.

At initiative point 1, Boris's player reminds the referee that Boris has recovered from being dazed, and although he is sitting in the hovercraft, he is within 2 meters of Georgette. Boris's player wants to know if Boris can perform a strike attack against Georgette. The referee rules against this but agrees to allow a diving attack. Boris's player decides to take this option, and Georgette fails to avoid the attack. Boris's total of size plus 1D6 turns out to be greater than Georgette's, so she takes a stun hit. A potential light wound is rolled, resulting in 1 point of stun, and Georgette is dazed for 2 combat turns (the total of the stun points she has received). Her initiative is reduced by 3 points to 2, as well.

On combat turn 8, Georgette cannot act since she is dazed. Boris acts at initiative point 1 and performs a strike attack. Being dazed, Georgette cannot attempt to block. Boris's player

figures Boris's DPV as 0.4, rolls a potentially light wound, and rolls under his character's DPV × 10, which results in another stun point for Georgette. As an NPC, the three stun points total she has received knock her out.

A total of four minutes of game time has gone by. The referee tells the players at this point that backup police forces arrive on the scene. Angela and Boris are taken to a hospital for observation and recover without difficulty. Clifford and Donna are dead, of course, having been scattered by the missile explosion. Frank, having taken three shotgun slugs to the head, is beyond hope of resuscitation. Edwin, however, recovers after undergoing surgery to remove the shrapnel from his chest and stands trial for smuggling. Georgette recovers from her stun to find herself facing several murder and attempted murder charges.

Angela, Boris, Clifford, and Donna all receive commendations for preventing the smugglers from making an escape. Clifford and Donna are, of course, awarded their commendations posthumously.

—*Lester W. Smith and Loren K. Wiseman*

Additional Aircraft for CD

In compiling the list of aircraft for GDW's *Command Decision* miniatures rules, it was necessary to limit the list to the more common varieties of aircraft in service. This article presents a more complete version of the game ratings, including several types left out of the original game rules. It is by no means a comprehensive list, for it does not include observation and liasion types, nor does it include variants which were never used in a ground attack role. I have included several types which are rather unlikely to show up in the average *Command Decision* game, such as the B-29 Superfortress, purely for the fun of it (20 bombs laid out on the tabletop is a wonder to behold....It brings new meaning to the term *carpet bombing*).

I am uncertain about some of the information (those items marked with a ? below). If any of the readership could enlighten me on any of these, I would be most appreciative.

—Loren K. Wiseman

Germany

Fighters	Year	Strafe	Bomb	AT
Ar-196A1	39	1	½	—
Ar-196A3	41	2	0	—
Bf-109B	37	3	0	—
Bf-109E	39	3	½	—
Bf-109F	41	2	½	—
Bf-109G	42	2	1	—
Bf-109K	44	3	0	—
Bf-110C	39	4	1	—
Bf-110E	41	4	4	—
Bf-110F	41	4	1	—
Fw-190A	41	4	0	—
Fw-190D	44	3	½	—
Fw-190F	43	3	2 or R	—
Fw-190G	43	1	3	1-
Hs-126	39	1	½	—
Me-410A	43	3	2	—
Me-410A1-U4	43	4	2	—
Me-262	44	4	2	—
Ta-152	45	5	2	—

Dive Bombers				
Ju-87B	38	1	2	—
Ju-87D	41	1	4	—

Attack Bombers				
Hs-129B	42	3	0	—
Hs-129B2-R3	43?	3	0	2
Ju-87G	43	2	0	4
Ju-88P2	43?	1	0	4

Medium Bombers				
Ar-234B	44	2	3	—
Bv-138	C1 41	0	½	
Bv-141	A 40	1	½	
Do-17Z	39	0	2	—
Do-217E	41	0	4	—

Fw-189A1	40	1	½	—
Fw-200C	40	0	2	—
He-111H	39	0	4	—
Ju-52	32	0	1	—
Ju-86	37	1	2	—
Ju-88A	39	0	4	—
He-177A	42	0	5	—
Ju-188E	43	0	6	—

Transport				
Ju-52/3m	32	0	0	—
Me-323D1	42	0	0	—

United States

Fighters	Year	Strafe	Bomb	AT
F2-A3 Buffalo	41	2	½	—
F4F-3 Wildcat	40	3	½	—
F4F-4 Wildcat	41	3	½	—
F4U Corsair	43	3	0	—
F4U-1D Corsair	44	3	2	—
F6F Hellcat	43	3	0	—
F6F-5 Hellcat	44	3	2	—
P-35A	37	1	½	—
P-36	39	2	0	—
P-38F Lightning	42	3	2	—
P-38J Lightning	43	3	3	—
P-38L Lightning	44	3	3 or R	—
P-39D Aircobra	41	3	½	—
P-39J Aircobra	42?	3	½	—
P-39N Aircobra	43	3	½	—
P-39Q Aircobra	43	3	½	—
P-40B Warhawk	41	2	½	—
P-40E Warhawk	42	3	1	—
P-40F Warhawk	42	3	1	—
P-40N Warhawk	43	3	1	—
P-47B Thunderbolt	42	4	0	—
P-47D Thunderbolt	43	4	2 or R	—
P-51B Mustang	43	2	2	—
P-51D Mustang	44	3	2 or R	—
P-63A Kingcobra	44	3	1	—
SBD-3 Dauntless	41	2	2	—
TBF-1 Avenger	42	2	2 or R	—

Dive Bombers				
SB2C-1 Helldiver	43	3	2	—
A-35A Vengeance	42	0	2	—
TBD Devastator	37-42	1	1	—

Attack Bombers				
A-20B Havoc	41	2	3	—
A-20G Havoc	42	4	4	—
A-26B Invader	44	4	6, 4+R	—
B-25J Mitchell	44	4	3 or R	—
B-25H Mitchell	44	4	0	4
A-36	43?	3	1	—

Medium Bombers

	Year	Strafe	Bomb	AT
A-20C Havoc	42	0	2	—
A-28/29 Hudson	39	0	1	—
A-30 Baltimore	42	0	2	—
B-25J Mitchell	44	0	3	—
B-26B Marauder	42	0	4	—
B-26G Marauder	44	0	4	—
PBY-5A Catalina	41	0	4	—
PBM-3 Mariner	42	0	2	—

Heavy Bombers

	Year	Strafe	Bomb	AT
B-17E Flying Fortress	42	0	17	—
B-17G Flying Fortress	43	0	17	—
B-24D Liberator	42	0	9	—
B-24J Liberator	43	0	9	—
B-29A Super Fortress	44	0	20	—
PB4Y-2 Privateer	44	0	8	—

Transport

	Year	Strafe	Bomb	AT
C-47 Dakota	41	0	0	—

Great Britain

	Year	Strafe	Bomb	AT
Fighters				
Beufighter IF	40	4	0	—
Firefly	43	4	2	—
Fulmar	40	3	0	—
Gladiator I	37	2	0	—
Hurricane I	38	4	0	—
Hurricane IIC	41	4	1 or R	—
Hurricane IID	42	3	0	—
Hurricane IV	43	1	1 or R	—
Hurricane IV	43	3	0	—
Lysander	38	1	½	—
Kittyhawk IA	42	3	1	—
Kittyhawk IV	43	3	1	—
Meteor	45	4	0	—
Mosquito VI	43	6	2	—
Mustang III	44	2	2	—
Mustang IV	44	3	2 or R	—
Seafire	42	4	½	—
Spitfire I	38	4	0	—
Spitfire V	41	4	½	—
Spitfire IX	42	4	1 or R	—
Spitfire XIV	44	4	1 or R	—
Tempest V	44	4	2 or R	—
Tempest V	44	4	2	3
Thunderbolt I	44	4	2 or R	—
Tomahawk IIB	41	3	0	—
Typhoon IB	42	4	2 or R	—

Attack Bombers

	Year	Strafe	Bomb	AT
Baltimore III	42	2	2	—
Baltimore V	43	2	2	—
Beaufighter X	43	4	R	—
Boston III	41	2	2	—
Mosquito IV	42	0	2	—
Mosquito XVI	44	0	3	—
Whirlwind I	40	4	1	—

Medium Bombers

	Year	Strafe	Bomb	AT
Barracuda	43	0	2	—
Battle	37	0	1	—
Beaufort I	39	0	2	—
Beaufighter X	43	4	2	—
Blenheim I	37	0	1	—
Blenheim IV	39	0	1	—
Blenheim V	42	0	1	—
Hamden	38	0	4	—
Hudson MkI-VI	?	0	1	—
Marauder III	43	0	4	—
Mitchell II	43	0	3	—
Wellington IC	38	0	5	—
Whitley	39	0	7	—

Heavy Bombers

	Year	Strafe	Bomb	AT
Halifax III	44	0	13	—
Lancaster I	42	0	14	—
Lancaster II/III	43	0	14	—
Short Stirling	40	0	14	—

Transport

	Year	Strafe	Bomb	AT
Dakota	42	0	0	—
York I	44	0	0	—

Italy

	Year	Strafe	Bomb	AT
Fighters				
Cr-42 Falco	39	1	0	—
G.50 Freccia	38	1	0	—
G.50bis Freccia	40	1	1	—
G.55	43	5	0	—
ICr.42	1	½	—	
Mc-200 Saetta	39	1	0	—
Mc-200CB Saetta	41	1	½	—
Mc-202 Folgore	41	2	½	—
Mc-205V Veltro	43	3	½	—
Re-2001 Falco II	42	2	1	—
Re-2001CB	42	2	1	—
Re-2002 Ariete	42	2	2	—
Re-2005	43	5	0	—

Dive Bombers

	Year	Strafe	Bomb	AT
Ju-87B	41	1	2	—

Attack Bombers

	Year	Strafe	Bomb	AT
Ba.65	36	2	2	—
Ba.88	38	2	2	—
FC.20	41	1	0	1
Ro.57	41	2	½	—

Medium Bombers

	Year	Strafe	Bomb	AT
BR.20M Cicigna	39	0	3	—
Sm79-I Sparviero	37	0	3	—
Sm81 Pipistrello	35	0	3	—
Z.206B Airone	38	0	2	—
Z.1007b Alcione	38	0	3	—

Heavy Bombers

	Year	Strafe	Bomb	AT
P.108B	42	0	7	—

Transport				
Sm81 Pipistrello	35	0	0	—
Sm82 Marsupiale	40	0	0	—

Soviet Union

	Year	Strafe	Bomb	AT
Fighters				
I-15bis	37	2	0	—
I-153	39	2	R	—
I-16	36	3	R	—
I-17	37	2	R?	—
Hurricane IIC	42	4	1 or R	—
LaGG3	41	2	½, R	—
La-5	42	2	½, R	—
La-5FN	43	2	½	—
La-7	44	3	½, R	—
MiG-1	40	1	0	—
MiG-3	41	1	½, R	—
MiG-5	43	2	R?	—
MiG-7	44	2	0	—
P-39D Aircobra	42	3	½	—
P-39N Aircobra	43	3	½	—
P-39Q Aircobra	43	3	½	—
P-40C Warhawk	41	1	0	—
P-40E Warhawk	42	3	1	—
P-40N Warhawk	43	3	1	—
P-47D Thunderbolt	44	4	2 or R	—
P-63A	44	3	1	—
Spitfire V	42	4	½	—
Yak-1	41	2	½, R	—
Yak-1M	42	2	½, R	—
Yak-3	43	2	½, R	—
Yak-7B	42	1	½, R	—
Yak-9	43	2	½, R	—
Yak-9B	43	1	1	—
Yak-9D	43	2	½, R	—
Yak-9T	43	1	0	2
Attack Bombers				
A-20B	42	2	3	—
A-20G	43	4	4	—
Il-2 Sturmovik	41	3	1 or R	—
Il-2m3 Sturmovik	42	3	1 or R	—
Il-10	45	3	1, R	—
Pe-2	41	2	3	—
SB-2bis	39	1	2 or R	—
Su-2	40	2	1 or R	—
Tu-2S	44	2	4	—
Yak-4	41	1	1	—
Medium Bombers				
B-25J Mitchell	44	0	3	—
DB-3B	37	0	2	—
Il-4	40	0	4	—
Heavy Bombers				
Pe-8	40	0	9	—
TB-3	36-44	0	9	—

Transports				
G-2	36	0	0	—
Li-2	39	0	0	—

*Changed from the basic game rating

as Burroughs' Barsoom where space travel isn't even an issue. Rules modifications are possible (tell me you don't use some "house rules" now and again—I know I do), but for most people they are not desirable.

For each player of science-fiction games there is an ideal role-playing situation, a preferred setting in which the player can act out his favorite adventure scenarios. Increasingly the trend is toward so called "shoot 'em ups," where very clear cut lines of right and wrong can be drawn to shoot high tech energy weapons across. I like to play these sometimes myself. Other possibilities include exploration and mystery adventures, where more brain work and less gun play are required. These are my personal favorites, but that's just me. In many ways investigative sorts of role-playing become difficult to administer and keep interesting, and are sometimes better dealt with in literature.

So, part of the trick to obtaining the maximum amount of pleasure from a role-playing game is to pick the correct game to start with. The current trend in game manufacture is to make a role-playing game "universe specific." Each game is tailored to a specific universe, and is therefore better suited for describing and administering events in that universe. It also has the effect of rendering the game impossible to adapt to any other situation—if you play the game you have to play in their chosen universe. The original **Traveller** rules were no universe specific, but became so as more and more materials have been published about the Imperium and its alien societies. All this may sound rather limiting, but actually that's not the case. There are enough universe-specific game systems out these to choose from that virtually anyone can find what they will enjoy.

I have suspicions that many players purchase new games without knowing enough about them when purchased. I realize that this information is often difficult to come by about a new game—the box back and advertising information is most often designed to excite rather than inform. Game reviews are helpful, but not always available. As a side note, we are planning to include a review column in Challenge starting with issue 32.

The theory that people are not always buying the game that's right for them is reinforced from my other duties here at the Workshop. I handle a large percentage of the game question letters we receive. Keep them coming—we're always glad to answer them. But it has been my experience that perhaps half of the role-playing questions we receive aren't questions at all. I can think of many lengthy lists of questions which could basically be boiled down to the statement "This isn't the game I would have designed." Questions like "Why didn't you do such and such?" aren't rules questions at all. They are pleas from people who haven't found exactly the game suited to them, and my bet is they might have done better to shop around a bit more.

Conclusions? Try to catch a review about a game if you can. Though review writers sometimes also fall into the "This isn't the game I would have designed" trap, they usually give every game a fair shake. Read magazine articles about the game. An article usually deals with an aspect of play in some detail, and will give you some feel for the rules themselves. There are perhaps a dozen different science-fiction role-playing games out there to choose from. Don't dump a bunch of money on something that might disappoint you later.

—Timothy B. Brown

Hazardous Cargoes

...All labeling shall include relevant Hazard Coding, as laid down in statutes KL-45384 to KL-51339. Failure to comply with this regulation carries a minimum fine of Cr500 and possible imprisonment.
—Imperial Freight Regulations, 1105 ed.

Look at any railway goods yard or motorway (freeway) service area. A good proportion of the vehicles have hazard markings, from petrol and oil to liquid gas, paint, radioactive material, and strange chemicals. There's no reason to assume that this will change in the future, or that this won't apply to space cargoes. The system described below is an optional addition to **Traveller**, but can be used in any SF game with appropriate changes. No real knowledge of chemistry is necessary, but all the examples are real and would have the effects described below. *Note:* This system partially resembles the EEC Hazchem system but is not identical. **Do not** confuse real hazard symbols and coding with the examples that follow.

Since the first cargoes were shipped on primitive ocean crates, there's been a continual need to keep aware of the dangers they may cause. This danger is particularly acute in the case of bulk chemical shipments, which are likely to contain hazardous quantities of substances that are innocuous under normal conditions.

One apocryphal Terran story concerns an ocean freighter carrying ingots of industrial-grade sodium, sealed in drums of oil. A small fire broke out in the hold. The crew didn't realize that sodium reacts with water, and they flooded the hold to extinguish the blaze. One of the drums was washed against the hull, where it cracked and began to fill with water. The explosion which followed blew the drum through the deck of the ship and several hundred meters into the air; it started a chain reaction, cracking more drums which flooded and exploded in turn.

Although this particular situation isn't likely to arise in space, the principle is obvious; it's essential to know exactly what you're dealing with.

The answer to this problem is labeling, but the multitude of languages used in the Imperium makes normal labels impractical. An example of the potential for error is the ancient Terran word **gift**, which meant **present** in English but **poison** in German. Even if a common language is used, there's a real chance of confusion when different names are used for the same chemical. More English examples include Blue Vitriol (later copper sulfate), Vitriol (concentrated sulfuric acid), and Cinnabar (mercuric sulfide). All are potentially dangerous. The history of chemistry shows that names change as new theories and chemical relationships are discovered. With a huge number of worlds at different tech levels developing their own sciences, confusion is bound to arise occasionally.

The final problem that can occur is the use of trade names which obscure the nature of a substance. Household chemicals are particularly likely to suffer from this problem, since the manufacturers rarely want to admit that they are selling dangerous material.

Multiply these problems by the number of worlds in the Imperium, and the potential for disastrous confusion is obvious.

Some hazards only occur under peculiar conditions; for example, many otherwise harmless powdered chemicals (such as flour) are explosive when thoroughly mixed with air. This situation could arise if a bag broke open in free-fall.

The Universal Hazard Profile is an attempt to produce a uniform standard of cargo labeling, tailored to the needs of a space-going civilization. Each label indicates the types of problems likely to occur, the range of species affected, and conditions likely to affect the substance in space and on alien worlds. Naturally, since this code system was originated by Humaniti, it is most precise when dealing with substances affecting humans and conditions likely to be encountered by humans.
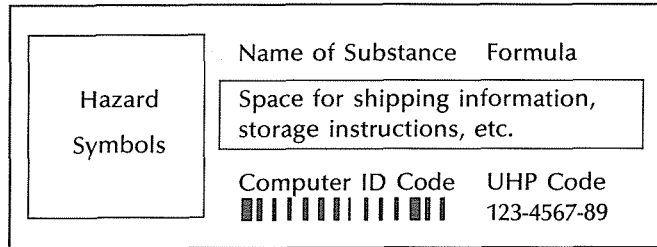
Most merchants tend to regard this scheme as a mixed blessing. It can prevent accidents, but unnecessarily cautious labeling can lead to expensive delays, while specialized cargo-handling teams load or unload the ship. UHP code labels aren't always accurate; occasionally, a shipper makes a mistake or simply reads the wrong line of a reference book when printing the label. Chemical hazard computer programs are available at most major spaceports and provide a good way of converting UHP codes into plain language. They can be used to help make contingency plans for leaks, fires, and other accidents.

The standard Imperial regulations are sold as a starship computer program (including full chemical references). These occupy one CPU and one Store space, and cost Cr2000. The package includes an expert system which can identify chemicals from partial data, generate
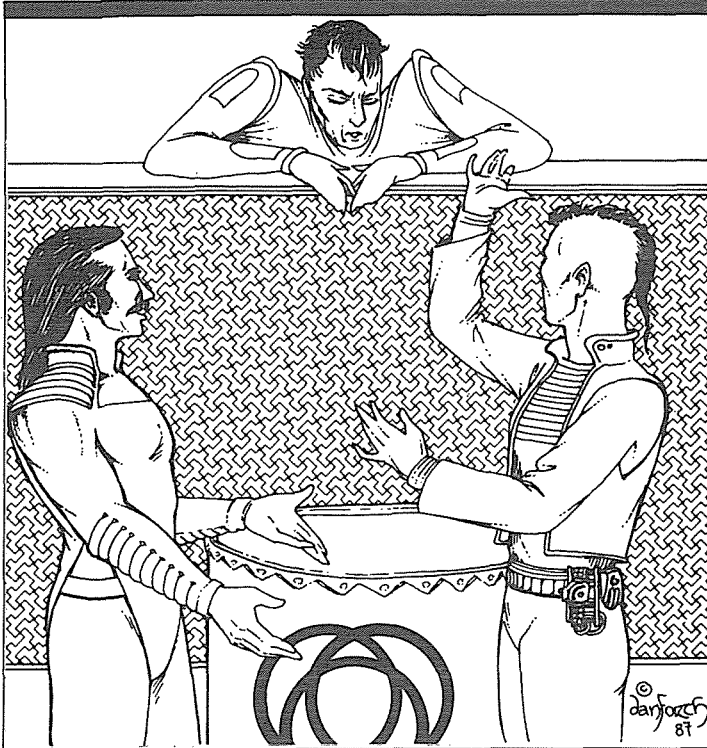
UHP codes, etc. A portable computer version is available for Cr120; this portable version only covers the standard UHP codes with no expert system.

Below are the main elements of a UHP warning sticker:

Hazard Symbols	Name of Substance Formula
	Space for shipping information, storage instructions, etc.
	Computer ID Code UHP Code
	▌▍▐▏▌▍▍▐▏▍▍▐▏▍▐▌▍ 123-4567-89

The digits in the UHP Code (from left to right) stand for the following:
1. Nature of Hazard (e.g. Explosive, Toxic)
2. Subclassification
3. Species Affected
4. Atmosphere Tolerance
5. Temperature Tolerance
6. Humidity Tolerance
7. Gravity Tolerance
8. Form (e.g. solid, liquid, etc.)
9. Mass (special code; see below)

Hazard Symbol: A simple logo indicating the nature of the hazard. Sometimes two or three logos are used, indicating different hazards associated with the cargo. The most important hazard is indicated first. Many of the symbols in current use are derived from Solomani patterns which originated on Earth.

Name of Substance: The chemical name as laid down in Imperial Freight Regulations or a generic name indicating the family of chemical compounds.

If all else fails, either a local name or trade name may be used. Red ink is always used to show that this isn't an official designation.

Formula: A standard representation using normal Imperial symbols. Nonstandard symbols and formulae must be in red ink.

Shipping Information: Usually a plain-language confirmation of the UHP code or a special warning. For example:

This product is criogenically cooled and must be kept below 22° K at all times. Handle with care; beware of cold burns and frostbite! EXTREMELY FRAGILE

Computer ID Code: A machine-readable version of the UHP code, essential on worlds with automated cargo-handling. A TL 7 bar code system is used, since all worlds with spaceports can import or manufacture the equipment needed to read it.

UHP Code: This code is divided into three sections: threefigures indicating hazard type and species likely to be affected; four figures indicating safe storage conditions; and two figure indicating form and mass. Dangerous materials may have two or more UHP codes, with associated hazard symbols.

Figures 1-2—Hazard Type

Code	Hazard Type
0	**Special Hazard** (no subcode). Substances that are dangerous in a manner which doesn't fit any of the standard classes below. Code 0 substances must be accompanied by full documentation or a courier. The symbol is three exclamation marks.
1	**Toxic.** Substances in this group are poisonous. The subcode shows the main method of poisoning:
0	Toxic if eaten
1	Can be absorbed through skin
2	Toxic fumes
3	Toxic dust
4	Avoid prolonged contact
5	Avoid all contact
6	Addictive drug
7	Carcinogen
8+	Unusual toxic effect (rare)
	The symbol is a stylized skull and crossed lines.
2	**Oxidizing:** These substances speed combustion and rusting, and should be kept from inflammable materials, delicate circuits, etc. The subcode lists the degree of risk, from 0 (potentially hazardous if combined with inflammable liquids) to 9 (spontaneously ignites inflammable materials, e.g. wood, paper, rags). The symbol is an object wreathed in flames.
3	**Corrosive:** An acid, alkali, or other material with corrosive effects. The subcode indicates the pH (degree of acidity or alkalinity), from 0 (strongly acidic) to E (equivalent to 14, strongly alkaline). "7" is neutral, and will rarely be seen as part of this subcode. The symbol shows drops eating a hole in a block, with fumes drifting from the hole.
4	**Explosive:** The subcode indicates the degree of hazard, from 0 (explosive under unusual conditions, with electrical detonation, etc.) to 9 (spontaneously explosive). Class 6 and above require special shipping containers; ships specializing in these cargoes must be modified for safety. External pods may be fitted, designed to burst outward in an explosion. The symbol is a broken sphere radiating debris.

5   **Highly Inflammable:** The subcode indicates the lowest temperature of combustion, in degrees centigrade, on a special scale. The formula used is to multiply the subcode by 10 degrees, then add it to -50xC. Thus, 0 indicates flammability from -50xC upwards, 5 means flammability from 0xC, A from 50xC, F from 100xC. A subcode of "X" indicates spontaneous combustion at all temperatures, or over a very wide range of temperatures. This subcode is not the same as the safe storage temperature, which is handled by another code below. The symbol is a series of stylized flames.

6   **Biohazard:** The substance is likely to cause illness or other medical problems, without being a normal poison. Subcodes indicated the nature of the problem:
1   May cause allergy
2   Likely to cause allergy
3   May cause mild infection
4   Likely to cause mild infection
5   May cause serious infection
6   Likely to cause serious infection
7   May cause lethal infection
8   Unknown biohazard
9   Biowar agent
     Substances with subcodes from 5 upwards must be shipped in secure containers, and ports must be notified in advance of shipment. Examples include vaccines, pathological samples, corpses, etc. Within the Imperium it is illegal to ship category 9 materials without an Imperial military escort and full Imperial clearance. The symbol is three interlocking circles.

7   **Radioactive:** The subcode indicates the type of radiation and intensity:
0   Weak Alpha emitter (e.g. uranium ore)
1   Weak Beta emitter
2   Weak Gamma (neutron) emitter
3   Moderate Alpha emitter
4   Moderate Beta emitter
5   Moderate Gamma emitter
6   Strong Alpha emitter
7   Strong Beta emitter
8   Strong Gamma emitter
9   Strong x-ray emitter
A   Nuclear weapons
     Codes 0 to 5 may be shipped by conventional freighters, given suitable type of shielding; 6 to 9 require unusual shielding, as well as special shipping containers and Imperial permits. Nuclear weapon shipment conditions are most generally covered by local and interstellar armament laws, which are beyond the scope of this article. The symbol is a circle surrounded by rays within a black trefoil. Codes 8 and up are reserved for future expansion of the system.

Hazard Type Figure 3: Races Affected
The third figure of the UHP code indicates life forms which are likely to be affected:
0   All life forms
1   All oxygen-breathing life forms
2   Humaniti, Aslan, and Vargr affected
3   Humaniti only (all races including Zhodani etc.)
4   Aslan only
5   Vargr only
6   Droyne only
7   Hivers only
8   K'kree only
9   Other life forms only

Code 9 is obviously a catch-all code, backed up by more information on the main label. For example, a chemical might only affect the silicon-based natives of Eshar (see *Ordeal By Eshar*, by FASA), or might be dangerous to all chlorine breathers. Codes 9 and above will probably elaborate on alien species in the next revision of the regulations, scheduled for 1120.

Figure 4-7: Storage Conditions
This group of four figures indicates the safe storage conditions.

Figure 4: Atmosphere Tolerance
This symbol is a conventional UPP (planetary profile) number. For example, "7" means "Store in standard (Earthlike) atmosphere," "0" means "Store in Vacuum." All codes indicating a tainted, exotic, corrosive, or insidious atmosphere must be backed by more information on the shipping label. There is usually some tolerance for error, but a wise shipper will indicate exact requirements on the label.
There are also two special codes: "X" means "May be stored under any atmospheric conditions;" "Y" means "May be stored in any oxygen-based atmosphere."

Figure 5: Temperature Tolerance
This figure indicates recommended storage temperature, plus or minus ten degrees, based on the same code system used for inflammable chemicals above. If the temperature is below $-50°C$ and "X" is used instead, if above $200°C$ a "Y" is used instead, with appropriate notes on the label.

Figure 6: Humidity Tolerance
This figure indicates safe maximum humidity, measured in units of 5%. Thus, 0 is 0% humidity, 1 is 5% humidity, and so on. An "X" indicates "May be stored under all humidity conditions."

Figure 7: Gravity Tolerance
This figure indicates maximum safe gravity conditions, measured in units of 1G. There are two special codes: "X" means "DO NOT store in zero gravity"; "Y" is "Keep at exact gravity indicated." Both must be backed by exact shipping instructions.

Figure 8: Storage Form
This is more or less an arbitrary code number. As usual, it is biased towards the conditions preferred by oxygen breathers; a creature living at a much higher or lower temperature or with

different atmospheric requirements would probably have a very different view of things.

1	Solid (e.g. copper ingots)
2	Powdered solid (e.g. sulfur dust)
3	Solid/liquid mixture (e.g. sodium in oil)
4	Solid/gas mixture (e.g. iodine)
5	Liquid (e.g. mercury)
6	Gas/liquid mixture (e.g. bromine)
7	Solidified gas (e.g. carbon dioxide ice)
8	Liquefied gas (e.g. methane)
9	Compressed gas (e.g. oxygen)
A	Rarefied gas (unusual)
B	Gas plasma (unusual)
C	Assorted forms (usually a mixed cargo)

Codes D and up are set aside for future expansion of the system.

Figure 13: Mass
This symbol shows the approximate mass, on a special scale:

0	Under 1 gram	9	100-200 tons
1	1-10 grams	A	200-300 tons
2	10-100 grams	B	300-400 tons
3	100 grams-1 kilogram	C	400-500 tons
4	1-10 kg	D	500-100 tons
5	10-100 kg	E	1000-1500 tons
6	100 kg-1 ton	F	1500-2000 tons
7	1-10 tons	G	2000-3000 tons
8	10-100 tons	H	3000-4000 tons

Symbols continue after "H" with an incremental increase of 1000 tons per symbol.

Naturally an exact mass will probably be recorded somewhere on the label, or amongst the shipping documents; the code simply indicates the approximate mass and is mainly for hazard evaluation. Thus a container of nitroglycerine with code 0 would probably be a fairly harmless medical shipment, but a tank of nitroglycerine with code 8 could be a major risk to buildings around a spaceport.

SAMPLE UHP CODES

130-XA0X-28 20 tons of powdered dry copper sulfate. The dust is poisonous if eaten or inhaled. It also absorbs water, and the container would burst if it was kept in damp conditions.

260-77A3-56 A 500-liter tank of strong hydrogen peroxide (used in many industrial processes). The tank walls are rated to 3G.

35-77A2-55 100 one-liter bottles of gourmet wine vinegar. More or less harmless to humans, it can affect chemicals, and some alien species may be allergic to it.

400-YA0X-29, 150 tons of powdered aluminum. It's ex-
5X0-YA0X-29 plosive if thoroughly mixed with air in free-fall, but mustn't be stored in vacuum because particles of the powder would weld to form lumps. It also oxidizes if damp, which could cause fires and may

make it useless for some processes.

5X0-Y8B3-38 25 tons phosphorus ingots, stored under water; of inflammable when dry, stored underwater in strong containers.

673-Y642-54 2000 ampules vaccine. Fragile, keep cool.

700-X7X5-47 5 tons of thorium hydroxide, a useful industrial ore which releases radioactive radon gas. The container is hermetically sealed, hence the wide atmospheric and humidity tolerance. Shipping instructions say the container must be vented into vacuum once a week to prevent the radioactive gas from bursting the container.

USING THIS SYSTEM

Don't assume that every cargo is hazardous; however, one or two ominously labeled containers in each freight shipment should give the players something to worry about, will encourage them to take better care of their holds, and can be a useful starting point for adventures. The examples which follow are in the usual **Traveller** 76 Patrons format, an introduction with two or more possible plots that can be selected independently or chosen by a 1D6 dice roll.

GAS!

Players' Information: During a routine hold inspection, a day after entering jumpspace, the team notice brown gas seeping from a large cargo container. Anyone who approaches without a respirator starts coughing; atmosphere testing equipment gives a marginally tainted result near the crate. The container is listed as "Assorted Laboratory Chemicals—50 tons," comes from a TL 7 (20th-century technology) world, and is valued at Cr25,000. The UHP code reads 000-7772-C7; the label says that the inventory gives full UHP codes for each item in the consignment. Unfortunately someone seems to have packed the inventory inside the container...

GM Notes: The team should not include a Hiver; this race has a very precise sense of smell and could identify the chemical immediately.

1-3: A five-liter container of nitric acid has burst open and is reacting with the packing material to produce brown nitrogen dioxide gas. When the reaction ends and the container dries out, several kilos of an explosive material resembling guncotton will have formed; any shock will detonate it and smash hundreds of other containers. If the container is opened and the packing material is soaked in water, the reaction will stop. This means unpacking 20 or 30 boxes of assorted nastiness before finding the one that's half eaten away. Respirators or spacesuits are needed, since the gas is poisonous.

4-6: Some small ampules of liquid bromine have been smashed, releasing corrosive vapor. The gas is poisonous but soon spreads enough to be harmless. This has no serious long term effects, apart from turning all the labels in the nearest boxes into brown mush and weakening the glue holding some of the boxes together. Unpack with great care....

RED TAPE AT MORNING

Players' Information: The current cargo is a capacity load of flour to be delivered to a major asteroid colony. A valuable

ore shipment is waiting to be picked up. On arrival the team find that there's a major problem: the spaceport artificial gravity system has malfunctioned, and for the next two weeks or so the entire installation will be in free-fall.

Normally this wouldn't affect the team; unfortunately an overly efficious port official notices that his copy of the Imperial Freight Regulations says that flour shouldn't be stored in free-fall.

The team must somehow persuade the port official to let them unload the cargo or risk losing the export contract. As things stand, they won't even be able to afford fuel if they can't sell the flour.

GM Information: This is an exercise in bureaucracy, as in the "Exit Visa" scenario found in some editions of **Traveller** rules.

The regulation was intended to refer to loosely packed flour, not the sealed containers the team is carrying.

The team must bribe or negotiate its way to freedom; attempts to solve the situation violently will leave them stranded without fuel in an unfriendly port.

1: Bad luck. The team has run into a genuine Jobsworth (as in "It's more than my job's worth!"); there's no way he'll let them unload. Bribes will be reported to the police. They could dump it in space, but that breaks other regulations about littering and would mean a fairly major financial loss. The only way to solve the problem is through negotiation with his superiors and a prolonged struggle through the jungle of red tape.

2: He's bribable. He's also a little paranoid and will go to elaborate lengths to avoid leaving evidence of the transaction. Payment involves left luggage lockers, numbered bank accounts, etc. For a really silly scenario throw in a few smugglers and a spy transferring sinister briefcases at the same time.

3-4: A rival shipper has bribed the official to prevent the team unloading and is negotiating to take over the export shipment. The team doesn't have enough money to outbid its rivals, but might be able to con the official, blackmail him into cooperating, or expose him publicly.

5-6: Choose one of the options above. Eventually the team gets permission to unload. The cargo handling union has now gone on strike, pending repairs to the gravity system and a resumption of "normal working conditions." All cargoes are affected, including the export shipment. If the team tries to unload or load without union labor, it'll be blackballed by a moderately corrupt union....

BIG BANG THEORY

Players' Information: It's the first time the team's ship as been overhauled since bought from a bankrupt cargo company, and team members are relaxing for a few days while technicians service defects. On the third day armed police come to their hotel and hustle them to the spaceport; they say that there's a problem on the ship, but won't give any details. As the police car reaches the 'port, the team notices workers streaming away; it appears that the area around the ship is being evacuated.

GM Information: The spaceport service crew has found an old 50-kilo chemical container in a hidden storage locker. It's corroded and looks ready to fall apart. There are the torn remains of a hazard label visible— it's only enough to show the nature of the hazard; all other detail is missing. There's a label stamped into the metal of the drum, but it's in an alien language which no one recognizes. It will prove to be the name of the company which made the drum, which is no help at all. The team may remember hearing that the former owner went bankrupt during a long trial on smuggling charges.

1-4: The visible fragment is an "explosives" symbol. Roll D6:

1: It formerly held nitroglycerine but is now full of packing chips concealing a fairly worthless piece of broken computer equipment. This has nuisance value, but nothing more.

2: Packing chips conceal a 25-liter drum of nitroglycerine. This could cause several thousand credits worth of damage, would kill anyone in the hold—it is now old and fairly unstable.

3: Eight machine pistols and 20 clips of incendiary ammunition from an illegal shipment are concealed by packing in the drum. Depending on the law level, this may cause problems.

4: The packing conceals 25 detonators, plastic explosive, and safe-breaking equipment. This will cause legal problems.

5: The packing conceals a tactical atomic warhead, correctly wrapped in layers of radiation-screening material. It isn't armed. This is big legal trouble, but nothing worse.

6: As *5,* but the explosive charge used to detonate the warhead has deteriorated and is unstable.

If the result is 5 or 6, radiation sensors can detect the warhead.

5: The label is a "Poison" symbol; roll D6:

1-3: It's weedkiller, relatively harmless unless eaten.

4-5: A lethal toxin that can cause long-term illness and death.

6: A chemical warfare gas, illegally shipped without authorization. This could kill everyone in the port and surrounding area.

If the result is 4-6, experts will insist the only safe answer is to dump the drum in an escape orbit. The repairs to get the ship ready for space will be hasty; there could be a lot of problems before the team gets back to port for the rest of the refit.

6: The label is a "Biohazard" symbol; roll D6:

1: Post-mortem samples that "got lost" in transit—evidence in a murder case that can lead to freeing an innocent man. Interests will stop at nothing to prevent the case being reopened.

2-3: Time-expired agricultural antibiotics. About 90 percent of humans are allergic to them and develop rashes, blocked noses, etc.

4: Remember *Alien*? The container holds the egg of something equally nasty in an embalming fluid that hasn't yet killed it. See Traveller double adventure 5, *The Chamax Plague/Horde,* for a monster if you don't feel inventive.

5-6: The case seems to be full of old rags. They harbor parasites (equivalent to fleas) that carry infection. On a roll of 1-3, it's relatively mild; on 4-6, it's lethal. This was originally intended for a pest control laboratory, but it was mislaid.

Unless a member of the team has some relevant medical qualification, this problem will be handled by scientists from the local university. There'll be an accident if the dice roll was 2-6, and the team members are nicely at hand as scapegoats....

These examples suggest possibilities of hazardous cargoes. Even something seemingly innocent could do a lot of damage.

SOURCES

Safety and Laboratory Practice. Ellis and Riches.
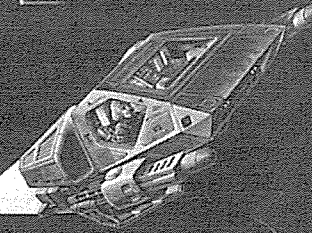*The Wages of Fear.* Film, 1953.
Shooting Script. Gavin Lyall.
The Cargo of Rice. C.S. Forester.

—*Marcus L. Rowland*

ourney across the light years exploring the uncharted systems of the frontier; watch your two shadows under a double
; war against the unfathomable Kafers amid the exotic environments of alien worlds; ride the beanstalk down to the
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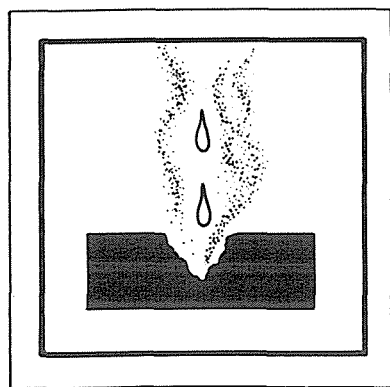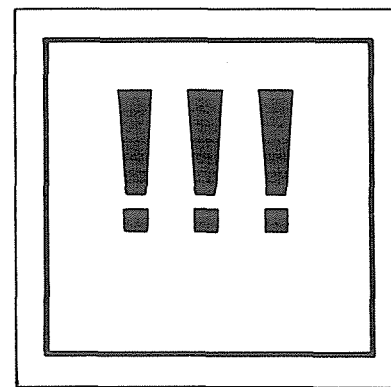
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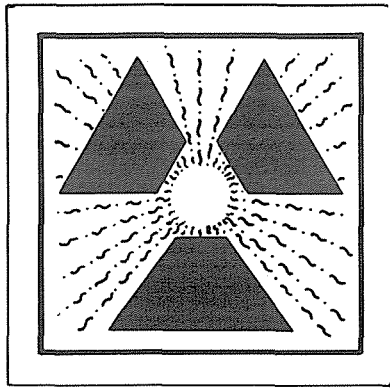
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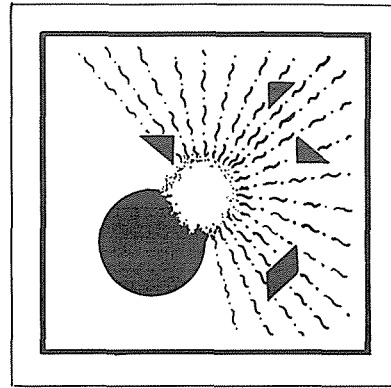
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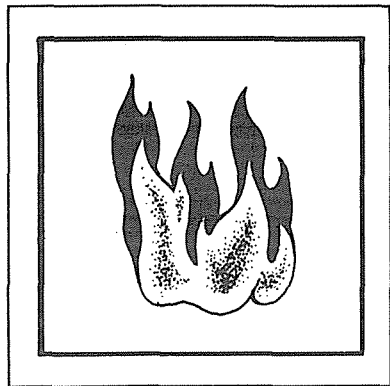
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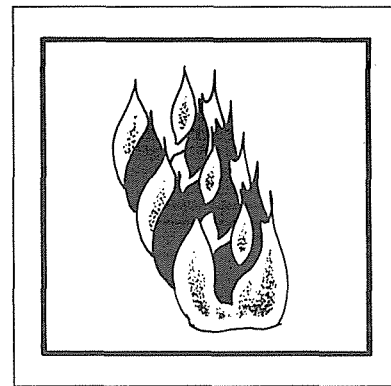
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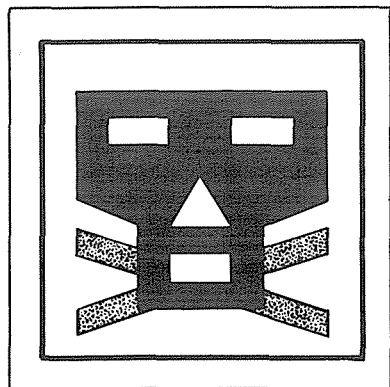
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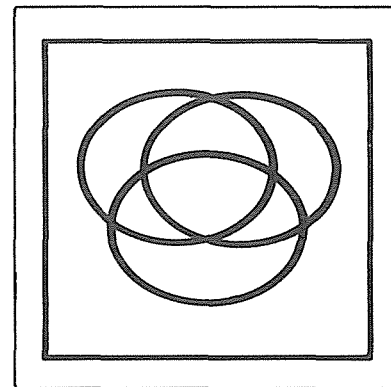
Biohazard

Corrosive

Special Hazard

Twisting Tech Levels: A Traveller Variant

This article is intended to provide ideas for **Traveller** *variants. While no specific rules are given here, the essay should spark your imagination enough to spice up any number of* **Traveller** *scenarios.*

While reading the article, "'Till They Glow In The Dark," by James F. Cumber in *The Journal* 22, I thought he raised an excellent point in suggesting that levels 6 through 9 be subdivided into five-year-long subunits. As he pointed out, a Scout crew would be *very* interested to know whether the tech level 6 world they were exploring might threaten them with a World War II prop-fighter, a 1950s-style jet, or a late '60s atomic ABM.

However, there are two "other" matters in this field which bear consideration: First of all, tech level 1 is Bronze Age; tech level 2 is 1400s to 1700s A.D. That's a helluva long period of technological progress to lump together even if a lot of it was rather slow at times! If a warrior of Xerxes "Immortals" of the early Iron Age took on a fully armored Frankish knight of the late Iron Age, there wouldn't be a battle—there'd be a *massacre*, though both would be well-armed professionals of the same tech level.

But to me, even more interesting are the worlds one might find where technology took paths which, on Earth, only exist in the realm of "what might have been." Consider this example:

Charcoal, sulfur, and saltpeter were known of in Classical times; it would have required no great effort of genius for some ancient Greek or Egyptian alchemist to discover the formula for black powder. Many people in ancient times commonly carried flint, steel, and tinder, and the manufacture of both spring-operated mechanisms and metal pipes and tubing was well-developed, with many common applications by the time of the late Roman Republic in the 1st century B.C. It's only a fluke of history that Caesar's legions were not armed with flintlocks and cannon, even though their basic *sublevel* of technological progress would remain unchanged in relation to their tech level.
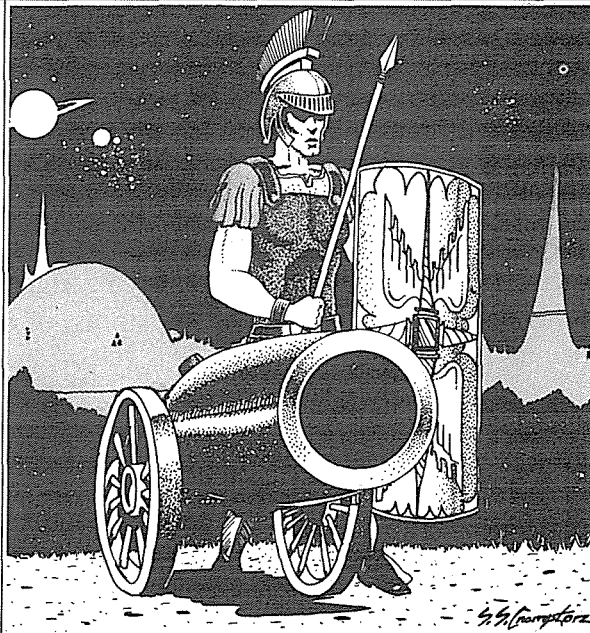
(Apparently the Romans had developed a primitive steam engine, but there is no direct evidence that they ever put the technology to use. Also, the Aztecs knew about the wheel, but apparently never used it for anything other than toys.—T.B.)

With this prospect to consider, that is the unexpected "surprises" which might greet the unwary adventurer, we enter whole new realms of risk and opportunity. For instance, in Book 4 *Mercenary*, on page 46, it mentions that the first tanks and armored cars appear at tech level 5 (circa 1900-1939). But imagine the difficulties that might beset a party whose ship or company-owned trading post is caught between two warring nations of a tech level 3 (1700 to 1860) or tech level 4 (1860-1900) world, and both sides are fighting it out with steam-powered "land-battleships" armed with carronades, 16-inch Civil War Dahlgrens, and Gatling guns from out of Jules Verne, H.G. Wells, and *The Wild, Wild West* TV show. Many different considerations might limit any overt use of greatly higher technology by the players. But even if the high tech owners of said trading post wanted to get involved, even laser, stunner, and disrupter small-arms of a group of less than platoon-strength would still be poor odds against one or more armies of primitives. And the risks! If their ship is threatened by the possibility of being caught in the center of a Patton-Rommel

style tank battle, the adventurers might never see home again, the company trading post goes up in smoke, they won't *dare* go back—their employer would take it out of their wages until a week after doomsday. And if they start bagging tanks out of season with laser carbine fire, the Scout Service will file enough charges to get them convicted of everything back to the burning of Rome by the Visigoths.

(Anybody want to *quietly* suggest the invention of the bazooka?)

Go to the public library and look at old copies of *Life, Mechanics Illustrated* and *Popular Science* going back from the early '50s to the Turn of the Century. In them, you will see pictures—many not implausible—showing views of futures that might have been, many of them quaintly "futuristic" in an "old-fashioned" sort of way. Each decade even has its share of spaceship designs.

In the 1890s when Prof. Konstantin Tislovsky (a boyhood fan of Jules Verne) calculated that the thrust of a rocket fueled by liquid oxygen and kerosene would be powerful enough to reach the moon, he recorded that he "almost fainted with delight." Tislovsky proceeded to design and write about all the things required to build a practical working rocket ship. Given the need or opportunity, other worlds and cultures (or even our own, with a slightly different course of history) would not necessarily have had to have waited for the science of the 1960s to venture into space if they'd had the motive or the right application of science. It *could* have been done earlier—more on raw courage, brute force, bullheaded daring (and one shudders to think of the risks and sacrifices)—but it could have been done.

One obvious drawback to these earlier applications of space technology, however, is a lack of sophisticated data processing. However, there are plenty of science-fiction ways around this lack. Large mechanical calculating devices could be employed, or perhaps some sort of bioengineering solution like cybernetics or a purpose-grown
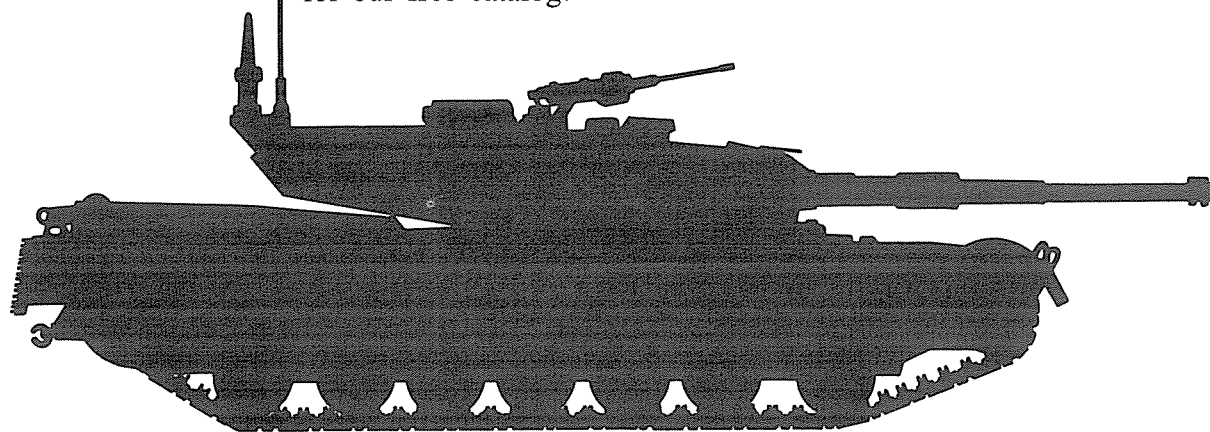
intelligent organism to perform routine mathematical functions. Remember that in science fiction there is almost nothing to limit your imagination.

These items of superior ability might very well be crude, less sophisticated, certainly more difficult to create, possibly even "primitive" compared with the present technology of our 1980s decade, but not at all impossible.

As an example, let me briefly describe a few possible versions of these "twisted tech levels" that a referee might wish to consider and the logic behind them. If a native equivalent of George Washington on a tech level 3 planet gets word that "The Redcoats are coming!" via the telegraph, then it is not implausible to imagine a "Ben Franklin" on that world who goes a little bit "farther" in his study of electricity. If that world's Cornwallis breaks the siege of Yorktown with fusion X guns, then the "only" possible answer is that *somebody's running guns to the natives*. On a tech 3 world, a Maxim-style machinegun is not beyond the possibility of that world's potential (though perhaps stretching it just trifle), but an Apollo moon rocket *is*!

In such cases, a partial guideline for some of the "potential" of a tech level would not be restricted just to the actual inventions of our own history at that period, but also to the science fiction, speculation and research, and prototype work of that era. (In many instances, work in a certain field has been advanced or delayed for mere reasons of luck, availability, finance, practical needs, or public interest (or apathy). To return to the example of armored tanks: Da Vinci (tech level 2) designed a workable model that could have used mere foot treadles and a hand-turned crankshaft for drive. If he'd improved on the idea of Hero's steam-engine toy of ancient Greece, the cannon-armed steam-tanks of a hypothetical tech level 4 might have appeared in a Renaissance Italy that might— in other ways—remain virtually unchanged as to technical progress. It could have happened. But when daVinci offered his ideas to the Medici, the Duke considered them "impractical,"

and history was forever changed.

Within the technical progress of the Renaissance "Age of Reason," and Industrial Revolution both historical, fictional, and speculative examples of individuals and sources of ideas where history might have "gone otherwise" might be grouped thus:

A. 1400s-1700s: Da Vinci, Newton, Paracelsus, Galileo, Jan Christian Heuygens, Leeuwenhoek.

B. 1700s-1800: Ben Franklin, Lavoisier, Laurenco de Gusmao, the Montgolfiers, David Bushnell, steam engines.

C. 1800-1860s: Cayley, William Henson, Fulton, Edgar Allan Poe.

D. 1860s-1880s: Jules Verne, American Civil War, the modern *Wild, Wild West* TV show.

E. 1880s-1900s: H.G. Welles, the "Frank Reade, Jr." series, Doyle, art of Winsor McCay, the "pseudo-classicism" of *art nouveau*.

F. 1900s-1920s: "Tom Swift" series, Edgar Rice Burroughs.

G. 1920s-1930s: "Buck Rogers," Hugo Gernsback, the movie *Metropolis*, the recent books/movie *Dune*, futurism.

H. 1930s-1940s: "Flash Gordon," *When Worlds Collide*, book/movie *(Shape of) Things to Come*, art deco, *Modern Mechanix* magazine, World War II.

I. 1940s-1950s: *Rocky Jones—Space Ranger*, EC-comic art of Frank Frazetta and Wally Wood, "Silver Age" comic art of Steve Ditko, Carmine Infantino and Jim Mooney, *Mechanics Illustrated*, *Superman* comics.

J. 1950s-1960s: "Tom Corbett" books, American and Japanese science-fiction movies, Marvel-Age comic art of Jack Kirby, Steranko, Steve Ditko, authors Andre Norton and Robert Heinlein.

In this list, real persons and events are mixed with works of art and fiction which sometimes had considerable overlap. These examples are in no way a complete picture, but they do mark somewhat specific "periods" in people's notion of progress and the scientifically possible as measured by the tech level of their day.

In a recent reprint of some of the early adventures of *Buck Rogers*, a page from a Sunday funnies episode of 1939 shows spaceships and soft helmet/shirtsleeve environment spacesuit-uniforms almost identical in appearance to the modern day space shuttle and astronauts of almost fifty years later.

What if adventurers should have to rely on the space travel of a world that developed it "earlier" than Earth? What would it be like (heaven have mercy)? What about the spaceships of a tech level 5 planet of the Hugo Gernsback era? Much of their technology would be built on a massive scale with considerable use of large tubes, coils, baffles, circuits, meters, levers, switches, dials, screens, and industrial-scale mechanical parts. In its own way it would be impressive, awesome in its suggestion of power and "raw technology," but also, to a certain degree, understandable, as technological sophistication has not yet reached the degree to allow for a high level of "solid state" and miniaturization.

The first, crude, Fermi-type atomic reactors could, with just a little bit of effort (and a colossal level of self-confidence, if not risk), appear by the early-to mid-tech level 5 (1900s-1929s). Rocket-planes, perhaps of crude, solid-fuel "cluster" types, and perhaps resembling in appearance the World War II German jet and rocket fighters, might make their debut as early as the

mid-tech level 3 of a world resembling ours of the 1820s-30s. Also, it is amusing to imagine how the world of an earlier generation might have *described* discoveries made on our world at a later age. Musing on terms such as "radiovision," "space dirigible," and "land-ironclads," we see ourselves through the eyes of an *earlier* decade or century.

Here's yet another example of a different kind of twisted tech level. Imagine this: there are two soldiers, both equally brave, skilled and alert; both are tech level 12. Each soldier is light infantry and armed with a laser rifle and two hand grenades using the same kind of chemical explosive. An even match, right? Maybe...maybe not.

The first soldier is of Humaniti stock. The second soldier, though a member of a "human" race, belongs to a race I design. It was inspired by the highly lifelike and "plausible-looking" 1940s animation of artist Connie Rasinski in *Mighty Mouse©* (Viacom, Inc.) In the cartoons, this race is usually shown as standing about knee-high to larger races. That would make our young mouse-boy soldier approximately 45 to 55 centimeters or 18-22 inches tall compared to his Imperial counterpart.

Prior to the development of gunpowder, any clash between this race which evolved (either naturally or via genetic engineering) into what the human race would be had it evolved from rodents, and their human Bronze Age counterparts would be— for the little people—the sort of battle legends are made of. Not that they would be helpless. Out of arm's reach, their small size and nimbleness would not make them the best of targets for either a spear or a bow and arrow. Once a mouse-person is close enough to hit with a sword, it can take one step forward and be under your guard. You then risk cutting off your own foot if you miss in your offensive or defensive attempt at him.

It would be a David vs. Goliath battle (but remember who won that one). The little people could use force-of-numbers (whether for open "banzai" attacks or infiltration night assaults) to overwhelm foes, and with poisoned arrows, marble-sized slingbolts, and other tricks, could manage a rough parity of strength.

The discovery of gunpowder, which brings along with it the ability to strike from out of range, could give larger foes a small but formidable advantage. A smaller race could, of course, make use of explosives, rockets and artillery to obtain somewhat of an advantage; but the real weakness would be in the ratio of *man-portable* weapons.

Two mouseling soldiers could probably manage a World War II Sten gun or M-3 "greasegun-type" submachinegun like a light machinegun crew, but an M-1 rifle would be light "field-artillery" for any one soldier of their race. Perhaps a smaller race of beings might have an advantage by making use of spring-fired *maula*-pistols and rifles, throwing a venomed dart, or firing rocket-squib "slow-pellet" guns like those in *Dune* for infantry small-arms.

Grenades of an elfin-like race would probably be equivalent for tech levels 4 through 8 to human-scale blasting caps—these would be less than what an Earth-human might be capable of throwing, but the grenades would still have enough deviltry in them to *start up* something, or stop it in its tracks. Bullet-firing infantry weapons of human-scale caliber might be possible in the form of shoulder-fired "recoilless-style" weapons,

but their main drawback, along with the other infantry small-arms usable to a smaller race of these tech levels, would be a slower rate of fire (since an infantryman couldn't carry as great a load of ammo as a larger race) and a reduced range for weapons of the same caliber (because a smaller race couldn't take the "recoil" of a man-portable firearm that a human could carry).

Ah, but with the advent of laser technology, our little trooper has now at last found an "equalizer" to set him on a par with any larger foe, hasn't he? Well, that all depends on what you're using to judge his technological advantage by. As far as mere applied tech level, yes. And remember, even at any higher or lower tech levels, their natural advantages of numbers, mobility, and low target-profile would still remain. A pitched battle with a determined force of such troops might, from either side of the picture, bring to mind battles with all the clawing, relentless fury of the "Battle of the Alamo." Imagine fighting a horde of *cornered rats* possessing the weapons and intelligence of humans.

So, our little soldier and his human counterpart each have a laser rifle of the same tech level. But, wait a minute! His laser-*rifle* is equal to a human's laser-*pistol*. A pistol for him would be a *derringer* for a human. So, sometimes "equal" tech level, even on an Imperial scale, might not, in reality, be even...or, then again, would it? Again, time to start exercising one's grey matter.
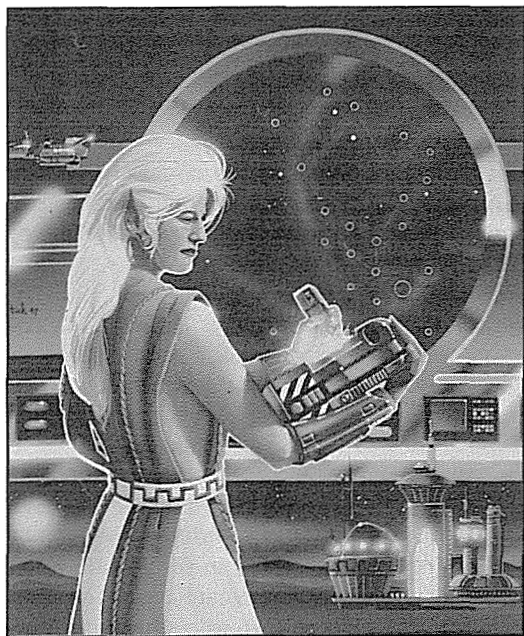
And so, a closing question:

What about tech level 4 space travel?

Well, would you like to consider a Jules Verne-style version of Captain Nemo's *Nautilus* or Robur's *Albatross* as a rocket ship—possibly a winged shuttle, launched with the aid of jettisonable boosters, a rocket-powered jump sled and a mountaintop, ski jump-style launch track or ramp? I wouldn't even begin to speculate myself, but if *you* would like to...? Feel free....the sky's the limit!

—Fred Lee Cain

TRAVELLER NEWS SERVICE

CAPITAL/CORE (0508-A586A98-F)   **Date:** 125-1117

¶ The Archduke of Antares has refused to commit his sector fleet against Dulinor, despite direct orders from Lucan. (His excuse was to protect his domain from Vargr invaders in the Lishun sector.) Rumors that the Archduke has been in negotiations with worlds outside the Imperium were neither confirmed nor denied by the Emperor's representatives.

¶ Travellers are warned that the Antares sector is a possible danger spot for the future.

KAASU/CORRIDOR (1209-AA7A9CD-G)   **Date:** 1134-1117

¶ Border ships along the coreward frontier have reported a marked increase in Vargr raider activity. Three border worlds and several dozen ships have had incidents with corsairs in the sector in the last month.

TERRA/SOL (0207-A867A69-F)   **Date:** 150-1117

¶ In a press release statement from the Naval Office on Terra, the Admiralty announced that three distinct Solomani fleets have crossed the border into the sector. The fleet is taking a defensive stance in response to this threat. It is certain that when this news reaches Capital that a state of war will be declared between the Third Imperium and the Solomani Confederation.

¶ The first fleet has jumped from Krypton through Kidashi and is battling Imperial forces in the Albadawi subsector. A second, more powerful fleet is laying siege to Iilike in the Dingir subsector. The final invasion fleet has occupied Scandia, Tewfik, and Melchior in the Arcturus subsector. The Solomani Rim fleet is reportedly on the move to counter these unprovoked advances by the Solomani.

¶ Though the threat of war is imminent along the Solomani frontier, people are encouraged to put their trust in the superior Imperial fleets which are already doing battle with the aggressors.

¶ In an attached statement, a state of martial law was invoked on the entire planet of Terra. Military authority under General Yoshtiru will be in effect until this current crisis has passed.

CAPITAL/CORE (0508-A586A98-F)   **Date:** 155-1117

¶ Emperor Lucan is at the head of the Core fleet doing battle with the rebel squadrons of the outlaw Dulinor. Widespread fighting has been reported throughout the Dagudashag sector, but no large, decisive battles have been fought to date.

¶ Imperial forces have inflicted heavy losses on the rebel fleets.

TERRA/SOL (0207-A867A69-F)   **Date:** 158-1117

¶ After a brief battle and siege, Ember has fallen to the Solomani fleet which operated through the Arcturus subsector. The Imperial forces there have retreated to reinforce both Prometheus and Terra against the advancing Solomani.

¶ Elsewhere in the sector, Solomani forces have been held in a large action at Munilgan, but their ships have begun to advance into the Gashidda system.

TERRA/SOL (0207-A867A69-F)   **Date:** 165-1117

¶ The combined Solomani fleet has overrun fleets from the Albadawi and Dingir sectors. Elements of both fleets are engaged in a large outer system battle at Dingir itself.

¶ Popular support for Solomani reclamation of the sector is becoming apparent in several systems. Increased incidences of rioting, protesting, and sabotage plague the Imperial war effort on Terra and other worlds.

MUAN GWI/VEGA (0107-A456A86-F)   **Date:** 168-1117

¶ Solomani forces have bypassed Prometheus and have laid siege to Terra. Imperial space forces could not hold out against the Solomani drive and have retreated coreward toward the Vegan Autonomous District. The Vegans have sworn allegiance and support to the Emperor, and their ships are lining up with those of the Imperium to stop the Solomani.

¶ The Admiralty assures that with the Vegans as allies, the Solomani have no chance of reaching farther into the sector. A corridor to Core will be maintained.

CAPITAL/CORE (0508-A586A98-F)   **Date:** 174-1117

¶ The Emperor's staff has issued a statement that Vargr fleets, mostly independent but all acting in similar fashion, have overrun much of the Lishun sector. The Lishun fleet is engaged in a deep penetration battle throughout the sector and is attempting to liberate or hold worlds against the Vargr hordes.

¶ Attempts by the Vargr to make similar moves against worlds in Antares sector have been for the most part thwarted by

effective use of the fleet there by the Archduke of Antares.

MUAN GWI/VEGA (0107-A456A86-F)   Date: 180-1117
¶ The Admiralty today announced a great naval victory for Imperial ships in the Dingir system. After a prolonged outer system battle which lasted over two weeks, Solomani forces have been routed out of the system.
¶ A reinforcing fleet of both Imperial and Vegan ships is reportedly on the way to strengthen the Dingir garrison and help secure the vital communications route on which it lies.
¶ In an accompanying statement, it was announced that a messenger ship had successfully eluded the Solomani blockade around Terra. According to the messenger ship, a landing attempt was thwarted more than a week ago, but losses on both sides were terribly high.
¶ General Yoshtiru has apparently died in a bombing campaign across central Asia.

CAPITAL/CORE (0508-A586A98-F)   Date: 184-1117
¶ The Emperor's Vengeance Fleet has performed excellently in the Zarushagar sector. When forced into a set battle in the Khipge system, the rebel fleets were reportedly absolutely defeated.
¶ Though rebel ships are still on the loose in the sector, the Emperor is reportedly on the advance toward Ilelish and his quarry, Dulinor.

DLAN/ILELISH (1021-A8D1ADE-G)   Date: 187-1117
¶ The office of Fleet Admiral Hutara released an official statement today. In it the admiralty announced that rebel forces in the Zarushagar sector have been successfully thwarted by a calculated campaign of military and commerce raiding by the glorious Loyal Fleet.
¶ The campaign to retake Capital and the Iridium Throne for the true Emperor is in full swing.
¶ Emperor Dulinor praised Admiral Hutara's success in a public announcement from his palace. He also announced plans to move his seat of power to Capital once it has been taken but said Dlan and Ilelish sector would remain the center of popular support and culture in the new empire.

MUAN GWI/VEGA (0107-A456A86-F)   Date: 193-1117
¶ Renewed fighting between Imperial and Solomani forces is reported in both Zaggisi and Lagash. The Solomani fleets have apparently been heavily reinforced from the Confederation interior—so much so that unofficial sources admit the Imperial fleet is stretched very thin trying to cover all possible attacks from the numerous Solomani battle formations.

REGINA/REGINA (0310-A788899-A)   Date: 225-1117
¶ Archduke Norris has returned to Regina unexpectedly and called an emergency news conference. The Archduke brought with him the dismal news that Vargr raiders have invaded the Corridor sector and effectively cut the Marches off from the rest of the Imperium. As Archduke of the Domain of Deneb, Norris stated that he remains loyal to the Imperium. He has assumed control of his domain in its name until the present crisis has passed.

MUAN GWI/VEGA (0107-A456A86-F)   Date: 242-1117
¶ Unconfirmed reports indicate that Solomani forces have gained a foothold on the surface of Terra. They have reportedly landed a significant ground force on the Australian continent and are beginning the systematic destruction of Imperial resistance elsewhere.
¶ The same unnamed source from within the Admiralty suggested that the Solomani are meeting with widespread support from the population of Terra, and the future of the Home Guard there is bleak.

CAPITAL/CORE (0508-A586A98-F)   Date: 252-1117
¶ In a surprise announcement, it has been reported that the Daibei fleet has been activated and is on the move out of its home sector.
Its forces will be put to use fighting either the rebels or the Solomani, but their exact destination is unknown. Reaction from the local nobility will certainly be negative.

ANTARES/ANTARES (2421-A686ABF-C)   Date: 257-1117
¶ The Archduke of Antares today renounced his oath of loyalty to the Emperor. In his words, the ascension to the throne by young Lucan was, at best, questionable, and since the true heir to the throne is in dispute the Archduke is assuming control of his domain in the name of the Emperor Strephon until an acceptable solution is reached.
¶ The Archduke detailed the pact he had signed with the Julian Protectorate, incorporating the worlds of Antares and Empty Quarter sectors with the worlds of Mendan and Amdukan sectors.
¶ The Archduke also announced he would use the forces at his disposal to make this secession succeed. Considering both the Archduke's isolationist policies of the last several months and the other pressing issues in the Imperium, it is doubtful that any move will be made soon to force Antares back into the Imperial fold.

Wrong Way Valve

PLAYERS' INFORMATION

You've just completed a profitable run in the latest of a bewildering line of starports ("If today is Thursday, then it must be....Hey, where's the itinerary?"). The

AmberZone

engines fire up, and the G-forces press you and your passengers down into your acceleration couches. Before the ship settles onto its prejump course, engineering staff begin preparations to top off the tanks in the oceans before jumping.

The crew is well into the routine of valves, connections, and switches which must be engaged and secured before scooping begins. All goes well; the ship begins its descent into the atmosphere of the world, settling the ship into a hovering position above the peaceful sea of water. The tubes are dropped, and the engineer's monitor panel in main control begins to reflect a flow of water across the sensors in the lines.

He frowns. One indicator is apparently burned out. Tapping the panel, he wonders why it didn't show up in the preflight diagnostic checks. He returns his attention to the other indicators, soon forgetting the panel marked "fuel tank," which continues to read 32 percent.

REFEREE'S INFORMATION

The seemingly trivial indicator light that the engineer ignored will be found to be the cause of a major dilemma. Depending on the specific alignment of the valves, a number of different spaces within the ship could be flooded with scooped water!

When crews fall into a routine, accidents are more likely to happen than when they are newly assigned to a job. They become complacent and tend to overlook details which they do not ordinarily have to think about. This is the situation here.

Naval ships, of course, are less likely to be plagued with this type of accident—they have more stringent maintenance and operation policies than do merchant ships. Privately-owned and operated vessels are even more lax on procedures though.

However it happens, an improperly-aligned valve (or series of valves) is responsible for a problem—perhaps a catastrophe! Whatever the space flooded, it will be difficult to clean up the mess. Scooping provided the pressure necessary to push the water into the ship, and many spaces will not have installed pumps for removal of such great amounts of water. Cleanup may necessitate draining the flooded spaces by exposing them to the vacuum of space, which would mean that time must be spent in recovering those pieces of equipment which would be removed with the water. Depending on the size of the space and the amount of water taken in, this could require days. Effects of flooding on some specific spaces are: Cargo in a flooded hold might be ruined—materials which are pervious to liquids and are not packed especially well, such as foods and clothing. In a flooded engineering space, generators will short out, causing a loss of electrical power; ship's batteries may not last long enough for power to be restored. Personnel in flooded compartments may not have access to emergency alarms, or such alarms might be shorted out before the personnel are drowned by the influx of water. Water being pumped into lube oil service systems will cause major

engineering damage; turbine generators which supply low-pressure steam and electricity for many ship's systems, including the laundry, galley, and sanitary systems will become casualties when water mixed with the lube oil impinges on the turbine blades. Extensive yard periods, costing exorbitant amounts of money, will be necessary for repair of such damage.

Scooped water is, understandably, not pure enough for human consumption and may contain large amounts of toxic chemicals. Should a valve allow scooped water to enter the potable water system, the first indication might be illness on the part of ship's crew and passengers. An unusually high level in the fresh water tanks is usually welcomed, rather than a cause for suspicion, so that this casualty is the most difficult to detect, although it is not necessarily the most devastating.

In addition to the above effects, a ship which is drastically flooded will require more fuel for a standard jump due to its increased mass. Depending on the fuel state before scooping begins and the amount of water scooped into the ship, there may not be enough fuel for even one jump. The result would be either a misburn (resulting in expenditure of fuel but no jump) or a misjump. If enough fuel was in the tanks to make a proper jump, there may not be enough to operate the power plant and maneuver drive on the other end of the trip.

If the valve is still open when jump is activated, a suction could be created in the flooded compartment. While at first glance this appears beneficial, the suction would not care whether it was taking solids or liquids; all manner of items would be sucked into the lines, probably clogging them and causing a misjump.

If the engineer in charge of scooping operations is on his toes, he should be able to spot the problem quickly and secure scooping until the valves have been aligned properly. If the error is not discovered until after scooping has been
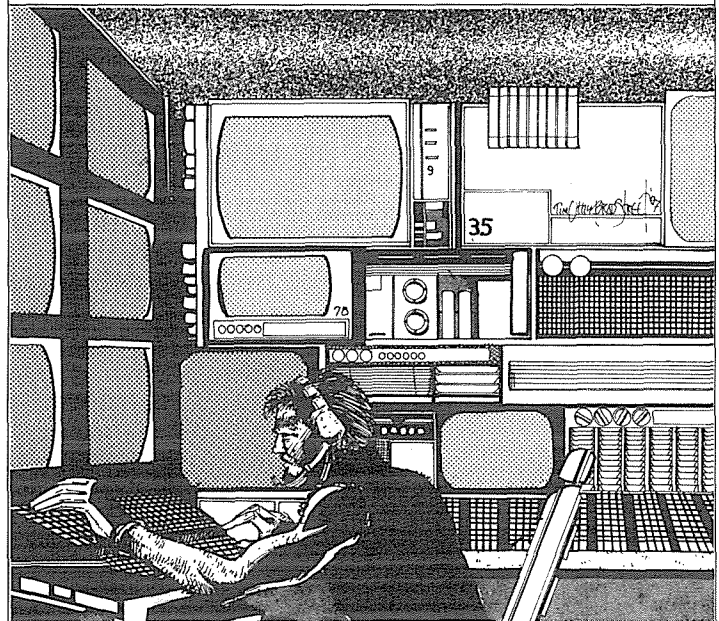
completed, detection of the unwanted flooding will require physical discovery. Investigation may be prompted by the failure of some affected system, as mentioned earlier, or by accident. If a passageway is flooded, for example, the first person attempting to use the passageway may be the one who discovers the flood! THe effects of opening a hatch backed up by a few hundred tons of water should not require elaboration.

To determine the space flooded, the referee should use the Flooding Calamity Table provided, as well as a little bit of devious cunning. Pick a compartment which is either not manned or in which NPCs would be isolated and quickly drowned by the flooding water. (This latter idea would surely test both the insurance coverages and legal skills of the shipowners.)

Care should be exercised in timing this little catastrophe. If the players are engaged in smuggling or if they are on the run from someone, this would definitely spice up the adventure! Conversely, this scenario could be used to add flavor to an otherwise dry campaign as indicated in this article's opening paragraphs.

Before employing this scenario, the referee of the game should determine the flow of the scooped water. He should make a decision concerning whether, according to the layout of the ship's engineering systems, such a calamity in a particular space is possible, then if it is probable. Some things to think about are: 1) Is the space located near the lines connecting the scoops and the fuel tanks? 2) Which space can be flooded with the fewest misaligned valves? 3) Which valves are manned during the scooping operations (misalignment of these will be easily detected by personnel, and the problem will be corrected too soon) and 4) Which space will provide the most appropriate calamity?

The piping diagram is provided as an example of a single scoop (or one-half of a dual-scoop) system. The atmosphere of a gas giant is sucked into the scoop and is forced through a strainer and air eliminator. An alternate Y-type strainer is provided for maintenance of the basket strainer. The water enters the evaporator where it is flashed into steam. Those components which cannot be boiled are expelled out the bottom of the evaporator and are discharged overboard along with items strained by the Y strainer and liquids from the sanitary
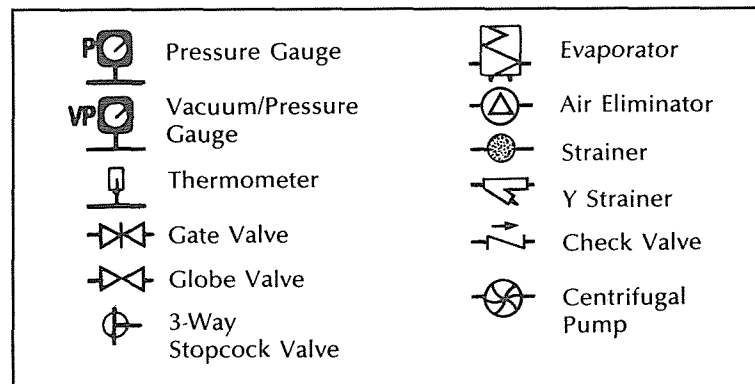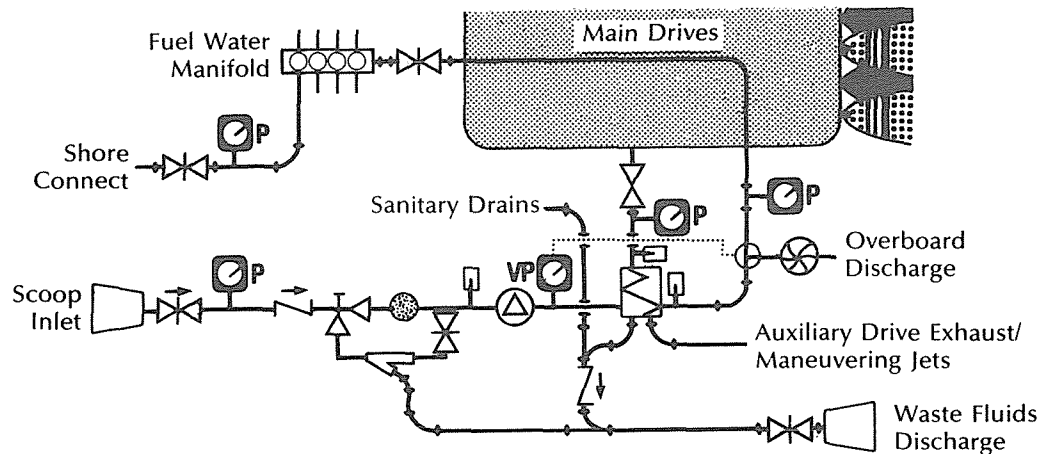
drains. The pure water passes a centrifugal pump and runs into the fuel water manifold, which distributes it to the appropriate fuel tank for storage. In larger ships, much more extensive purification plants precede the manifold in the water's path.

The simplest misalignment is leaving the discharge valve closed and the Y strainer isolated (unused). During scooping, when sediments drain out of the evaporator into the discharge lines, they will fill those pipes. Once the wastes back up past the check valve at the joint of the evaporator waste and the sanitary waste lines, the sanitary drains back up and flood. Soiled, unsanitary, even poisonous water floods out of lavatories, sinks, and showers. If the fuel water manifold valve stays shut, the line from the evaporator backs up, sending the water into the sanitary drains. Alarms indicate a malfunctioning, and the vacuum pressure gauge engages the centrifugal pump, sending the water overboard.

FLOODING CALAMITY TABLE

Roll 2D6	Compartment
2	After Staterooms
3	Lube Oil System
4-5	Cargo Hold
6-8	Engineering Mainspaces
9-10	Potable Water System
11	Passageway
12	After Staterooms

—Jeffrey Groteboer

Armor in 2300

It has come to our attention that the armor rules for **2300** are flawed. Lester Smith has been kind enough to rework them and submit this official errata to clarify the problems.

INTRODUCTION

The rules for personal armor use in the basic game are unclear, and the armor values listed are incorrect. The following rules cover both armor and close range damage, and they should be used in place of those which are listed in the *Player's Manual*. These listings will be corrected in a future edition of the *Player's Manual*.

PERSONAL ARMOR

There are three types of personal armor: nonrigid, rigid, and inertial. Nonrigid is made of flexible material which is extremely tough and resists puncture by a bullet or energy beam. It does not inhibit movement to the extent that rigid armor does. Rigid armor is made up of solid pieces. Inertial armor is flexible like nonrigid armor but becomes very rigid when struck by a fast-moving projectile (such as a bullet or a piece of shrapnel). The difference between nonrigid, rigid, and inertial armor is only important when resolving blunt trauma injuries. For normal damage, the armor value of the armor is subtracted from the DP value of the round, and the difference determines the seriousness of the wound.

NONPENETRATING KINETIC ENERGY ROUNDS

A kinetic energy round with a DP value less than the armor will not penetrate; instead it will cause blunt trauma or stun damage. If the round hits rigid or inertial armor, it inflicts stun damage; if it hits nonrigid armor, it inflicts blunt trauma damage. Half of the armor value is subtracted from the round's DP value, and the seriousness of the wound is reduced one level.

CLOSE-RANGE FIRE

All fire combat weapons double their DP values when firing at targets which are within close range.

ARMOR LISTING

The armor values listed below supersede those found in the *Player's Manual:*

Helmet: 1
High-Threat Combat Helmet: 2
Steel Helmet: 0.2
Chainmail Vest: 0.1
Rigid Breastplate: 1
Nonrigid Vest: 0.6
Inertial Armor Vest: 0.8
Full-body Nonrigid Armor: 0.3
Full-body Inertial Armor: 0.4
Full-body Combat Armor: 1
BH-21 Combat Walker: 8
Kz-7 Combat Walker: 10

Challenge Writer's Department

Challenge is always growing and changing, and we like to keep our active subscribers abreast of what's coming up. If you would like to get more involved in *Challenge,* here are three items which may interest you.

New Writer's Guidelines

The editorial staff has created new writer's guidelines for *Challenge.* They contain everything a writer will need to know to give an article the best chance of making it into publication. There are also suggestions for submitting articles on computer disk, when possible. Even if you have our old guidelines, you should probably obtain a copy of the new set before submitting your next article to *Challenge.*

Since the magazine is growing in size and expanding its scope of coverage, we are, more than ever, looking for new writers. We would like to encourage all potential authors, regardless of experience, to break out their word processors or typewriters and get involved with the magazine. Provided a submission adheres as best it can to the new guidelines, it will be given equal consideration for publication in *Challenge.*

To obtain the new guidelines, please send a stamped, self-addressed envelope to *Challenge* Writer's Guidelines, c/o GDW, PO Box 1646, Bloomington, IL 61702-1646.

E & C

You may have noticed that we have started an irregular feature in the magazine known as E & C (for Errata and Corrigenda). It's the new home for pertinent clarifications of games we cover in the magazine. If there are any specific errata you would like to see, drop us a line to that effect.

Letters Column

Starting soon, we hope to begin bringing you a letters column. If you have comments on the magazine or on games in general, form them into a concise letter and send it in. All letters will be considered for publication, but all are subject to some limited editorial control. A bit of advice—don't become too wordy. We would like to fit as many letters in as possible without taking up too much of the magazine. If you have questions about an article or a game, or if you have comments which you feel you would like to share with the rest of *Challenge's* readership, the opportunity is in the making for you to express yourself. Send your letters to *Challenge* Letters Column, c/o GDW, PO Box 1646, Bloomington, IL 61702-1646.

MegaTraveller Designers' Notes

MegaTraveller is without a doubt the largest **Traveller** project ever attempted to date. Many people had a hand in the original design and conceptualization of the game, but when push came to shove the final editing and assembly work was handed to Gary Thomas and Joe Fugate. We thought it would be nice to let them get in their two cents about what they have done, why they did it, and what you can expect to get out of it.

MegaTraveller is here at last! By the time you read this (we have to write it some months ahead to meet publication schedules), all three volumes of the new rules set should be available in your local game store. Was the 10-year wait worth it? If you already play **Traveller**, is this something you need? What changes were made, and why? These are all good questions, and this is our chance to give you some answers.

First, who are "we"? Marc Miller first conceived of **Traveller** 10 years ago, and along with Frank Chadwick has guided its development since that time from the bridge at Game Designers' Workshop—in that time GDW has published more than 50 different **Traveller** books and magazines. Gary Thomas and Joe Fugate

are the brains and brawn behind Digest Group Publications, publishers of *Travellers' Digest* magazine and several other approved **Traveller** books.

When **Traveller** first appeared, it was revolutionary—a powerful, playable, science-fiction role-playing game with infinite expandability. A whole universe waited to be explored. At the beginning, GDW didn't publish background material for the game, but allowed referees and players to develop their own milieux. It soon became apparent, however, that the game could grow faster if more background was laid out— not everyone has the time to invent a galaxy of worlds, inhabitants, culture, and technology.

So GDW started in. The Spinward Marches were laid out in loving detail. Aliens appeared—the proud and ferocious Aslan, the intent and mysterious Zhodani, the tradition-bound and militant K'kree, the mercurial and quick-to-take-offense Vargr, the silent and scheming Hiver, the anachronistic and quiet Droyne, the reactionary and independent-minded Solomani. Cultures flourished. Technology and commerce prospered. Far-ranging starships were

designed and built. The historical underpinnings of the Third Imperium were discovered. And the first inklings of the governmental structure of the Imperium were hinted at in the system of nobility.

In this development, many hands played an important role. Besides Marc and Frank, the Keith brothers—William and Andrew—were instrumental in giving the game a definite flavor through their writing and art. Magazines like *Journal of the Travellers' Aid Society, High Passage, Far Traveller,* and *Travellers' Digest* came along with their contributions from many sources.

SO MUCH FOR HISTORY

But not to belabor a point: if you've come this far in your game playing, you probably know where **Traveller** came from. The reason we mention it here is that it is important to be clear on where we are if we are to understand where we are going. Ed Edwards, former editor of *Working Passage* and one of **Traveller**'s most vocal and devoted fans, says that in one sense, "Everything we have done for the last ten years has been playtesting." Now that we've had a chance to try out the game, we've
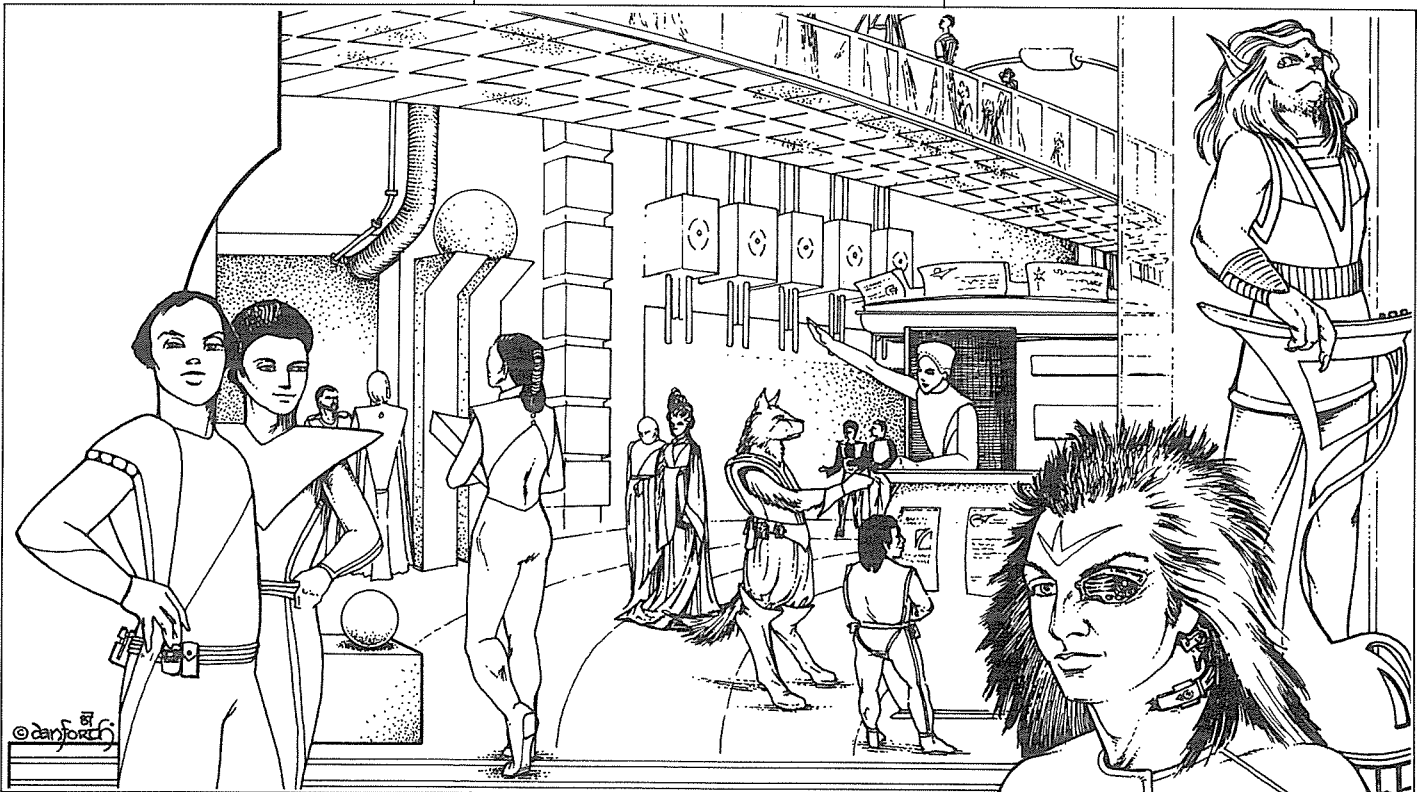
encountered its kinks. We've found its strong points. And over the years, each of us has thought of how we would change the game to perfect it.

Some of the game's growth has been unpruned; different branches of the same tree have fought each other in space and stunted each other's growth. Some of the roots had reached bedrock, or withered from exposure, lacking a firm foundation. A few years ago, Marc decided that we were approaching the time when the game would need to be rebuilt, from the bottom up, to incorporate everything that all of us had learned over the years about role-playing in general and **Traveller** in particular.

IN THE BEGINNING

So here we were, with a mass of material and a deep desire to make all the pieces fit without throwing any away. A monumental task? Definitely. An impossible task? Definitely not!

We worked hand-in-glove for the entire duration of this restructuring task, knowing that what we came up with at the end had to be greater than the sum of its parts. It had to breathe fresh life into a game that was still quite healthy but had grown flabby in a few places and had a few muscles that hadn't been exercised as much as they could be. Marc never wanted a cosmetic retouching of the game: Instead, he insisted that whatever came out of this process had to be right. If something was wrong, it was changed. If something was right it was kept. If something needed more development, the development was done. And if something was overinflated, it was pared down to size. We like what we came up with, and we think you will too.
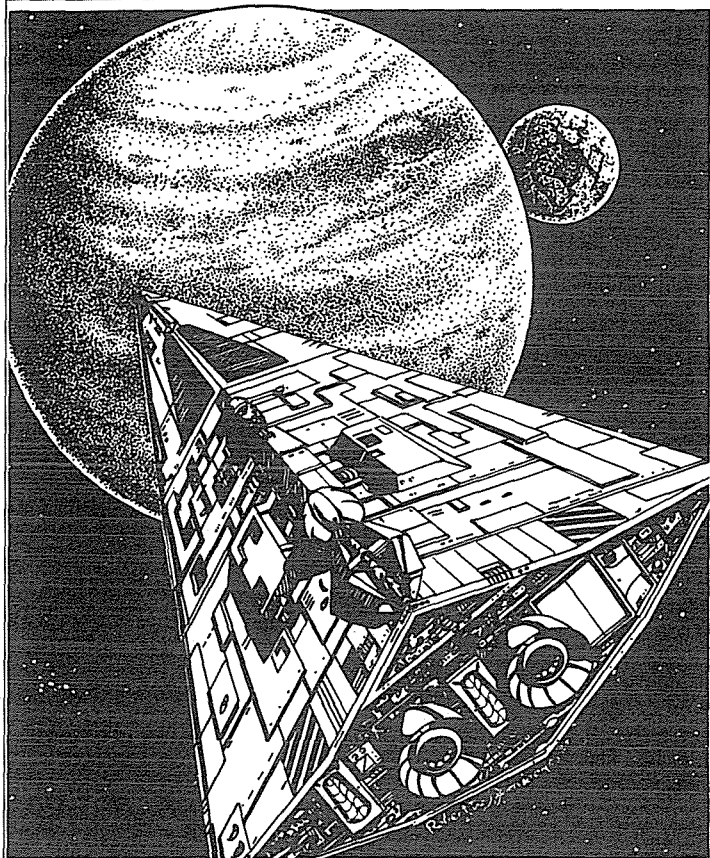
ON WITH THE TASK

One of the first decisions, one that was obvious after working with it in **Traveller** sessions for the last three years, was to include the DGP task system in the new version. The structure of the Universal Task Profile was an enhancement that gave real meaning to character skills and attributes, and it enabled referees to resolve actions in a consistent and easy way.

Every time a task roll is attempted, no matter how trivial, there is some element of risk. This risk creates conflict (the skeleton on which any adventure is built), and success gives the characters (and their players) a sense of accomplishment that was sometimes lacking before.

You can't pick up the **MegaTraveller** rules without encountering the task system. What does this mean to the referee and the players? Once you've learned the basics of the task system, you're well on your way to creating realistic (yet playable) dramatic situations. Your air/raft is stalled and the villains are hot on your trail? Make a task roll. The Vargr who had "befriended" you now turns against you, weapons ready? Make a task roll. The customs agent wants to have "just a closer look" at you ship's hold? Make a task roll. Your starship sensors pick up an unknown object coming at you at a high rate of speed? Make a task roll.

The simplicity and universality of the task system give it its power. After just a few minutes, a referee can have at his fingertips a way to bring any situation to life instantly. In playtests, we've found that inexperienced players are not at a disadvantage: they can have just as much fun as the "old hands" by virtue of the task system. As long as the referee understands its fundamentals, it is a tool ready for any circumstance. And players enjoy using the system: when they encounter a new situation, more often than not they ask if some task could apply if we don't mention one first.

In fact, some of the universality of the system came from these requests. As obvious as it seems now, the task system was not originally used for combat. Then in a playtest, a newer player, who didn't know the standard **Traveller** combat rules, asked what task roll was needed to shoot at an enemy. Lightning struck! The lightbulbs went on over our heads, and we realized at once that we were really on to something. As we said, you can't open the **MegaTraveller** rules without finding the task system as the thread that gives color to the whole cloth.

GOODBYE, OLD FRIEND

One result of the increased use of tasks is the elimination of many unnecessary rules for situations that are now handled in one comprehensive way. Most of these nit-picking details were impossible to remember, anyway, and looking them up always slowed down the play of the game.

Quick, now, a quiz: What's the basic roll needed to avoid a mishap with a vacc suit? And what's the die modifier for vacc suit skill in this instance? What about your air/raft—do you remember the DMs for bad weather, being chased, and so forth, to avoid crashing the thing? Under the task system, you will never have to look these up again.

CHARACTER GENERATION

Traveller revolves around its characters, those disembodied

entities that carry out the players' desires in the game. Thus, changes to the character-generation system were some of the most important made in **MegaTraveller**.

Advice on this point came from many sources. Some old-time **Traveller** players wanted us to base character generation on the one-year system (like *Mercenary* and *High Guard*) and to throw out the "regular" four-year system altogether. We hesitated to do this, though, because of the added complexities (read: it takes a long time) to generate a character year by year.

But something needed to be done. That the systems were different was obvious. A player using the one-year system had a greater degree of control over the resulting character information. Not only that, but a player using the one-year system could get a lot more skills than someone using the four-year system. In the context of the game, this wide diversity wasn't "fair" to those with less time, but we hated to throw out the baby with the bathwater and cause players to lose control over the identities of their game personalities.

The compromise we reached is an effective one. By adding new skills to the system and by revamping the charts with many new cascade skills (in which players choose a specific skill desired from a group of related skills), we've given the "four-year" player as many skills as the one-year player had without costing him the extra game time necessary. The one-year systems are still given as "advanced" character generations. Too many players insisted that we leave them in **MegaTraveller**, and we were more than happy to fulfill this request. Where a specific one-year system is not given for a particular character career, the four-year system is designed in such a way as to suggest what the one-year system would be like.

SKILLS FOR ADVENTURES

One result of the new system is that characters generally have higher skill levels than before. The task system takes up this slack perfectly: its tradeoffs make the game more realistic without requiring characters to be unbelievably talented in any one realm. In those cases where characters do end up being "smarter than the average bear," we find this an advantage. After all, no one really wants to play "the fellow down the street." The reason behind the game is the search for adventure among the stars: the characters are adventurers, individuals culled out of society because they do stand out in some way.

But this system is still "unfair" because of the different degrees of experience that different characters have. A career Navy officer with 36 years under his belt will be a better pilot than the green recruit getting his first taste of a starship. Is there a way to reconcile this disparity within the structure of the game?

Certainly there is, and **MegaTraveller** accomplishes it beautifully. Again starting from the basis of the task system, characters can try their hands at things they may not be completely expert at. Over time, by dint of these repeated efforts, they learn, just as "real" people would under similar circumstances. Eventually, this experience can be measured after the character's ability has reached a plateau point, and the character record is then changed to show the addition of this new skill level. In **MegaTraveller**, you can play the veteran or the recruit, and after a number of terms of game time, the recruit's skills will be similar to those "rolled up" in the veteran's character generation.

If you want to start out with an 18-year old novice, go for it! It won't be long before your character has accumulated many skills useful to a party of galactic adventurers. If your character is the academic type, he can go to college, too, and pick up skills that way. (Naturally, the more you play, the more your character will pick up skills—but we've never claimed there's anything wrong with playing **Traveller** a lot!)

OH, GIVE ME A HOME

Another enhancement to the **MegaTraveller** character-generation system is the required homeworld determination. No longer are characters faceless orphans without any roots. With the new system, the first characteristics rolled up are those of the character's homeworld.

The impetus for this addition to the rules is a desire to expand the role-playing aspects of the game. If you know where your character is from, it's easier to create a personality that seems real. Once we had decided to make this change, our playtesting helped us to discover that knowing your homeworld has much more impact on play than we realized at first.

Characters from high-tech worlds, for example, live under different environments than characters from low-tech worlds. We've simulated this by including lists of automatic zero-level skills for characters from these worlds. Certain skills, too, are limited by their Tech Level. If your character is from a low-tech world, he won't get much chance to fly an air/raft (grav vehicle skill); on the other hand, your high-tech character won't ever have the chance to learn how the clutch on a standard

transmission works (Ground Car skill).

Another problem that every **Traveller** player has surely wondered about from time to time is the effect of tech level on skills. Is a navigator from a tech level three world able to act as navigator on a tech level 15 starship? Seems doubtful, but the rules were never specific on this. **MegaTraveller** spells out the conditions under which skills can transfer between devices of various tech levels.

FLESHING OUT THE CHARACTERISTICS

By better defining what characteristics mean, we've solved one recurring problem in the game: "I just rolled a 9 for my _____ (fill in the blank); is that good?" Players will now have a firmer basis for knowing the abilities as well as the constraints of their characters—another change that enhances the game's role-playing aspects.

For example, the mysterious social standing is now clear and meaningful and has continuing influence on play sessions. A character with a high value has an abiding need to "keep up with the Joneses," by spending money to stay in the lifestyle he's accustomed to. In the context of the game, this means that the character has a regular cash outflow he must maintain. The result? The character needs an equally regular cash inflow, and that means adventure.

Remember the typical monthly salaries for characters given in **Traveller**? Now characters have typical monthly expenditures, too. Let's get that hold loaded up with cargo and head on to the next system—we need a good profit this month!

YOU'RE AS YOUNG AS YOU FEEL

Anagathics—medicines that reduce the effects of aging—are covered in great detail in **MegaTraveller**. Characters can use these drugs both during character generation or after mustering out. In either case, anagathics are expensive and potentially dangerous to one's health. But it's entirely within the scope of the rules to have a 70-year-old character with the fitness and physique of a 40-year-old. (This could be a good way to build up skills....)

PSIONICS

Task based, of course. Psionics are streamlined and made more consistent with other aspects of the game. What psionics can and can't do is clarified in the new rules. Levels of psionic skill are handled just like a level of any other skill, and the all-powerful task system resolves any attempted use of psionics.

One interesting side effect of using tasks is that many psionic tasks are classified as "uncertain." This places these events in the proper light: psionics are no longer the super-duper powers than never fail. So you've read your adversary's mind, have you? And you know what he's thinking, do you? So you're sure you can trust him, are you? All right, it's your neck.

ALL DRESSED UP AND NO PLACE TO GO

World generation has always been an important feature of **Traveller**. You begin with a basic star system then go as long as you want. Create a major world for the system. Add other worlds if you want. Satellites? Just keep going. The beauty of the system is that you can stop wherever it's most appropriate. Sometimes players don't need that much detail, and in those cases the new system can save the referee's time. (The new

system incorporates all of the original system, most of Book six: *Scouts*, and a smidgen of *Grand Survey*.)

The new Universal World Profile listing standard also gives you more information than you had before. It now includes the population multiplier, the number of gas giants in the system, and the number of planetoid belts.

MINOR DISAGREEMENTS

The combat systems in **Traveller** (and in other role-playing games) vary considerably in their techniques and effectiveness. At one point, GDW started to develop an advanced combat system for **Traveller** in order to consolidate and simplify the systems then in use for the game.

Some minor work on this concept was begun, but before it could bear fruit the **MegaTraveller** project had already started, so GDW decided at that time to incorporate the advanced combat system into **MegaTraveller** along with whatever enhancements or modifications the new rules set required.

Surprise, surprise! Combat in **MegaTraveller** is task based. Players pick up on the risks associated with tasks quite readily, and this basic knowledge of game mechanics carries right over to combat resolution. Should I stick around and fight? Or should I strap on my grav belt and head for the hills? Decisions like these are made easier by the consistent nature of the task system. A player already understands the different difficulties a task might entail, so he can better assess the risks involved in any combat decision he makes.

The new combat system is improved in other ways, too. In some games, dice are king, and they reign as long as they can. "Let's see, this fellow is about to shoot his laser pistol at you....Let me check the result." And only 16 dice rolls later, the referee has determined that the draw was successful. "Now let's see if he's aiming at you...."

Excessive dice rolling is tedious; it drags the game down at a point when it should be the most exciting. The **MegaTraveller** combat system is also derived from our "fast combat" system, a **Traveller** variant used for years of playtesting in extended campaigns. This means that results are known almost instantly, with a minimum of dice rolling or paperwork.

One way combat is speeded up is by deferring the detailed determination of damage until the end of the combat session. If someone's drawing a bead on you with his FGMP-15, and you're lucky enough to get your shot off first, you don't really care whether your slug hit him in the thigh, the kidney, or the neck. What you want to know is whether he's still standing and whether he's still got you in his sights. Once things have settled down, then you can take the time to check on his medical condition.

The new combat rules also incorporate "interrupts." Interrupts mean that characters can "jump into the action," pre-empting another NPC or PC by acting first. In the game, the result of this interrupt is heightened attention from all the players. In some systems, while the referee and a single player spent time resolving one interaction, the rest of the group could go out for pizza without missing any of the events, thinking, "That doesn't affect me, does it?" However, it does affect you in **MegaTraveller**: you always have a chance to change the course of events by taking direct action. But again, there's conflict. If you interrupt too soon, your action may be wasted. If you wait too long....
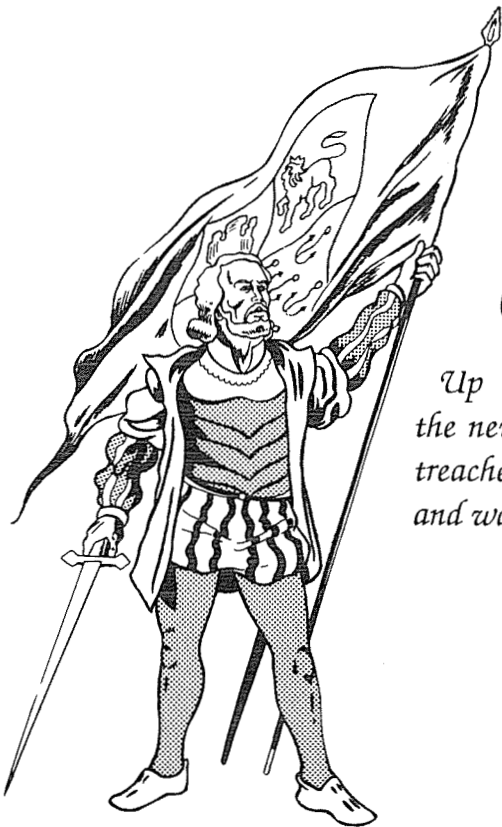
GET THE BIG PICTURE

One advantage to the **MegaTraveller** combat system is that there is only one **MegaTraveller** combat system. Whether you're attacked by a groat, a thug with a cudgel, a Vargr with a laser carbine, or a system defense boat with a meson gun, the system is the same. Do you really want to shoot at that armored starship with a bow and wooden arrows? OK, it's up to you (personally, we think you'd have to be nuts), but with the new system you can do it and find out how much damage was done. (Hint: absolutely none at all! Has anybody got a bottle of starship touch-up paint handy?)

MAYBE WE CAN WORK THIS OUT

Not every character interaction ends in combat, of course. In **MegaTraveller**, five types of interpersonal tasks allow characters to use their skills to negotiate and resolve conflicts without coming to blows. Want to pump someone for information in a conversation? Make a task roll. Want to bribe an Imperial official? Make a task roll. Want to agree on a fair price for your ship's cargo? Make a task roll. (By now, you should be getting the picture: everything in **MegaTraveller** revolves around the task system.)

The reaction table now shows the degree of cooperation over the long term, rather than some immediate inner emotion felt by the NPC. We used to hate rolling "hostile": if you stop someone on the street to ask directions, are you assaulted? Probably not, but you might not get a straight answer, either. The new interpersonal interaction system allows a wider spectrum of meaningful responses in the game.

WE'VE GOT TO STOP MEETING LIKE THIS....

The encounter system in **MegaTraveller**, like most other systems in the revision, is integrated: one set of charts does all the work for the referee. Animal encounters, patron encounters, NPC encounters, starship encounters, predetermined adventure encounters, rumors—all are resolved in one consistent system. The headache of trying to remember six different sets of rules is thus eliminated, as well as the problem of remembering when to roll which number of dice for which type of encounter.

CRAFT DESIGN

It would seem pointless to keep the "**Traveller**" name unless there were plenty of opportunities for characters to actually travel. We needed systems that designing would allow craft of any and all sizes, from the very smallest all the way up to the largest.

For small vehicles, we used **Striker** as a jumping-off point. This system, developed by Frank Chadwick, was remarkable in that it allowed the designer to use one set of rules for the whole gamut of tech levels. At the same time, we wanted to cut down on some of the **Striker** complexity and ensure that the vehicle design system and the starship design system did not contradict each other.

As work progressed on the two systems, we realized how powerful this concept of noncontradiction was. It didn't take long to start linking small vehicles, small craft, and starships into one integrated craft design system. Now, using the same set of rules, you can design almost any vehicle imaginable, all

the way from your grandfather's Model T clear up to a 100,000 ton tech level 15 battle cruiser. (Pitting the two against each other is still an unfair fight, however.)

One significant addition to starship design is ship sensors, many of which were borrowed from DGP's **Grand Survey** and **Grand Census** (which in turn owed their beginnings to Marc Miller's Special Supplement 3: *Missiles*). Once starships have "real" sensors, the fun is just beginning.

NOSE TO NOSE, TURRET TO TURRET

Starship combat in **Traveller** has benefited greatly from the new rules. At once more realistic, easier to learn, and easier to run, it owes much of its procedure to the **MegaTraveller** personal combat system. Once you've learned one system, the second follows along the same basic lines.

The starship combat hit resolution is a—yep, you guessed it—task-based version of **High Guard**. Another difference between the two is the use of starship sensors just mentioned. Under the old system, any ship "within range" was a possible target. Under **MegaTraveller**, you have to determine what the ship is first. Is it a Vargr corsair? Or a friendly vessel maintaining radio silence during the battle? You better know for sure before firing. Besides, you're aiming your weapons with the dual assistance of your sensors and your computer—now don't you wish you'd gone ahead and installed that Model 9?

With the necessity of sensors, there's a lot more possibility of skullduggery and deception. Power down your fusion plant, and your enemy's sensors show that your vessel is an insignificant target. But if your enemy isn't fooled, you could end up a sitting duck. On the other hand, what about that clump of space debris you just whizzed by? Maybe it bears a closer look.

BUYING AND SELLING

Money makes the world go 'round, so they say, and we're dealing here with 11,000 worlds. Commerce rules in **MegaTraveller** were adapted from *Merchant Prince*, with the addition of detailed cargo rules. Now you know whether your cargo hold is filled with laser rifles or vacc suits. (We can certainly think of a scenario in which this would make a difference.) Special rules for hazardous cargoes also serve to spice up an adventure—you wouldn't mind the firefight between your ship and that corsair if it weren't for the fact that your hold is loaded with potentially explosive petrochemicals.

Dealing with the day-to-day details of interstellar trade is also unified by means of the task system and the use of character skills.

YOU CAN ALWAYS LOOK IT UP

Ten years of role-playing taught us one thing: Players want background material, even if they sometimes exercise the option of modifying that material for their own campaigns.

To this end, **MegaTraveller** has much more background material than the original **Traveller** had (which was minuscule, at best). The third book of the **MegaTraveller** set is the *Imperial Encyclopedia*, which is completely filled with library data, several maps, exhaustive lists of equipment, armor and weapons, a catalog of starships and vehicles, and a few details on starship operation.

In developing the background, Marc wanted to provide more opportunities for adventure than currently exist in the Third

Imperium, so changes were in order. But Marc insisted that these changes be implemented in a peaceable manner: things had to be "upward compatible," so we couldn't go back in time or otherwise change the written history.

To create a new scenario, then, we had to move forward in time—about 10 years—allowing some radical shifts in the political makeup of the regions contained in and around the Third Imperium. Emperor Strephon is dead—shot down in cold blood by an archduke who then claims the throne by an ancient right. In the ensuing confusion, big chunks of the Imperium start breaking off, and Aslan and Vargr on the border start encroaching. (If you've read the articles in the last two issues of *Challenge*, you already know about this.)

These border spats (and they exist throughout the whole region, because there are lots more borders) are dangerous to anyone travelling in the area, and danger spells adventure. Anywhere you go, you might find warships, corsairs, petty thieves, and a general state of lawlessness.

LIBRARY DATA

In some respects, this third volume was the hardest to write, even though it had no new rules per se. We collected the background from the entire corpus of **Traveller** books and magazines and then summarized this into library data.

But not your ordinary library data—the *Imperial Encyclopedia* has library data with a twist. In order to further develop the background for **MegaTraveller**, we give one version of library data and specify the version. According to this scenario, the information collected was part of a project instituted by Archduke Norris of Deneb. Naturally, this funding source brought about certain biases in the library data. Of course it's still complete and accurate—well, comprehensive, at least, and reasonably correct—oh, forget it: some of the library data entries that "should" be there are missing, and others are just plain wrong.

Now, you know that, and we know that, but do your characters know that? Some do, some don't (in doubt as to which is which? That's right, make a task roll). But those who believe everything they're told might be in for some nasty surprises later on. We can say this: the library data collectively is at least as accurate as the books, taken as a whole, in your own local library. Is that reassuring or what?

(A special section for the referee's eyes only fills in some of the gaps, but players should resist the temptation to peek.)

EQUIPMENT, WEAPONS, AND ARMOR

The third volume of the **MegaTraveller** rulebooks contains a complete listing of handy gadgets. We combed through everything in print for **Traveller** and included almost all of the equipment for this revision. The handy part about this list is nearly everything is in one place: from books, magazines, adventures, alien modules, you name it. And everything fits together well in one standard tech level progression. In the original system, there was no laser pistol; in the new system, there are two different versions at several different tech levels.

CRAFT DESIGN EXAMPLES

The *Imperial Encyclopedia* contains craft designs, each with the new Universal Craft Profile listing. In one place, this listing gives you a complete rundown of the craft's operational status.

We included small vehicles like the air/raft and ground car, small craft like the GCarrier and the ship's boat, and full-fledged starships like the Scout/courier and the system defense boat. Space was at a premium here, but we were able to squeeze in all the vehicles from the basic **Traveller** book.

MISCELLANY AND POTPOURRI

Taking advantage of 10 years of **Traveller** experience, the new rules are much more comprehensive. Your character wants to jump off a ledge? It's in there. Throw a rock across a chasm to hit that pesky K'kree in the snout? It's in there. Throw that same rock across the same chasm, but on a .125 gravity world? That's in there too. What's it take to power up your starship when you want to blast out of port in a hurry? It's in there. Want to use your communicator to call down fire from your orbiting starship? It's in there. Want to put on a tech level 15 false moustache to sneak past the guard? It's in there.

SOME FINAL THOUGHTS

We all love **Traveller**, or we sure wouldn't have agreed ahead of time to work on a project that would take such big pieces of our lives to complete. But we recognized its weaknesses, and we had good ideas to change the game for the better by incorporating 10 years of "playtesting" the original system.

We wanted the new game to better simulate the "reality" of science fiction. We wanted the new game to have more detail yet be more playable. And we wanted the whole shebang to fit in with what's been done previously in **Traveller**.

Conversely, there are some differences between the old and new systems, but we made these changes only when we decided that the change was necessary to bring about the greatest improvement. We weren't afraid of complexity, either. While much of the game mechanics are streamlined and simplified (thanks mostly to the task system), a few aspects are more detailed in order to heighten the sense of "being there." The complexity came about because of the comprehensiveness of the new game: simply stated, you have many more options to choose from in the **MegaTraveller** rules.

This myriad of choices, though, was made easy to handle by focusing our efforts. We knew that if we added to the game indiscriminately, the wealth of detail would overpower both players and referees alike, giving a "realistic" system that was never any fun. **MegaTraveller** has the best of both worlds.

In appearance, the three volumes of **MegaTraveller** are meant to be enjoyed. No one enjoys flipping through rulebooks to find some obscure reference (and we think we've eliminated the need for that), but even if you did we think you would enjoy the graphic presentation.

The books contain small vignettes scattered through them: small "sketches" of a few paragraphs that give the reader a better look at some aspect of the **Traveller** universe.

All three books went way over their "expected" size; for the most part, we bit the bullet and included the extra material.

THE BALL'S IN YOUR COURT

MegaTraveller is on its way to your dealer's shelves. Take a look at it and let us know what you think. This game is yours; we need feedback so we can start preparing the next 10-year revision.

—By Gary L. Thomas and Joe D. Fugate Sr.

The Sung

CHAPTER 19: "SAPIENTOLOGY"—AN OVERVIEW

Sapientology, as the field of study involving sentient life, encompasses more than just straight biology. In trying to fully understand an intelligent, extraterrestrial species, many things such as sociology, psychology, linguistics, technological advancement, political geography, history, and culture must be examined in addition to the basic biological studies one conducts on alien life. In this chapter we will present an overview of the present sapientological data on each of the known sentient, extraterrestrial species: the Sung, the Xiang, the Ebers and the Pentapods.

(Editor's Note: Only the information concerning the Sung is reprinted in this article.)

At the end of this article, we will summarize the types of studies conducted by sapientologists and will also make note of some of the more ground-breaking investigations which have been conducted in the field.

SECTION 19.1: THE SUNG

As the first alien race contacted by humanity, the Sung are the most famous and most well understood of the extraterrestrial sentient species known to humanity. First encountered in 2247 by the Manchurians, the Sung were the first and as of yet, only, alien species with whom we have engaged in combat.

(Editor's Note: This was written before the Kafers were discovered.)

Since the end of the Slaver War in 2255, however, humanity has been on reasonably friendly terms with the Sung, which has resulted in significant amounts of information having been gained about the Sung and their cultures.

ANATOMY AND PHYSIOLOGY

Appearance: The typical Sung, with a man-height of approximately 129 centimeters when standing as tall as possible, is shorter than the average human. With a slightly stooped posture, however, the average Sung appears to be even shorter. In terms of terrestrial analogues, Sung appear vaguely reptilian, but their homeopathic physiology makes them resemble mammals more than reptiles in terms of physiologic functioning.

A Sung possesses six appendages arranged in a bilaterally symmetric orientation: two forelimbs, a pair of wings, and a pair of back limbs. The forelimbs are small and somewhat delicate-looking, and the back limbs are well muscled and sturdy in appearance. Each of these four limbs terminates in a "hand" of sorts, with two middle fingers and two opposable thumbs (arranged thumb-finger-finger-thumb) on each hand. The forelimb hands are not developed for strength, but, instead, are adapted more for a high level of dexterity. The hands of the back limbs are sturdily built and well adapted for grabbing and holding large, heavy objects (enabling the Sung to transport sizeable loads via wing-powered flight).

The wings of a Sung are located roughly midway between the forelimbs and the back limbs. Fairly long (extended wingspan is, on the average, about five meters) and slightly tapered, these wings enable a Sung to stay aloft, riding the air currents and winds for extended periods of time while expending minimal energy (much like terrestrial gliding birds). While not in use, the wings can be folded flat alongside the spinal column to keep them out of the way and to allow more freedom of movement on the ground.

The Sung head and tail both possess structures facilitating flight. A rigid crest (which has some internal bony support) located on the upper surface of the Sung skull has the appearance and function of a small "rudder." The Sung tail, which is heavily muscled and almost as long as the Sung torso, possesses a fan-like extension at the tip. This tail extension can be spread wide to serve as a stabilizer in flight or retracted to protect the membranes from damage while the Sung is on the ground. When retracted, the membranes are protected by fleshy ridges surrounding the depressions and by the muscular leading edges of the tail itself.

Senses: The Sung have five senses similar to the five senses of humans. As is common with many higher level species encountered by humankind, much of the sensory organs in the Sung are located in the head, where the neural sensory pathways to the brain can be short. Sight, as with humans, is an important and well-developed sense in the Sung. A Sung has four eyes (arranged in two pairs) located on the frontal surface

of the head. The upper pair of eyes is smaller and more close-ly spaced together than the lower pair. These upper eyes are used more for short-range vision than the lower eyes, whose *separation makes them more suitable for long-range seeing.* Although both pairs of eyes are sensitive to the same wavelengths human eyes can perceive, the lower pair, which has a larger diameter and aperture, is capable of seeing far-ther into the infrared portion of the spectrum than either the upper pair of eyes or human eyes. Sung are thus able to perceive objects in complete darkness (in human terms) as long as those objects emit or reflect infrared wavelengths.

Sung hearing covers a broader spectrum range than does human hearing. The Sung auditory ability extends from the subsonic (relative to humans) to the ultrasonic. At subsonic frequencies, Sung hearing is limited to being just able to detect that subsonic sound is being produced (auditory resolution at this level is poor). Throughout the normal human hearing range, Sung hearing is approximately comparable to human auditory perception, but Sung can usually detect sounds at a lower volume threshold than humans can. It is at ultrasonic frequencies that Sung hearing surpasses human hearing by a significant margin. At the higher frequencies of the human hearing range and at ultrasonic frequencies, Sung auditory perception is at its most acute, allowing a Sung to resolve ac-curately small changes in pitch at low volumes. This ability proves useful in allowing Sung to communicate with one another while in flight and while not in close proximity. The Sung ears, one on each side of the head for stereophonic sound, are roughly hemispherical in shape with a slightly flared outer edge, and they can be flattened against the side of the skull while in flight or fully extended to allow for maximum reception of sound.

The Sung senses of taste and smell are currently the least understood of all the Sung senses. It appears that there is some significant overlap between these two senses in terms of Sung perception. Both odors and flavors seem to be regarded as the same thing in the Sung mind. Studies indicate that the oral cavity contains both taste buds and olfactory receptors. These appear to be located in approximately equal proportion in several localized areas of concentration within the oral cavity. This may partially explain the overlap in perception in the Sung mind of these two senses.

Tactile sense in the Sung is effectively the same as that in humans. As in humans, the Sung have the highest concentra-tions of touch receptor cells in critical areas such as the hands, feet, and mouth. Perception thresholds for the tactile sensa-tions of pressure, temperature, and pain appear to be at a slightly more sensitive level than in humans. The thresholds of discomfort for these sensations are close enough to those of humans that making special considerations for Sung tactile comfort in human environs is unnecessary.

Respiration: The atmosphere on Stark, the Sung homeworld, is thinner than that of Earth. The Sung, having evolved to func-tion optimally on their homeworld, are most comfortable in environments with conditions similar to those on their homeworld. Atmospheres with higher air pressures than 0.768 atmospheres at the surface (that limit is the mean sea level air pressure on Stark) are taxing to the Sung. Compared to Earth's atmosphere, Stark's atmosphere has a proportionally higher oxygen content although it is still within the limits of human
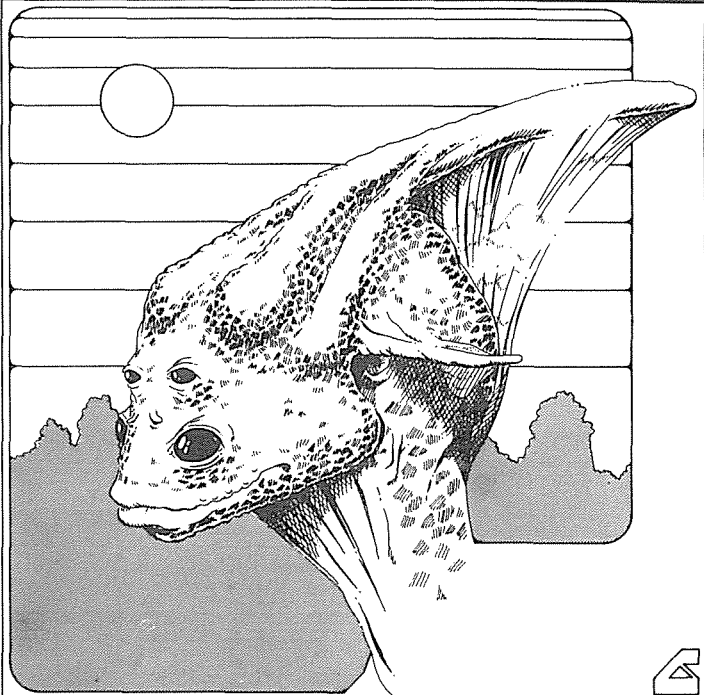
respiratory needs. Sung visiting Earth have found that fatigue *tends to set in more quickly than on Stark since the higher* air pressure and lower oxygen percentage result in somewhat more labored breathing along with slightly lowered blood ox-ygen levels. On worlds with thinner atmospheres (but still with proportionally the same oxygen fraction), Sung have an easier time adapting since high altitude flight on Stark has acclimated them to a certain degree to such conditions. Most atmospheric *gasses that are toxic to the Sung are the same ones that are* poisonous to humans.

Health: The Sung, as a whole, are generally a healthier species than humans. The Sung immune system has evolved to a level of strong defense, enabling the Sung to remain virtually disease-free for much of their lives. Those few seriously in-capacitating diseases that could get past the natural immune *system of the Sung have been eliminated by the advances of* Sung medical science (which, in some respects, is superior to that of humans). Minor diseases, of which there are a modest number, are generally of the annoying rather than the in-capacitating variety and afflict the average Sung with a severi-ty of symptoms comparable to the human common cold. These infections are usually fought off by the natural immune system in a period of days after which reinfections are relatively unusual.

Cancer and cancerlike conditions, which were nonexistent in preindustrial Sung, have appeared on a very rare basis among industrialized Sung. The radiation incident on the Sung homeworld from its sun is less mutagenic than that on Earth. Skin cancer on the Sung homeworld is, therefore, virtually nonexistent (except in rare individuals with pigmentation defi-ciencies). Sung living on other worlds where the ultraviolet radiation is more intense are highly susceptible to skin damage and cancer as a result of exposure to those alien solar radia-tions. Even on Earth, where the UV radiation is safe for humans, Sung must be very careful of overexposure to the Sun's rays. Skin cancer in Sung, however, generally does not develop in-to the all-invasive malignant cancer that occurs in humans.

Instead, Sung skin cancer tends to remain localized, spreading only into those immediately adjacent areas of skin and bone, rather than eventually invading the entire body. If it occurs on the wings, however, skin cancer in Sung can develop into a severely disabling condition if not treated swiftly.

Partially due to their excellent health, the Sung can expect a productive lifespan of approximately 150 Earth years (from hatching to death, the average lifespan of a Sung is about 165 Earth years). Almost all Sung, however, do not live their full, natural lifespans. As a Sung approaches an age of about 165 Earth years, a rapidly progressing syndrome, similar to the human condition known as Alzheimer's disease, develops. Very little is understood about this condition, which seems to be part of the natural aging process of the Sung, since the Sung have tied it in with their religious beliefs and have refused to allow humans to study it extensively.

Called *Cho-sorrah* (literally, "The Sea Calls"), this syndrome starts out as a mild mental confusion accompanied by some memory loss in the aging Sung. These symptoms rapidly become more severe: the Sung becomes disoriented most of the time and is unable to remember anything significant. In the latest stages observed, the Sung also begins to lose muscle coordination, eventually becoming unable to fly or walk any real distance. It is unknown how the syndrome progresses after this point since Sung usually undergo euthanasia just as the muscle coordination starts to deteriorate. In known history, no Sung has been allowed to live past the point where self-powered flight becomes impossible.

Mutual infections shared and transmitted between humans and Sung are quite uncommon. Such infections are usually of the mold or yeast variety and are rarely serious when present in either species. Most bacteria and viruses present in the Sung seem incapable of infecting humans, just as human infections seem to stay completely out of the Sung body systems.

Genetic Basis: Sung body chemistry is DNA-based like that of humans and other terrestrial organisms. Also like humans, the Sung (like all of the life on Stark) have carbon-based biochemistry, with left-handed amino acids being used as the building blocks of the body. Twenty-nine pairs of chromosomes carry the genetic material, with one pair being the sex chromosomes. Genetic analysis indicates that the sex chromosomes in the Sung may carry more genetic material than those in humans, which possibly results in a larger number of sex-linked traits in the Sung than in humans. The Sung sex chromosomes appear to function in much the same way as they do in humans, with female Sung having two sex chromosomes of the same type (SX-SX) and with male Sung having one of each type (SX-SY). As with humans, the Y-Y (in Sung, SY-SY) combination does not result in a viable offspring with normal characteristics.

Reproduction: With two sexes, reproduction in the Sung is sexual rather than asexual. Fertilization is internal: gamete exchange occurs within the female, and the male of the species possesses the more penetrative genetalia (which, unlike human males, is completely retractible). The embryo develops with the female during the early, critical period of growth. After a period of approximately seven months (Earth-standard months), the young Sung leaves the mother's body. At this time, when it enters the outside, the young Sung is encased in a leathery-surfaced, egglike shell, within which it continues to develop

for another three and a half months. The young Sung, after hatching when mature enough, devours the shell as a first meal. Newly hatched Sung are capable of eating many of the more easily digestible adult Sung foods and can usually eat just about any adult food by the time they first begin to fly about a year to two years (Earth-standard) after hatching.

Locomotion: The preferred method of locomotion among the Sung is flight; a Sung that is permanently incapable of flight often undergoes voluntary euthanasia rather than living flightless. The Sung are, however, perfectly capable of walking on their hind legs, albeit at a slower pace than the average adult human. Most Sung have a tendency to hop rather than stride when speed is a necessity since the powerful hind leg muscles on the Sung are capable of propelling a Sung a considerable distance in one hop.

In flight, the Sung is quite graceful. With the right atmospheric conditions, a Sung can stay aloft for hours with only a minimal expenditure of energy. Getting aloft from the ground, however, can be rather strenuous, especially on worlds with surface gravities greater than Stark's 0.763 Gs since the Sung's flight abilities are slightly more suited to achieving flight from heights rather than the ground.

Nutrition: Although the evolutionary ancestors of the Sung were predominantly carnivorous, the present day Sung are omnivorous (much like humans) with a dietary emphasis on processed plant products. Sung nutritive requirements have not yet been extensively studied; however, it does appear that an adult Sung needs to ingest a variety of good types in order to maintain good health. The Sung and humans have not yet found any foods that both species find mutually palatable and nutritious, but work in this area has barely begun. In situations where Sung and humans must live together, each species takes care of its own food supplies and production.

CULTURE

Language: The Sung, unlike humans, speak only one language on their world, but there are dialects spoken which vary depending on the region. This homogeneity of language on Stark is probably due to the large degree of interaction between the different Sung nation-states. To some extent, this has made easier the job of human linguists studying the Sung and their language. Unfortunately, the spoken language of the Sung is not entirely audible to human ears. Pitch is an important component of Sung speech and the sonic frequencies used by the Sung often extend into the ultrasonic. Complex sonic analyzers coupled with sophisticated computer translation software have enabled humans to detect and translate the ultrasonic components of Sung speech. This means of translation, however, is slow and not always accurate for all dialects. Consequently, the Sung have tended to learn more of the human language (mostly English, Canadian French, and Mandarin Chinese) than the humans have learned of the Sung language. The Sung vocal apparatus is not capable of producing all the sounds that humans are capable of; conversely, the Sung regularly produce and use in their speech a number of sounds that humans cannot make naturally (some of these, humans cannot even hear).

The written language of the Sung uses a phonetic alphabet system, with each distinct consonant or vowel sound being represented by its own symbol. Again, as with the spoken language, the Sung written language is virtually the same in
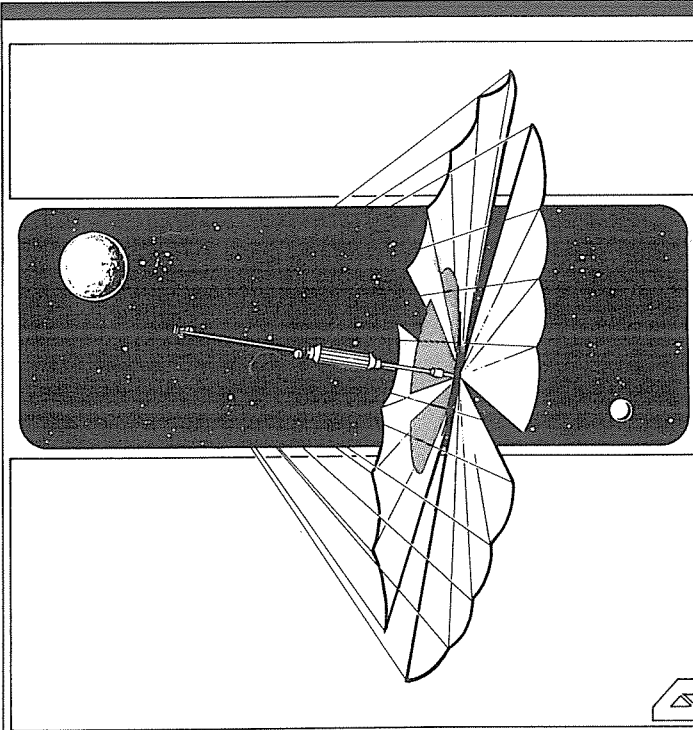
all the regions of Stark. The numbering system of the Sung is base 16, similar to the hexadecimal system of humans. With four limbs, each with four digits, the Sung naturally developed a base 16 system. Each digit, from one to 16, has its own distinct written symbol. The Sung also have separate symbols for zero as a place holder and zero as the number zero (meaning the absence of quantity).

Technology: In general, the technological level of the Sung is comparable to that of humans. In some respects (such as medical technology), the Sung are more advanced than humans, yet in others (such as spaceflight technology), humans clearly hold the edge. The Sung are skilled at manufacturing, materials fabrication, and automation. Food processing by the Sung is done at a high level of sophistication and quality. When first contacted in the mid-220s, the Sung had achieved a regular schedule of interplanetary spaceflight using ships equipped with solar sails (for out-system travel) and ion drives (for in-system travel), but they had not developed any means of interstellar travel. Land, sea, and air transportation technology on Stark is similar to human methods, but short-distance personal transportation vehicles are generally not used by the Sung due to their natural flight capabilities.

Architecture: Most of Sung architecture is designed along vertical rather than horizontal expansion. Skyscraper-like structures are very common in Sung cities. With portals to the outside located on most floors, Sung skyscrapers differ from their human-designed counterparts. Since Sung can fly up to any floor in skyscrapers (and actually prefer to do so), internal elevators in these buildings are constructed and used almost exclusively for freight transport rather than personal transport. Instead, open air spaces extending from the top floor to the lowest floor are often built into these skyscrapers, enabling Sung to travel between floors and still remain inside the building.

Careful consideration of wind conditions around these Sung skyscrapers is taken into account by Sung architects.

Dangerous eddies and currents in the winds around tall buildings can have fatal results for Sung attempting to fly near such structures. Care must be taken by architects to prevent such fatal conditions. Consequently, Sung architects and designers have a much better understanding of the interaction between structural design and wind effects.

Religion: Sung religion is another area of Sung culture that is not yet fully understood. It seems that there is some variety of beliefs from region to region, yet all religious beliefs appear to have in common the view that the seas and oceans of Stark hold some sort of divine presence. Also held in common is the belief that life (including some form of divine spark that produces sentience) originates in the sea and that one must return to the sea at the time of death (Sung funeral rights usually involve the dumping of the body into the ocean). Most, although not all, of the Sung religious faiths believe that the harmony of life must be maintained. Irreversible disruption of the environmental balance is frowned upon in these faiths, and a number of them seem to believe that the sea will reclaim all the land and the life upon it if such a disruption were to occur. Beyond these few insights (which may not be entirely accurate), little is clearly understood of Sung religious beliefs.
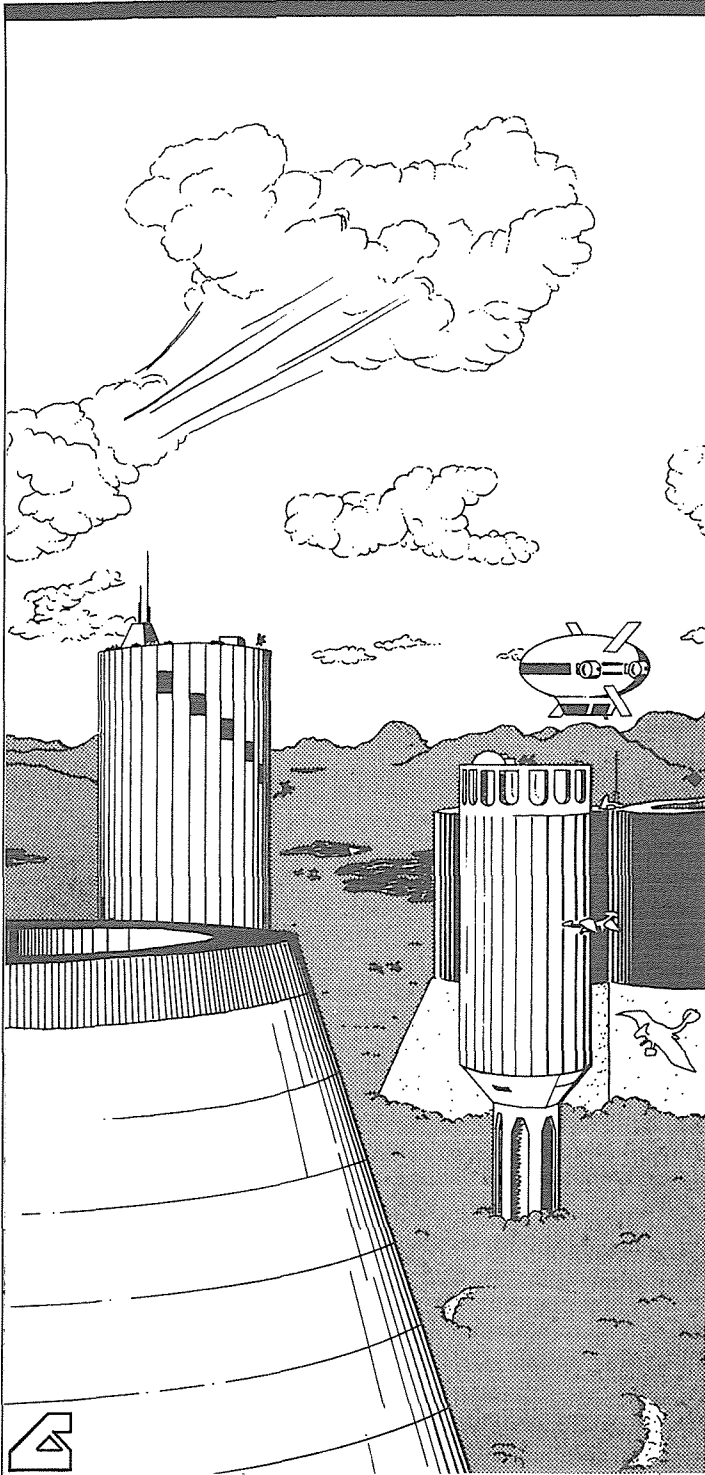
POLITICAL GEOGRAPHY

Political Organization: The largest unit of political organization among the Sung is the nation-state. Most of the political boundaries of these nation-states are based upon the physical geography of Stark, which is made up of numerous islands (the larger islands are roughly equal in area to the total land area of Japan). Some of the lesser nation-states are comprised of numerous small islands which are usually separate independent political entities.

Political boundaries are rarely disputed on Stark. When such disputes occur, a neutral committee of the World Council (similar to a more powerful version of the United Nations of Earth and made up of representatives of all the Sung nation states) is appointed to mediate and resolve these disputes. The hierarchic system, however, also prompts much rivalry (albeit non-violent) among the nation-states as each state tries to achieve supremacy.

Heirarchic System: The guiding principle of Sung governments (and, in fact, Sung culture as a whole) is "Soon-Atkacharr," which translates as "Flight of Superiority." Sung nation-states are always vying for cultural and, mostly, technological superiority. A state which feels it has a strong claim to superiority may challenge other nation-states (those presently marked as "Kacharr" (superior) to the Charr-to-sah, which is a series of mutually agreed-upon tests or competitions designed to determine which group has superiority. The winner of the Charr-to-sah is acknowledged as the superior group and is entitled to control and dictate policy to the loser of the Charr-to-sah, as well as being entitled to control any and all other groups deemed inferior. Those in the inferior group (or groups) are known as Taka-soon ("lesser flight") and are obligated to obey and serve the superior group (Kacharr-soon: "greater flight").

It has been commented that this is essentially just a master/slave relationship, but this is not entirely the case. In return for the servitude and obedience of the Taka-soon, the Kacharr-soon are obligated to "uplift" the Taka-soon to the new

be made by the Kacharr-soon (the Taka-soon can petition to be considered for such advanced status, but they must pass tests devised by the Kacharr-soon designed to assess the competency of the Taka-soon at the new standard of superiority).

The system of Sos-Soon-Atkacharr ensures that most of Sung civilization is at, or close to, the same level of advancement and culture (the most "primitive" Sung states are always taken under the wing of a more advanced state to be brought up to the level of everyone else). Sung society, therefore, tends to be relatively homogeneous, with minor cultural idiosyncrasies being the major differences between Sung nation-states on approximately the same level in this world-wide hierarchy. This system occurs on both the large-scale level of nation-states and the small-scale level of Sung cities and towns. The deliniation of the hierarchical structure can often be very complex, for various groups find themselves newly-uplifted into a superior position while others find themselves on an inferior level after one group makes a breakthrough to a new and better way of doing something.

This system has also resulted in strained relations at times between the Sung and the human species. The attempts of the Sung to deal with the perplexing Xiang within the framework of Sos-Soon-Atkacharr (the observing humans did not understand or even know of this aspect of Sung culture at that time) are what caused the misunderstanding of the Slaver War. The outcome of the Slaver War, in which the human's technology of stutterwarp spaceships was demonstrated to be markedly superior to the ion drive/solar sail technology of the Sung, has resulted in the human species being placed at the top of the Sung's Sos-Soon-Atkacharr hierarchy. The entire Sung species is therefore required by their cultural code to serve and obey the human species.

From the Sung perspective, the humans are now obligated to advance the Sung to this new technological level and present the Sung with some test to pass to assess their new equality. The humans, not knowing of their obligations at first, made some serious cultural blunders in the eyes of the Sung. This situation has become somewhat better as humans and Sung have grown to understand each other to some extent. The Sung still feel that the humans are obligated to give them stutterwarp technology (along with some other superior technologies the humans have) and feel that the humans are being abnormally slow in fulfilling their obligations to the level of the code.

The Sung involved with humans have proven both exceptionally helpful and obedient to the humans—to such an extent that some of the humans involved think that the Sung cannot possibly be sincere in their attitudes and actions and must be hiding something. These suspicions are dangerous to successful interactions with the Sung; thus humans interacting with Sung are required to study and understand the Sos-Soon-Atkacharr system so that these suspicions can be put to rest.

Although we have been in contact with the Sung for almost 50 years, there is still much that is not yet known or understood about Sung biology and society. With two human enclaves on Stark and several human-Sung cooperative space ventures, however, the information gathered on the Sung grows daily. Hopefully, the day is not too far distant when humans will understand the Sung as well as they understand their fellow humans.

—*Deb Zeigler*

standard of superiority. Usually, this involves a gradual education of the Taka-soon in the new area or areas of superiority, with funding assistance for educational programs and/or construction of new technological facilities being provided by the Kacharr-soon. Additionally, the Kacharr-soon must ensure the well-being of the Taka-soon during the learning process.

Once the Taka-soon have been advanced to the new standard or superiority, they are designated "Tassacharr-soon," or "equals," to the Kacharr-soon. The Tassacharr-soon are then no longer bound to the obligations of obedience and servitude, and the Kacharr-soon are no longer obligated to assist them. The determination of Tassacharr-soon status, however, must

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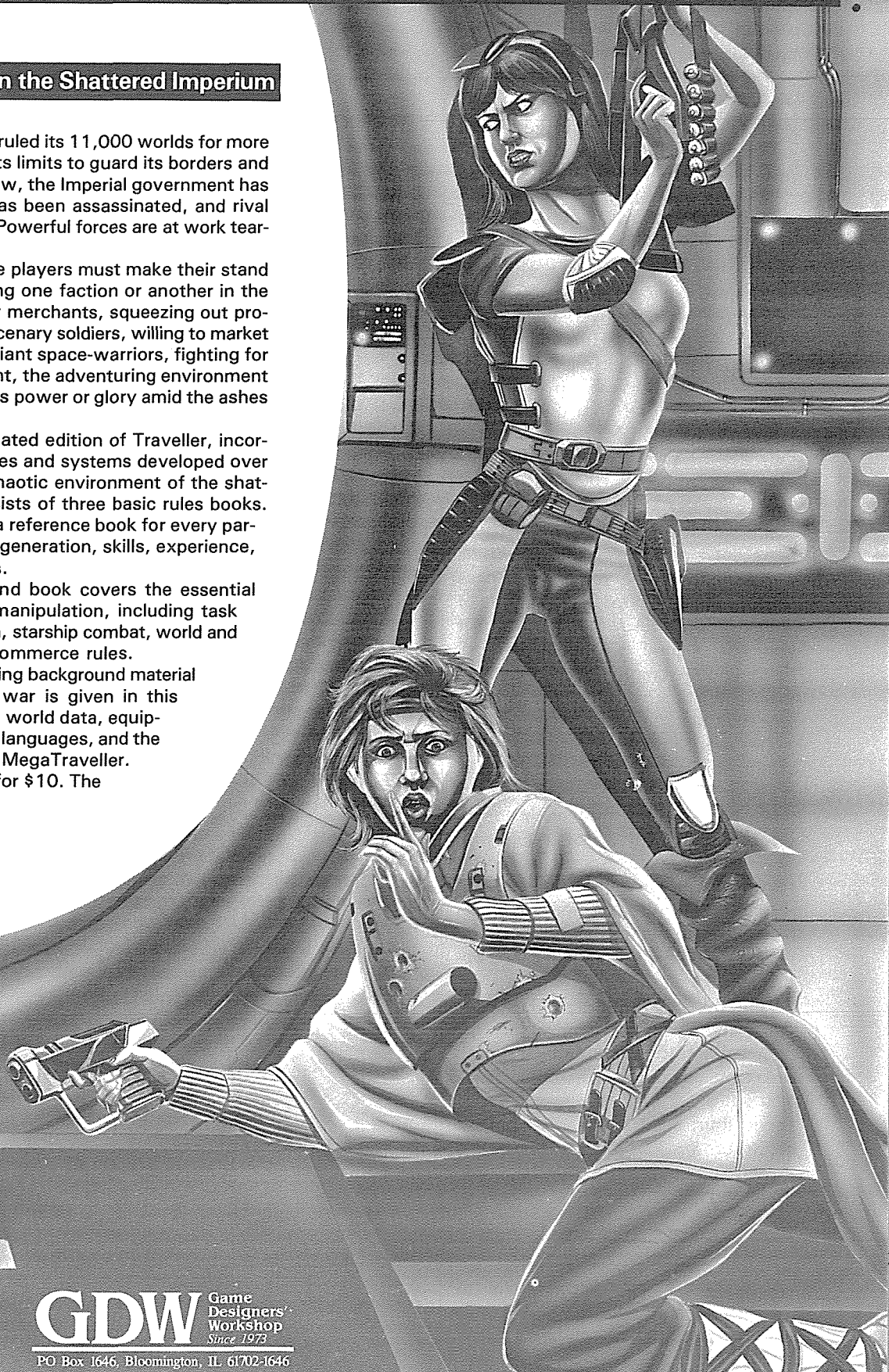
Spacesuits

"So you want to be a spaceman, eh? A breakabout, a drifter, starman, high-lifter, wanderer, spacer, a doer of deeds and seer of sights? Well, boy, the first thing you need to do is lose that tourist's gladbag you got there and get you a working spacesuit. Professional gear for professional men!"

"There's a whole lotta decisions to make about what you wear where the air is rare, ya know? You go wrong buying, you'll sure go wrong trying, eh? Now lookit here, have you ever cut yourself with a tool when you were working on something? You do that in a 'suit, yer oot, right? Get you a 'suit made of armor cloth, with a hard torso, you kin mebbe learn from some of your mistakes, instead of paying all your dues at once, OK?"

"A good workman's 'suit'll have velcro stripes on the front and side of both thighs, around the waist, and down both arms. Lotsa pockets, waist belt with D-rings and straps to tie you off, extra pads on your knees, elbows, butt, outside of your feet, and backs of your hands. Get you some good silk shipsuits too. Nothing more comfortable's ever been made, and they work wonderful for a spacesuit liner."

"You want a portacomp interface and mount on your offhand forearm, ELT hooked to your biomonitor, strobe flasher and radar enhancer, heads-up display (not a hologram, they eat up your power), concentrate dispenser and water bottle with nipple in your helmet, flip-up light intensifiers, IR and UV vision enhancers, nuke and laser flash-proof masks. Remote video is a real nice option, but kinda pricey."

"Also think about a comfort kit for excreta, and don't buy no chowlock for your helmet; it's just another thing to break and let your life run out the hole. You get stuck bad, you may need to spend four, five days in your 'suit, so make sure you can live with it. You get power, air and water, you'll do for a week if you must. Food ain't near as dear as you think."

"I've seen construction types build in a chest-mount hardpoint, centered over center-of-mass. This allows them to mount power tools, cargo pods, move materials, etc. Also, with an auxiliary thruster unit, the hardpoint is already set over center-of-mass, so thrust is easily controlled. That's a pretty specialized option, though. Make sure your suit will self-seal up to a 2mm hole and comes with Supr-Stik patches on a tear-and-swear mount on each limb and fore and aft on your torso for bigger holes or rips. Remember, someone else may be using it on your behalf, so make sure they can be seen real easy. Feel free to use bright colors and patterns; it's your suit and you want to make a statement. You go with black, you tell everybody you're a tenderfoot. That's about it, young feller. Good luck!"

PRICES

Item	Price	Notes
Tourist's Gladbag	Lv1000	
Velcro Striping	20-50	
Pockets	0-25	
Padding	0-100	
Suit Liner		
Synthetic	10-20	
Cotton/Linen	50	
Silk	100	
Armorcloth Suit (AV 0.8)	1200	Initiative Penalty −1
Inertial Armor Suit (AV 1)	1750	Initiative Penalty −1
Add Hard Torso	.250	Initiative Penalty −1 NetPenalty −2
Biomonitor	500	
Light Intensifiers	250	
IR and UV	500	Vision
Portacomp Interface Mount	50-150	Complexity of PC
Emergency Transmitter	100	
Strobe Flasher	20	
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Heads-up Display	300	
Hologram Display	500	
Remote Video	250-100	See notes below
Concentrate Dispenser	20	
Pharmaceutical Dispenser Turret	100	Plus cost of drugs
1-liter Bottle w/Nipple	10	May mount up to 3
Chowlock	100	
Nuke Proof Mask	50	One use only; replaceable
Laser Resistant Flash Mask		One use only; replaceable
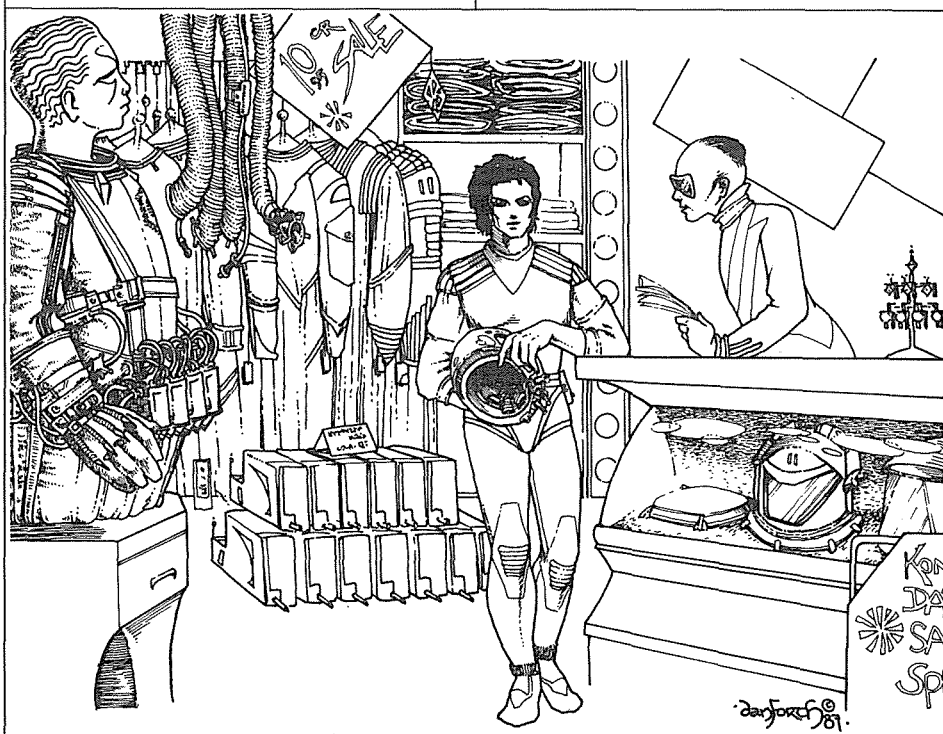
Comfort Kit		
2-day	200	
4-day	500	
Self-Tourniquet	500	Above wrist, ankle
Banding		knee and elbow

Deluxe adds bands below hip, knee, elbow, shoulder and waist, costs +Lv500. Choose autoinflate or command-deploy only (−2 Initiative).

Construction-Style	1000	Initiative Penalty −2
Hardpoint		
Self-Seal 1mm	Free	Normally green;
		Nonstandard color
2mm	100	Lv20 extra
3mm	400	Initiative Penalty −1
Supr-Stik Patches	1 each	Many free sources
Tear'n Swear		
Mounts	5 each	Full set of six, Lv25
Extended Battery	200	Battery life—50 hrs
Airtank Mount	100-300	Air supply = 50 hrs
Umbilical for Air	150	Uses airtank mounts
and Power		

EXPLANATIONS

A **Gladbag** is minimum-duty spacesuit, suitable to support life. If you take this to a job interview, you won't get the job!

Velcro Striping is a decoration as well as utility. Male velcro (the hooks) is mounted on virtually all zero-G gear, female velcro (the soft stuff) is standard for mounts. Many colors are available.

Padding in the locations mentioned above permits sitting, kneeling, and crawling on surfaces otherwise dangerous to suit integrity. (*Suits lacking padding will add a difficulty level to tasks in hazardous environments*).

Armor Suits are not for fighting, per se, but to allow some margin for error when using power tools, etc. (*For resolving mishaps with power tools, try assigning a DPV equal to 2D6×0.1, or 3D6 for very serious mistakes.*) Navy/marine suits are intended for combat and are another matter entirely.

A **Biomonitor** permits the user or an outside observer to monitor the physical condition of the wearer. Various status readings can be used to activate various emergency suit systems. Data can be transmitted through the suit radio. (*A biomonitor is required for autodeploy on self-tourniquet bands. Exterior readout helps would-be rescuers decide who is worth saving.*)

Light Intensifiers, IR, UV all aid in repair work in space. (*Lower difficulty of outside repairs by one level for the availability of these, where applicable.*)

Remote Video allows the transmission of the wearer's view to others. Lv1000 option buys vid-sensor on reel/stalk mount, permitting wearer to extend a probe into places he can't (or doesn't want to) go. (*Lower difficulty of repairs by one level for having this available, where applicable.*)

Portacomp Interface and mount is a very useful option to permit use of PC in suit. PC programs can extend capabilities of suit systems dramatically. (*Lower difficulty of repairs by one level for having this available, where applicable.*)

ELT, Strobe, Radar Enhancer all make it easier to find the suit
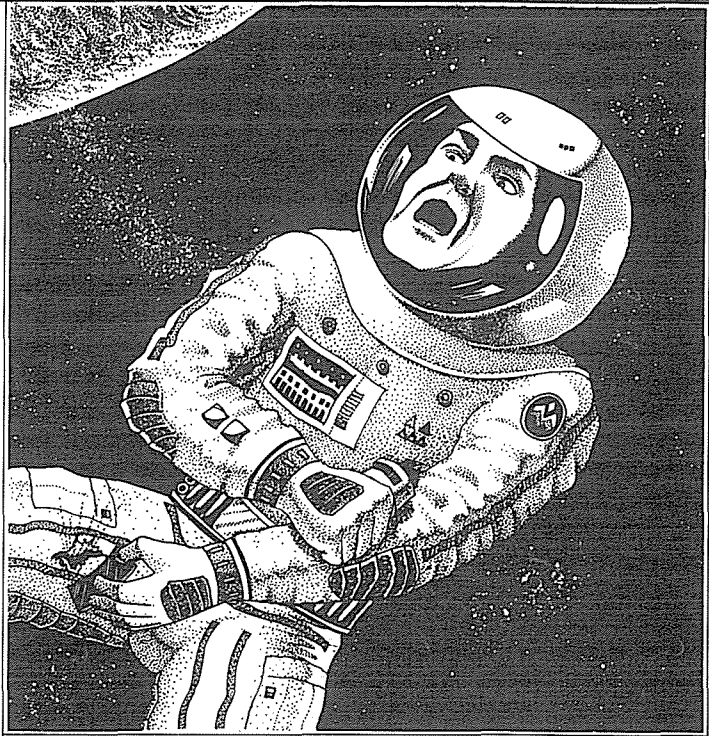
in emergency conditions (i.e. you were blown out of a hull breach during battle.) (*Lower difficulty of search and rescue by one or more levels for having this available.*)

Heads-up, Hologram Display provide a coordinated system of presenting data to the wearer. (*Absence of one of these systems might warrant a −1 to initiative, or add a difficulty level to tasks due to wearer having too much to keep track of in his helmet.*)

Concentrate Dispenser provides minimum quality, minimum bulk sustenance.

Pharmaceutical Dispenser Turret is used for extreme emergencies when self-medication may be indicated. This is a no-hands, multichoice pill dispenser. Where you get your drugs is between you, your pusher, and your lawyer. (*Effects of drugs are as per drug in question.*)

Water Bottles are your most critical need after air and power. Three liters of water can keep you alive for a week.

A **Chowlock** is a miniairlock for transferring food items into your helmet from outside. Modeled after a revolving door, they have been known to fail, compromising airtight integrity. Few professionals use these, but they are common on tourist's excursion suits. (*Treat usage as an Easy task. A fumble followed by a mishap would indicate loss of airtight integrity.*)

Nuke-Proof and Laser Resistant Masks are outer covers for the more expensive systems underneath and are designed to be replaced after use (usually with a prayer of thanks.) Nuke-proofs opaque above a certain level of heat, light or radiation absorption, and do it very quickly. Laser-resistance requires efficient reflection and is much more difficult to do quickly. Damage control parties doing exterior work in battle first demonstrated the need for these. (*If the mask is needed, it will function correctly unless a fumble followed by a mishap is rolled. Also, if more than a year old, fumble indicates failure.*)

Comfort Kits represent different technical solutions, making longer spells in the suit tolerable.

Self-Tourniquet Bands are inflatable cuffs in the joints to

LEGEND

- 🮥 VELCRO STRIPS
- PADS
- POCKET
- TEAR 'N SWEAR
- BELT W/ O-RINGS

FRONT   REAR
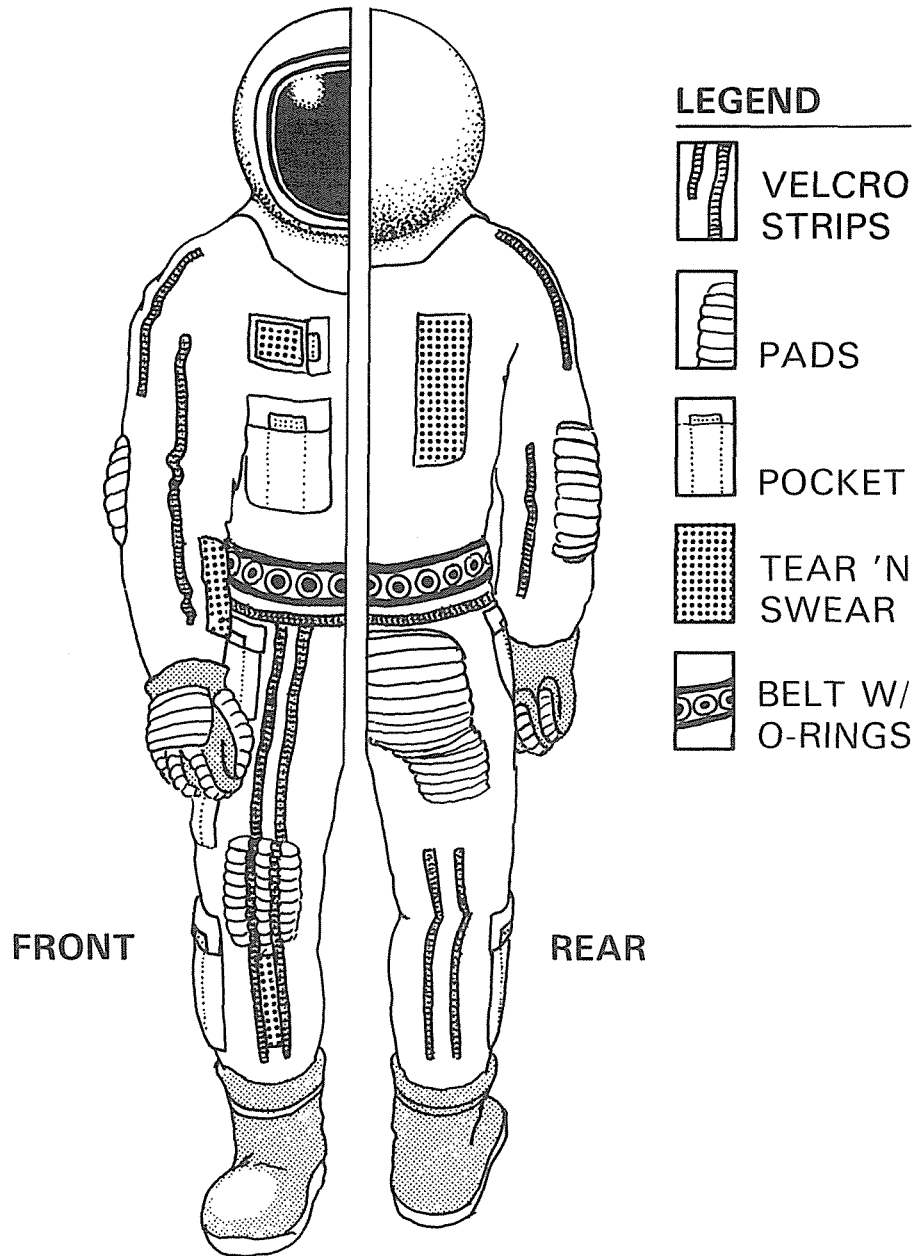
maintain airtight integrity at the expense of damaged areas. If shrapnel has already severed a limb, no other system will save the life of the wearer. However, the tourniquet may cause the loss of a limb that otherwise could have been saved.

A **Construction Hardpoint** must be mounted on a hard torso unit and can offer amazing capabilities to a skilled user. For a novice or even a general starcrew-type user, this is an expensive, overspecialized option.

Self-Seal is a passive system to seal holes from minor damage.

Tear'n Swear is a brand name that sprang up from the natural sequence of events in suit leak situations. It is now an English language universal for a system of ready mounts on suits. Typically a 7 × 15cm patch of Supr-Stik-coated Kevmylar will be mounted on a Teflon-faced area on the limb or torso of a suit. A 2cm border is left clear of adhesive to facilitate handling. If a major (+2mm) leak develops, the nearest patch is torn off and slapped in place. Supr-Stik is an adhesive that forms a putty-like seal in vacuum, sealing leaks up to the size of the

patch itself. This is an emergency fix and is only designed to get the victim to the nearest airlock alive.

The standard mounts are left thigh, right shin, left upper arm, right forearm, right breast, and left shoulder blade. Tear 'n Swear patches are often covered with advertising, slogans, cartoons, etc. Bright colors and high contrasts are the norm to aid in finding the patches on someone else's suit.

Many other options are available for mounting on a suit, including such items as light sources, comlinks, weapons, solor power arrays, reentry packs, and enhanced power packs for heavy equipment.

Note that the remarks and design decisions in this article reflect the needs of a working suit for a spacer, a ship's crewmember, or a dockworker. Suits for use on planets with hostile or no atmosphere will have a variety of different features than those described here. All prices are retail and could readily be knocked down 10 percent for good bargaining.
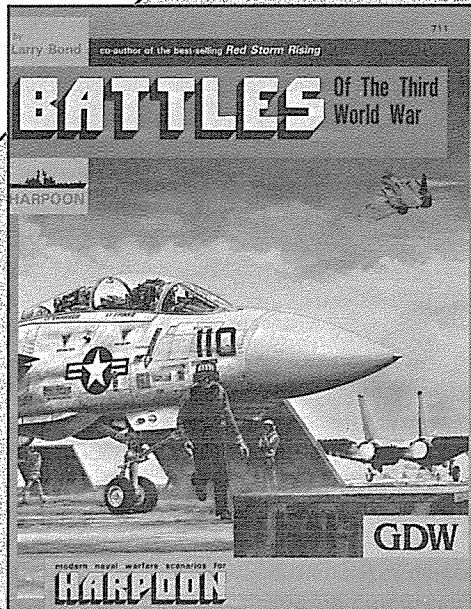
—Robert Bodine

Earth: 2300

The following information is a grand overview of Earth at the dawn of the 24th century. It is best used as a guide for players and referees wishing to make brief trips there. Additional information and specifics about locations and procedures will be forthcoming in future issues of Challenge.

"As we debarked at Kafik after the medics had cleared us for the fifth time, and I stepped at last upon the earth, there was a clarity to my senses that I had never before experienced. It was as though suddenly, the blurring hood of outworld perception had been thrown aside. Wherever I go, whatever will happen to me, I shall always know where I am. I can never again lose my way, because I have living roots here, deep down in the soil of the Earth, the soil from which I grew like the trees and the plants." (Anwar Al Wahed, *Night Skies—Rhyad 2238.*) Thus Al Wahed expressed the feelings of generations of colony-born individuals returning to a place they had never been.

With biological certainty, people know Earth. The air, sunlight, and soil of another world will never feel the same. While most find little difficulty created by the environments of the colonies, there remains in everyone a legacy of evolution. Behavioral scientists concerned with the high stress indices in early colonists put it most succinctly:

"Man's hind brain, the reptilian complex, has evolved to interpret subtle cues from the environment. Abnormalities are judged against standards evolved on earth. Deviations, regardless of their seeming insignificance, will generally result in some form of generalized anxiety."

CARRUTH/COMER—LEON, 2150

Earth alone provides an innate sense of belonging: of home. This simple fact, more than any other, insures that Earth will be the center of Man's universe for generations to come.

Yet in an instant of hubris, humanity nearly obliterated its home and itself. The Twilight War (1996-2000) is the most important single event in human history. In a decade of fighting, the population of the planet was cut in half. The ensuing anarchy destroyed or altered the na-

tions of Earth forever. Gradually, it spawned the resolve and stern will that would be necessary to cast away the wreckage of the old world and build the shining towers of a new one.

Now planet Earth is the home to 5.38 billion people living in 120 nations. It is the economic and cultural hub of an expanding network of colonies. Its 24 starports and related facilities import four times the goods and raw materials that are exported. In addition to Earth, Sol system contains significant off-world populations on bases, factories, and research and military installations which stretch from Mercury to Titan. The average colonial immigrant, faced with this world, cannot help but be impressed with its age, size, and the intricacy of every aspect of its civilizations. In this place reside over 120 nationalities, each with their own policies and opinions. It is impossible in this din of ideologies to synthesize anything called the Attitude of Earth. The legacy of Babel continues, facing off the nations in confrontations and competitions unrivaled by any earlier age. Thus the following material should be considered not as a complete reference, but rather as a guide to further research.

POLITICAL CLIMATE

The most significant aspect of international relations on Earth is the degree of stratification present. There are three basic divisions of power and influence which classify the civilizations of Earth. At the head of those civilizations is France. The only nation to emerge from the Twilight War intact, it moved to fill the power vacuum left by the major powers. In 2300, the Third French Empire is the most powerful nation on Earth. Nowhere is its influence not felt to some degree. Its territories on three continents provide it with abundant resources and economical access to space. Its colonies are among the richest discovered, further enhancing political and economic power. The science, art, music, and literature of the era are dominated by French masters. While France has been fortunate, its present position is a function of its ability to adapt to changing situations and capitalize on transient opportunities.

The second tier of influence belongs to the 18 starfaring nations. While the dominance of France heavily influences all aspects of their policies, it does not follow that they attempt to use France as a model for their own governments. Their policies are each unique and often spectacularly inconsistent with one another. They do have some similarities. As members of the second tier, they find themselves as players in a zero-sum game. Each wishes to gain more influence and power but can generally only do so at the expense of another. The significant effect of colonial holdings on their economies shapes their policies and requires of them fundamentally different stances than those of the non-starfaring nations. They cannot afford to focus their efforts only on the issues and conflicts occuring on Earth. While individually they cannot threaten France, resources are sufficient to allow them to wage extended war against each other. This gives rise to continuous minor struggles between them, which explore the boundaries of one another's will. It is to these nations that the task of establishing interstellar civilization falls, while maintaining the unique ideologies that give each culture its inherent strength and insight.

Most of the smaller nations have been forced into close alliance with one of the starfarers by the pragmatism of 24th-century warfare. Of these states, there are a few which have little to offer in the way of natural resource and nothing in the way of strategic position. These are considered by many the freest of the existing nations. With nothing worth taking and no capacity to defend, these smaller nations rest secure. Bush wars are not unheard of in these areas, and revolutions are occasionally attempted, but generally, economic conditions make revolutionary thinking unpopular. These and other Earthbound countries are kept afloat by the overall good monetary conditions, but nonetheless, they have little chance of ever achieving the power of a Texas or a Ukraine. Little gain is possible in their state of existence beneath the starfarers; however, they still continue to exploit the solar system in hopes perhaps of one day accruing interstellar capacity.

th in 2300

SIBERIA

FAR EASTERN
REPUBLIC

RUSSIA

JAPAN

IROPE

UKRAINE

RIA

CENTRAL ASIAN
REPUBLIC

MONGOLIA

TUNISIA

IRAN

MANCHURIA

CHINA

TIBET

CANTON

JAPANESE TERRITORY

U.A.R.

MIDDLE
EAST

ERA

INDIA

BURMA

ERITREA

BALUCHISTAN

INDOCHINA

KANURI

DJIBOUTI

PHILIPPINES
(Japanese)

RIA

CHAD

AFGHANISTAN

SOMALIA

RA

UBANGI
SHARI

ETHIOPIA

OON

BON

ZAIRE

KENYA

BORNEO

TANZANIA

IGA

MALAWI

INDONESIA

ANGOLA

ZAMBIA

PAPUA

BWE

MADAGASCAR

AZANIA

MOZAMBIQUE

AUSTRALIA

NEW ZEALAND

CTICA

ENVIRONMENTAL CONDITIONS

Three hundred years after the twilight war, the ecological situation on Earth has stabilized to generally habitable conditions. However, long term studies have confirmed that considerable damage has been done to the Earth's biosphere. Ultraviolet radiation continued to be a significant health hazard, particularly in the equatorial belts, for an entire century after the war. Particulate radiation is a nuisance, especially in ground-zero sites. Mutagenic viruses and micro-organisms presented serious threats,particularly to less developed nations. Disposal and clean-up of the remaining particulate radiation is being conducted even in 2300, and though total eradication is considered impossible, Earth has managed to bounce back almost completely from the blow it suffered three centuries earlier.

Terraforming projects to restore the great Indian jungles are well underway, as are measures to refoliate North Africa. The Siberian Soviets have taken the greatest steps toward bettering their environment by flooding huge portions of North Central Asia to create new inland seas capable of moderating the local climate. Going beyond restoring Earth, their projects seek to create whole new climactic systems. This has disturbed other nations, and the World Court is busily intervening in many cases currently. In France and the Second Tier, advanced methods have brought food production far beyond prewar levels. However, the Bengali Famine has proven that there are still life-threatening situations possible, even in this advanced age.

TRADE AND COMMERCE

Earth's principal commodity is knowledge. It serves as the ultimate source and final repository of humankind's intellect. The advanced nature of 2300 civilization requires constant access to this knowledge. Governmental and private information services together employ a large portion of the Earth's population. Practically every government and large corporation invest significant resources in the acquisition of information simply in the course of executing normal operations. Corporations whose sole business is the acquisition and resale of data do exist, but most information flows to Earth because of the decision-making and information-analysis processes centered there. As a result, Earth pays little for what has become invaluable.

And thus, Earth is a source of significantly more than merely raw data. Thousands of corporations base their main resource facilities at Earth. Biological research firms operate out of the sealed environments at the Lagrange facilities. The technologies produced by these facilities generate enormous revenues. Manufacturing techniques devised on Earth are employed in near-Earth space, particularly the asteroid belt. Many of these techniques produce products which are manufactured solely within the system. All are terribly expensive and have proved to be worth every Livre.

Information analysis has generated high revenues, and many corporations now farm all research analysis directly to Earth companies. They find this more cost efficient in the long run than maintaining independent analysis operations, particularly considering the difference in the results. Trade and speculation corporations have also found Earth to be the ideal environment for their operations, and a number of these are based here which neither import nor export any products from the planet, but they nonetheless house their main offices here in order to remain competitive. Remaining trade and commerce is generated from service industries, light manufacturing, construction, and agriculture.

ENERGY PRODUCTION

Production of energy is moderated in order to assure no adverse environmental effects. Consequently, methods of energy production either tap naturally occurring energy sources or use processes isolated from the environment. Specific methods vary widely depending on locally available resources. Nations holding near-equatorial lands use solar power beamed from orbit in the form of microwaves. Nations with access to seacoast rely on wave or current or heat differential systems. Geothermal power is widely used where available. Energy-resource-poor nations usually buy energy from the energy-rich equatorial nations, piping it in sophisticated distribution networks such as the recently completed Potempkin Grid. Various other methods account for about 3 percent of energy production.

THE SOLAR SYSTEM

Solar space is Man's home for now, just as surely as are the ancient lands of Earth. While no solar planets are sites of colonization, the resources of the solar system are as responsible for the new age of economic abundance as any grain crop of Beta Canum. The only exploitation of near-Earth space other than the Earth orbit itself is on the terrestrial planets and in the asteroid belt. A number of interesting endeavors are occurring at these locations.

The first interplanetary enterprise was the industrialization of the asteroid belt (circa 2200). Today, an unlikely combination of mavericks, Japanese Zaibatsu, and government-funded operations of a dozen nations ply their trade. Many belters have settled here, creating their self-sustaining habitats where they are now free to concentrate on their own interests. Some of Earth's most eccentric and productive thinkers have adapted just such lifestyles. The large corporations are based on the major asteroids, though prospecting ships travel widely. Mined loads are bound together and sent to smelters at L4 or L5, launched with laser pumped solar sails.

Occasionally an asteroid will sweep out of the main belt and begin an arc toward the sun, occasionally accompanied by a mining ship. These are the vessels of the Sun Dogs, who chase iron asteroids bound for the atmosphere of Venus. Since 2230, the Aphrodite Foundation has been sending asteroids to Venus in the first stage of a highly speculative terraforming project. These asteroids liberate quantities of the Cytherian atmosphere to vaporize and chemically bond with the remaining atmosphere's poison gasses. Aphrodite is currently meeting costs by selling the departure vectors to transit miners. After mining the asteroid, the Sun Dogs then depart and slingshot around the sun to swing back out to the belt.

Mercury was another early target. Manchuria discovered significant heavy metal deposits there in 2106 and by 2111 was using a solar powered launching catapult to send this metal to Earth orbit for processing.

Mars also has a permanently manned facility set down by

the United States. It isn't a well-kept secret that they have discovered a tantalum deposit at Mons Olympus. They are currently attempting to access it without drawing undue attention, especially by the nonstarfaring nations.

EARTH QUARANTINE

Earth has been fortunate. Early expeditions to the stars found incompatible biochemistries. Had there been virulent organisms on those initial scouts, it is unlikely that they would have detected. The false alarm of plague on the Felicity in 2175 made the need for a unified quarantine procedure apparent. Established in 2176, the Orbital Quarantine Command was designed to provide protection for Earth's ecology. OQC's mission is to coordinate the quarantine and inspection of all of the Earth-bound spacecraft for potentially hazardous organisms and prevent the introduction of same into Earth's biosphere. Inspection stations have been established in the geosyncronous orbit through which all incoming vessels must pass. Failure to comply results in the neutralization of that spacecraft as a biological threat. No vessel has ever penetrated the OQC final defense stage. OQC is made up of independently operating units of the starfaring nations' military, with central command rotating on a regular basis. In 2218, separate civilian and military orbital traffic control organizations were merged with OQC, and they presently operate under their auspices.

Just outside OQC's second stage defense boundary exist a number of civilian and military facilities. A variety of orbital docks, industrial parks, and recreational facilities occupy this area. Premier among these facilities is Gateway at the top of the Beanstalk. This is a duty-free port established to encourage trade and commerce. Since its introduction, it has garnered 20 percent of the heavy lift cargoes and resulted in restructuring of a number of orbital life corporations. Numerous methods are being explored by these companies to combat the influence of the space elevator. Amongst orbital facilities, these have been along the lines of reduced storage rates for bulk cargoes awaiting re-routing, customization of facilities, and increased security. Transfer companies have emphasized their speed, reliability, and destination flexibility when compared to the Beanstalk.

TRAVELLERS' NOTES

Earth is the most difficult planet to visit. Travellers should be advised to reserve a minimum of four days' processing time in the event they wish to make planetfall. Earth's quarantine qualification exams are separate from any colonial or inter-colony procedure, and alternate examinations will not be accepted. It is generally considered simpler to purchase small goods on planet, for cargo transfer to planet is a lengthy process and requires certification prior to transfer. Travellers using their own vessels and drafting their own flightplans should contact OQC immediately upon entry. Restricted space maps are clear and approved flight vectors convenient. And always remember:

At no time should any vessel violate OQC distance-speed specifications. Warnings may not be issued. Use of deadly force is authorized.

OQC makes one thing crystal clear—the safety of no vessel nor its passengers will be held above the safety of the entire Earth. When they say deadly force, they mean it.

If time does not permit planetfall, there are a number of facilities in orbit well worth visiting. Gateway's free port is a very modern facility, and the duty-free merchandise there represents virtually every colonized world as well as Earth. The United States facility at L4 is a fascinating artificial environment, and those areas open to the public are as educational as they are spectacular. The moon is primarily the home of military operations and French xenobiological research, but there are some interesting recreational facilities there mostly associated with the old strip mines, including the Alan Sheppard Memorial Golf Course.

The trip down to Earth can be accomplished in a total time of 90 minutes; however, the five-day descent on the Beanstalk provides a unique experience in itself. The large skycars are luxuriously appointed, and the cuisine, entertainment, and gambling available in transit are on par with the finest luxury resorts. None of these luxuries, however, offer quite such a view.

Although entrance to Earth is difficult, once there, an individual will find that great pains have been taken to allow travelers to share in its numerous wonders. Indeed, the attitude amongst the populace seems to be more one of stewardship than ownership. Despite the recurrent monuments and references to the severity of the Twilight War at historical sites, travellers should be informed that conditions are safe throughout the world ecologically. If you are planning an extended stay, however, it is recommended that you consult with a physician every six weeks for the first three months of your stay.

The tendency toward revisionism and ecological restructuring will impress itself on any outworld visitor, and tours of any of the revisionist cities will be fascinating to those who are able to spend time visiting them. Central Europe offers the height of this, though the central west of the United States is also quite interesting. Manchurian projects are the premier of naturalistic restructuring, and the smaller ones have been opened to the public.

Naturally, the number of historical sites of potential interest are too numerous to mention in so short a space. We highly recommend the following list of interesting historical sites (you can contact any of the natural tourism boards for more information): Pyramids at Giza, Taj Mahal, Gibralter Bridge, Sagrada Familia, Restored Gdansk, Manhattan Archologies, French Twilight Memorial, Macchu Picchu, Louvre, Libreville, Rhine, Battlefield Memorial, Norcon Centre, and the CERN Spaceflight Centre.

MAP

The map on pages 60-61 shows the political geography of Earth in the year 2300. The occupational beanstalk is located in Libreville on the west coast of French Imperial Africa.

In the next several issues of *Challenge*, we will be taking a more in-depth look at individual portions of Earth in the year 2300. Information-intensive, these articles will provide the **2300** referee and player with a good notion of what is happening in each nation on the planet, from population and government to industrial and spaceport facilities. Also, attention will be paid to manned facilities elsewhere in the Solar system to make mankind's home system an asset to any **2300** campaign.

—David Nelsen and Tom Peters

Classifieds

PUT YOUR WANT AD HERE. Any Traveller or Twilight: 2000 related ads accepted, subject only to space available and good taste. Buy or sell out-of-print booklets. Advertise fanzines. Find people to play against. Challenge *Classifieds,* Challenge *Magazine, PO Box 1646, Bloomington, IL 61702*

WANTED: *Challenge* 25, will pay $5.00. Travis Newport, 8017 Bonnie Cr., Abilene, TX 79605.

JUMPSPACE: A quality, amateur magazine for **Traveller** written by dedicated gamers. Each issue is available singly for $2.50, or a 4-issue subscription is $8.00. Send to: Starlance Publications, 50 Basin Drive, Mesa, WA 99343.

T-TECH: A new **Traveller** fanzine devoted to the technology of the Imperium needs your input. Will publish new equipment, starships, weapons, robots, etc. Tentatively scheduled for Feb. '88 release. Send SASE for submission information to: T-TECH, 7783 Kensington Lane, Hanover Park, IL 60103

WANTED: JTAS 1-5, 20; **Traveller** programs for Commodore 64. Dennis Ricketts, 1 Greenhill Ln-2A, Hampton, VA 23666.

WANTED: Will players and/or referees of **Traveller** or **Traveller: 2300** in the Cleveland, Ohio area please contact George F. Cooper III, 3433 North Ave, Parma, OH 44134. Willing to play or referee.

WANTED: The *USS Lexington* NCC-1703 Chapter of Star Fleet is looking for players and/or gamemasters for **Traveller** and **Twilight: 2000.** Contact Captain Gunther Bellows, 227 Fox Fire, Columbia, SC 29212.

WANTED: Maryland/Washington DC area referees: I want to swap information. If interested, please contact Jason Weiser, 4027 Postgate Terrace, Silver Spring, MD 20906.

PLYMOUTH STELLAR SHIPYARD: Need a ship for your characters, but you're stuck on what to design? Need a whole fleet? Need a whole armada? Then send a SASE to the Plymouth Stellar Shipyard for a free list of **Traveller** ship designs and services, many of which are free. Referee, let the PSS design that ship for you or a whole fleet for your command. Don't know how much money a planet, subsector or sector has to build a fleet with? Send along a list of the planetary UPPs to the PSS, and we'll send you a free list showing how many credits your planet/subsector/sector has from its annual tax base and how much tonnage your starports can build at a single time, and even a free copy of the PSS Thesis of Naval Combat (Jump Drive Ships vs. BattleRiders?), a $2 value for free. Just send your SASE to Plymouth Stellar Shipyard, c/o INFOLINE, PO Box 585, Plymouth, NH 03264-0585.

WANTED: Used **Traveller** and **Twilight: 2000** game rules and accessories. Other role-playing games accepted also. Send SASE and/or game for price details and/or money for game to Greg Short, 11659 Doverwood, Riverside, CA 92505.

TRAVELLER: Long-time **Traveller** ref switching to **2300.** Selling *Journals, Alien Modules, Snapshot,* etc; many hard-to-find, **Traveller**-related items, such as *Beyond Sector* and *50 Starbases.* Also have **Twilight: 2000** and miniatures. Write to Claud Wolf, PO Box 545, Strathmore, CA 93267.

VARIANT: Discontinued **RPG** fanzine including **Traveller** deckplans, character classes, equipment. All 16 back issues $5 ppd. Sample issues $1. Gary Reilly, 395 Wimpledon Road, Rochester, NY 14617.

WANTED: Players and/or referees of **Twilight: 2000** in the New England area. Please write to Patrick Hoye, 343 Washington St., Holliston, MA 01746.

CEREBRETRON: An illustrated fanzine aimed at SF fans and roleplayers (especially **Traveller: 2300**) of all sorts. Issue 5 includes a rare SF tale by Brian Lumley, as well as a great short story competition. Send $1.50 payable to Alex Bardy, 286 Gladsmuir Road, London, England, N19 3JX.

THIRD IMPERIUM: Issue number 6 now available, featuring details of a new alien race, 3-D deckplans, and a complete **Traveller** timeline, plus our regular features. Single issue $2.50 Canadian, four-issue subscription for $9.00 Canadian. C/O Mike Jackson, No.512, 4676 Yew St, Vancouver, BC V6L 2J6, CANADA.

CENTRAL INDIANA GAMERS: *The Game Club—C.S.G.C.I.* needs you! We have been the center for boardgame, **RPG** and miniatures action here since 1977. Contact The Game Club—C.S.G.C.I., at 2060 E. 54th St, Suite 12, Indianapolis, IN. Phone 251-9809.

WANTED: Will players and referees of **Traveller** in the Victoria region of British Columbia please contact Allan Hopkins, 715 Donovan Ave, Victoria, BC, V9B 2A4, CANADA.

DALLAS TRAVELLER GROUP: Looking for serious **Traveller** players for a long-term campaign game. For more info call Alex at (214) 357-3216.

CONTINUUM: A **Traveller** newsletter/fanzine containing stats and info on the Forever Sector, info on the CGU megacorporation, and miscellaneous other information. Send a SASE for sample issue, $3 for 4-issue subscription. Herb Petro, PO Box 1515, Belmont, NC 28012.

WANTED: *Journals* 1-5, 8, 9. Will pay $10 each for excellent condition only, or will consider trade for my mint copies of GDW *Azhanti High Lightning* or FASA's *Hotel Complex.* Robb Wilson, 1001 Luxor, Corpus Christi, TX 78412.

CHALLENGE Next Issue

For **Traveller**
   Swift Water: An adventure from the prolific pen of John M. Ford.

For **2300**
   Catuga-**Class Escorts:** Deckplans and details for a new class of American warship.

For **Air Superiority**
   Tournament '87: J.D. Webster analyzes the players and the tactics at the 1987 Origins tournament.

Plus: Our regular features, and more!
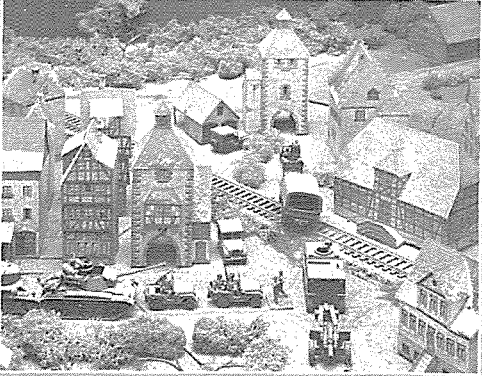
★ BASTOGNE ★

On December 16, 1944, the German Army unleashed a massive offensive in the Ardennes forest of Belgium. Known as The Battle of the Bulge, this epic struggle is remembered as one of the U.S. Army's greatest victories.

Essential to the final U.S. victory was the stubborn defense of the critical road junction at Bastogne. Defended by the 101st Airborne Division, the town was besieged by a Volksgrenadier division and two of Germany's best divisions: 2nd Panzer and Panzer Lehr. Called upon to surrender, the commander of the 101st, Brigadier General Anthony McAuliffe, answered with the single word, "Nuts!" Reinforced by Combat Command B of the 10th Armored Division and other units, the Americans fought back German attacks from every direction. The Germans, for their part, were torn between the need to take Bastogne and the need to get mobile troops to the Meuse immediately.

GDW now presents the defense of Bastogne as a campaign module for *Command Decision*, its World War II miniatures rules. This module contains everything needed to fight the campaign with strategic map moves and then resolve the resulting encounters as miniatures games. All you provide are the miniatures. *Bastogne* is a 48-page module for use with *Command Decision*. $8.00.

HARPOON

Modern • Naval • Wargame • Rules

Harpoon is the pre-eminent naval wargame for the modern era. It handles all aspects of maritime combat: surface, sub-surface, and air. *Harpoon* is a system of detailed but comprehensible rules covering the many facets of modern naval actions. Consistent rating systems and evaluations of the capabilities of modern naval vessels, aircraft, submarines, and helicopters make it possible to achieve realistic results when simulating known situations; by extension, *Harpoon* also achieves realistic results with hypothetical scenarios.

Harpoon simulates modern naval warfare. Its rules tell how ships and aircraft move, detect enemy contacts, and attack them. Weapons inflict realistic effects, and proper naval tactics produce accurate and believable results. The die-cut counters included in the game make it possible to take this game home and start playing tonight.

Larry Bond, the designer of *Harpoon*, served in the U.S. Navy in a variety of warfare billets. He is currently a naval analyst in Washington, D.C. He is co-author (with Tom Clancy) of *Red Storm Rising*, a novel of the Third World War. *Harpoon* is $20.00.

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