SORCERERS & SOLDIERS

COMPUTER WARGAMES, FANTASIES AND ADVENTURES

BRIAN MURPHY

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To Kerry, who is my wife and my best friend. Thank you for making my dream come true. Also, to my baby girl Elizabeth Emily, my inspiration. I love you both with all my heart.

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INTRODUCTION

Imagine . . .

. . . What it would be like if you possessed a time machine that could bring you to any era of history you chose—real or imaginary—for magical treasure-hunting adventures or for battlefield exploits that could change the course of history.

Imagine . . .

. . . That you're the leader of a band of adventurers in an age of swords, wizards, monsters, and magic. Can you take your party of heroes into a mysterious dungeon maze on a quest for treasures and glory and come back alive?

Imagine . . .

. . . That it's England in 1940 and you're the leader of RAF Fighter Command. Can you beat the Luftwaffe in the skies over England or will you fail and doom all the world to a thousand years of Nazi domination?

Imagine . . .

. . . That you're in a deserted town just beyond the edge of time. Overlooking the village is a vast, deserted mansion where fabulous treasures are said to be hidden. Are you clever enough to break into the mansion and take those treasures from sinister guardians?

Imagine . . .

. . . That it's the future, but only the day after tommorrow, the day World War III begins. You're the commander of NATO forces in Central Germany. They're defending against a flood tide of Russian tanks and motorized troops. Can you hold back the Soviets long enough for reinforcements to arrive from America, or will the Soviets break through to conquer all of Western Europe?

Just how healthy is your imagination? Chances are it's in excellent shape, ready to conjure up vivid and exotic images of action and adventure. After all,

it's almost impossible to find anyone who hasn't gone adventuring in his mind's eye at one time or another. Dreams of daring exploits in the days of knights of old or on the batlefield are shared by almost everyone with at least a little imagination and time to dream.

Just a little while ago I asked you to imagine a wonderful machine, a time machine, which could move you not only forward and backward through time, but into alternate realities as well. It would be a machine that could send you to worlds where magic is real, where nightmare creatures of myth and fantasy live and are slain by heroes and heroines who wield mighty weapons.

It would be a machine that could take you to any era of history you might choose. It would place you in command of vast armies on the eve of battle. If you wished, the machine would tailor histroy as you like it, to exist just the way it reads in the books or, warped just a little to suit your taste.

It really doesn't take any imagination at all to picture a time machine like this because you can see and touch one wherever they sell home computers.

A computer can't physically transport you through time and space to another era or another reality—not yet. What they *can* do is take your mind on an amazing voyage, mightily boost the powers of your imagination, and make your fantasies come alive for you. They make it easy to play a heroic role—in simulation. Do you want to be a mace-swinging, spell-casting hero of the mythic age of swords and sorcery? So be it! Do you want to command a fleet of carriers and battleships in the South Pacific of World War II? Done! Do you yearn to solve mysteries which would have bafffled Sherlock Holmes? Here's your chance!

Here's where this book comes in. *Sorcerers & Soldiers* will help you to discover games of the imagination and intellect. You'll see how these games are played and discover strategies that will help you play successfully.

We will *not* be dealing with what are commonly called "arcade games." Instead, we'll be playing "mind games" that fall into three very general categories: wargames, fantasy/roleplaying games, and adventures.

Wargames are recreations of historical or hypothetical battles, with one big difference: While war is nasty, dirty, bloody, brutal, and expensive, computer wargaming is only expensive. The violence of wargaming is all just a simulation. The blood you spill is all imaginary; no one gets hurt.

Wargaming is an immensely satisfying hobby for anyone who has read history or has dreamed of battlefield glory. In a world where you are never the boss, you can be a grand admiral or a field marshall. In a computer wargame, imaginary thousands will obey your commands and lay down their lives at your slightest whim. Wargaming gives you all the advantages of unlimited power without having to suffer any of the consequences, moral or otherwise.

There are many different kinds of wargames based on the kind of fighting that takes place (land, sea, or air) and the number of men involved. We'll examine most of these subcategories in depth, looking at some of the most pop-

ular, exciting, and realistic games and discussing strategies and tactics that can help you win.

Fantasy games have been played as long as there have been humans capable of dreams—and nightmares. Today's computer fantasy/roleplaying games are simulations that let you assume the part of a legendary hero in a fantastic world of magic, swinging swords, and fierce monsters that anyone who reads "swords 'n' sorcery" fiction will instantly recognize.

We'll discover how to create a character from the ground up and how to keep him alive in the dungeons, wildernesses, and mazes which lie in the darker recesses of your computer. We'll also review some tips that might just help you win.

Adventure games are intensely cerebral; they challenge your powers of analysis to the limit. The level of challenge to be found in games such as *Zork, Deadline, Cranston Manor,* and *Time Zone* is part of the growing folklore of computer owners.

Unfortunately, we can explore adventure games only in a relatively superficial manner. Explaning how to win at these games is nearly the same as giving away all the solutions and clues. Since that is 99 percent of the fun (and we certainly don't want to spoil your fun) we will have to handle the subject delicately. We *will* give you insights into the kind of thinking you must do in order to win.

HOW TO USE THIS BOOK

Sorcerers & Soldiers is not a technical manual or a programming tutorial. It will stay far, far away from technical jargon. The idea here is not to explain how your computer works or to teach you how to program it. What we *are* going to do is demonstrate how to turn your personal computer into a time machine you can use to escape to a world of your favorite fantasies. Once in that world you'll learn how to survive and prosper there.

Most of the chapters in this book explore game concepts and strategies through the examination of a particular game (or games) that embodies them. For instance, Chapter 6, "Tanks" explores the principles of tank warfare primarily through exploring two tank games—*Tanktics* and TAC. In this way, you will be able to get a taste of specific games, while learning general principles applicable to other games as well.

If you want to key on a specific kind of game, such as naval warfare, tank games, roleplaying, etc., then by all means go to those chapters first, absorb the material, and play the games. The best introduction to this hobby is to play the kind of game that *you* find most interesting. After you're done, read the rest of the book. Chances are you'll find other varieties of games that will capture your imagination.

One note: If you don't own a computer, never fear. The concepts here, for the most part, are readily adaptable to all kinds of games, board and computer. By reading this book, and investing a modest sum in a board wargame or a *Dungeons and Dragons* game, you can get your feet wet and then decide whether or not you want to go on to computer games.

If you do decide to take the plunge, Appendix I, "Choosing a System" will come in handy. This is a section on how to pick a home computer, from a game-playing point of view. Appendix I is the only part of this book with computer terminology and information. If you already have a system, ignore this section . . . until a friend comes along who needs advice on buying a system; then you can quote chapter and verse.

In Appendix II you'll find a listing of games in every category we covered. It is not a comprehensive list, but a representative list designed to give you the essential information on a sampling of good games.

You may find, here and there in the text, military terminology and hobby jargon with which you may not be entirely familiar (though I've tried diligently to define and/or explain all terms and concepts in the text). If you find yourself in that situation, just turn to Appendix III, and you'll find a glossary of all the important terms, jargon, and concepts in the book. You can also use this glossary as your interpreter when you buy a wargame or fantasy and have trouble understanding what the manual is trying to say. I'm proud to note that it will work as well for board games as it does for computer games.

I hope you'll keep *Sorcerers & Soldiers* handy as a reference and as your strategy coach. Most of all, I hope that this book unlocks for you a world you will find exciting, entertaining, and intellectually challenging.

1. WARGAMES THROUGH THE COMPUTER ERA

All wargames and fantasy games are descended from chess, the first wargame. In chess there are footsoldiers, cavalry, and fortifications, all playing their vital roles as in real life. There's even a religious/political element, as portrayed by the bishops, queen, and king. Chess became the most popular game of all time—which certainly says something about the appeal of the war theme.

For our purposes, when we talk about *wargames*, we will be specifically referring to games that use the computer to simulate historical or hypothetical future battles and which require generalship of the combatants. Games like these represent an old concept, but are, as computer pastimes, a relatively recent development.

HOW IT ALL STARTED

The first real wargames—games that realistically recreate actual battle conditions—were developed around 160 years ago. The reason they were invented is simple: There were no real wars to fight. Napoleon was dead; the great armies which he had led through Alpine passes to Italy, under the hot Spanish sun, over the deserts of Egypt, through the gates of Moscow, were no more. After a 20-year world war, Europe was finally at peace. For young officers just entering the service, it was a boring era.

It was in 1824 that a Lt. von Reisswitz demonstrated in Berlin a game he called *Kriegsspiel* which tranlates literally as *wargame*. It was nothing like the abstract wargames such as chess or the Japanese game of Go which had been

around for centuries. Rather than symbolically portraying a battle, Reisswitz's game was intended to accurately simulate actual combat.

Young Reisswitz had been working on that simulation since the time he first joined the army, refining a game which had been invented by his father. Having joined the service as an artillery officer just after the end of the Napoleonic Wars, the call of duty did not involve what a young officer like him would consider the glory of the battlefield. Reisswitz had plenty of time to develop his father's idea into an easily playable game, a game which was to set a pattern for war simulations to the present day.

The wargaming which had gone on before Reisswitz's *Kriegsspiel* was done using lead soldiers on miniature landscapes, with each piece representing one solider. This limited the scale of the simulation in an era when armies were expanding to many hundreds of thousands of soldiers. That's a lot of lead soldiers for a group of wargaming officers to move around.

In Reisswitz's game each piece represented not a single soldier but a whole unit such as a company battalion or regiment. This feature gave the player the ability to move an entire army, rather than just a few hundred men in battalion or regiment strength. This also meant that the scale of the game could be enlarged to encompass whole campaigns over very large amounts of territory.

Reisswitz's system did away with the raised relief maps that were part of the miniature game, the chessboard-style colored squares, the stylized lead soldiers, and miniature warfare rule. Instead, he developed rules for moving masses of soldiers over various types of terrain depicted on flat maps. (These games later came to be known as *map exercises* in the U.S. Army.)

When the opposing forces met in these games, the resulting combat was decided by a nonplaying umpire. The umpire would first calculate the odds based more or less on the numbers of troops involved and then, throwing dice which represented the chance fortunes of war, determine the outcome of the battle and the damage done to the losing side. This system, greatly elaborated to figure in factors such as supply, terrain, and morale, survives today in computer wargames (where random numbers are generated, replacing the dice).

Reisswitz and a few good friends worked to perfect the game in Berlin. There they were under the eye of the high command . . . and also of Crown Prince Wilhelm, the future Kaiser Wilhem I. The prince, his interest aroused, asked the clique of *Kriegsspielers* to stage a demonstration game. Only too happy to comply, Reisswitz and his friends put together a lecture on how the game worked and then played a demonstration game in which the prince was invited to participate. The prince, himself a soldier who commanded a division of his father's Royal Guard, caught on to the principle of the game quickly. The prince fell in love with *Kriesgsspieling* and his enthusiasm helped to further spread the word about wargaming.

The word finally got to the Prussian Chief of Staff, Field Marshal Friedrich von Muffling, who ordered his own demonstration. The prince and

Reisswitz's *Kriegsspielers* eagerly obeyed Muffling's command, putting on a marvelous show of military skill which won over the skeptical field marshal.

Not long after, Muffling ordered every regiment in the army equipped with a *Kreigsspiel* set to use for tactical and strategic training. "This is not a game," he cried. "It is training for war!"

Here we must abandon the thread of Reisswitz's life. His days of fame abrurtly ended when duty took him to other quarters, away from his wargaming friends and the rarified atmosphere of Army Headquarters. Stuck in a minor military post, Reisswitz grew increasingly morose and finally committed suicide. He had been left behind while his wargaming friends, all junior officers like himself, went on to high command. The mark he left on the military thinking of all armies, however, endures to this day.

Officers at all levels of the Prussian Army continued to play the various *Kriegsspiels* which were devised over the next five decades. In those 50 years the exploits of the ever-victorious Prussian Army showed that Muffling's claim that the games were excellent training for war was on the mark.

The rising generation of *Kriegsspieling* officers led the Prussian Army in the most victorious era of its history. In 1864 they swiftly overwhelmed Denmark and in 1866 the *Kriegsspieling* General Staff masterminded a strategy that beat the Austrian Empire in a seven-week campaign. Five years later the Prussians smashed the French Empire of Napoleon III in a series of brilliant battles, culminating in their triumph at Sedan (1870). The evidence seems to show that the German officers learned a lot from their *Kriegsspieling*.

WARGAMING FOR HIGH STAKES

It was after the magnificent Prussion victories that *Kriegsspiels* began to play an increasingly important role in the military planning of countries all over the world. Every important military establishment had institutes where wargaming was studied, improved, and intensively played. Military plans and theories were routinely tested in games which had evolved greatly since Reisswitz's day.

Many armies created special games to explore specific tactical problems. One such series of games, played over and over by the Germans just before World War I, was designed to find the best way to conquer France. German General Count Alfred von Schlieffen spent much of his time at the turn of the century wargaming to develop a plan for the final, utter defeat of the French. He pored over maps, devised games and played them out, eventually coming to the conclusion that the French Army could be beaten if it were outflanked to the north and west by a huge sweep of the German Army through Belgium and along the English Channel, cutting off the French from British support.

These wargame results were the basis of an actual invasion plan, the famous (and nearly successful) Schlieffen Plan. It was a meticulously thought-out

scheme for an entire war, its thousands of details of troop movement, supply, attack objectives, and combat forces having all been wargamed years in advance of the actual fighting.

Encouraged by this plan, which Schlieffen had wargamed until it was considered fail-safe, Kaiser Wilhelm II and the German General Staff felt confident of victory when the war began in 1914. The plan almost ended the war in Germany's favor in the first few weeks, as events turned out. To save the Allies it took another German field marshal, von Moltke, to tamper with Schlieffen's plan, swinging the army far east of the point where the old count (who had died before the war began) had intended. The German Army swung too close to Paris where the French could stop them. And stop them they did. It was not at all the battle Schlieffen had carefully wargamed out. It was only after four years of the most brutal struggle imaginable that the war ended—with the Germans beaten.

The Germans did not lose faith in the *Kriegsspiel* as a military planning tool. In 1940 the Germans went back to the Schlieffen game plan, as modified, modernized, and improved by an ardent and talented *Kriegsspieler*, Gen. Erich von Manstien. This time the Germans followed the plan Manstien had gamed out. They cut through Belgium and Holland, headed for the English Channel, and cut the British Army off from their French allies. The attack brought France to its knees in little over a month of fighting.

Another *Kriegsspiel* was used in the planning of the German invasion of the Soviet Union, operation "Barbarosa," which Hitler lauched in 1941. That campaign resulted in a German victory which almost—but not quite—knocked Russia out of the war.

Later in the war when the Germans were losing, the generals continued to pin their faith on *Kriegsspiels*. In one famous incident, the commander of the German armies defending against U.S. forces in the Ardennes forest of Belgium was just beginning a *Kreigsspiel* to plan for his defense against the Allied assault when the Americans actually attacked. The German commander stayed with his *Kriegsspiel*, quickly gaming each possible move he could make in advance and then issuing the orders to his real troops once he was certain he had found a successful tactic. He mustn't have been a very good wargamer; the Allies won.

The Japanese were also ardent *Kriegsspielers*, with a special talent for playing naval wargames. The Pearl Harbor attack was meticulously gamed out in advance, with the game result showing—optimistically it seemed—that the U.S. battleships would all be destroyed by a surprise air raid. The Japanese admirals were at first astonished by the wargame's results. In the end, their faith in their wargames was vindicated. The admirals lauched their surprise attack and nearly wiped out the U.S. Navy's Pacific Fleet in port.

In another Japanese game, the admirals wargamed a task force attack on Midway Island. This time the admirals felt themselves forced to cheat—with

disastrous results. When the wargaming showed that the result of the attack would be the loss of two of the four Japanese aircraft carriers, the admirals called for a new result from the umpire. OK, the umpire said, only one carrier sinks and you win! The admirals were mollified.

Turning the *Kriegsspiel* into a real campaign, the Japanese attacked Midway—and just as in the Pearl Harbor wargame, the game results (before the admirals meddled) closely matched the outcome of the actual battle. The Japanese lost the two carriers the umpire had said they would—and two more to boot!

MODERN MILITARY WARGAMES

The development of the electronic computer after World War II changed wargaming in the military forever.

What has developed is a new, staggeringly complex kind of wargame that requires advanced electronic-data-processing support to play. The scale of these games frequently embraces the entire war-making potential of the two superpowers, requiring the processing of enormous amounts of information. These games not only keep track of the millions of men and mountains of weapons and supplies used, but also simulate political, social, meteorologic, and chance factors that can influence the course of the battle.

Today, all great military powers use the computer wargame as the key to their military planning. Wargaming is no longer limited to military officers, however. Now private citizens have gotten in on the game. In their hands, wargaming has changed from a grim weapon of war to an entertaining game of the imagination, suitable for play in the home.

WARGAMES AS HOME ENTERTAINMENT

It was Charles S. Roberts, a National Guard lietutenant with no experience of playing staff wargames, who decided one day to introduce a game, which he'd designed to practice his tactics, into "a context that was less noisy" than a battlefield. He founded the Avalon Hill Game Company of Baltimore and published the first commercial board wargames in 1954. *Tactics II*, Roberts's first game, sold well, establishing wargaming as a new form of home entertainment.

Although sales were modest, they were encouraging enough for Avalon Hill to push ahead with the design of many more handsome games, including such great examples as *Chancellorsville, Midway, D-Day, Gettysburg, Waterloo,* and *Battle of the Bulge*.

Avalon Hill's early games were outstanding for their unique subject matter, playability, and authenticity. While they were not as sophisticated as the

wargames of the 1970s and 1980s, Avalon Hill's first games offered such sophisticated features as the entrance in midgame of reinforcements based on historical fact, supply restrictions, and the modification of movement and combat by terrain features.

In the early 1970s a rival to Avalon Hill entered the field: Simulations Publications, Inc. This company (now defunct) published it's own magazine *Strategy and Tactics* which featured a complete new wargame, including rulebook, playing pieces, and maps in each monthly issue. SPI's games were frequently more complex than Avalon Hill's and their rulebooks much more difficult to interpret. (Miserably written rule books have always been the single biggest element holding back wargames from the wider popularity they could attain. This is true of both board and computer wargames.)

Among SPI, Avalon Hill, and a host of smaller firms, almost every aspect of twentieth century warfare and an imposing selection of earlier wars and battles were represented in board-game simulations by the time the home computer revolution of the late 1970s began.

HOME-COMPUTER WARGAMES ARRIVE

Joel Billings is one of the first programmers who realized the potential of the Apple II as a vehicle for home entertainment. More specifically, Billings understood how Apples could be used to create a whole new variety of wargames. He founded a new game company, Strategic Simulations, Inc., (known as *SSI* in the industry and among game players), the first company devoted to the development of computer strategy games. SSI's first wargame, *Computer Bismarck* was as great a wargaming milestone as *Tactics II* had been 20 years before because it helped to open up the entire home computer entertainment-software industry.

At about the same time, Avalon Hill entered the computer game field. Their debut turned out to be a less auspicious entry into computer wargame manufacture. AH's initial computer games, though they offered interesting strategy problems to solve, were not as finished in appearance and play as their board games had been. Since then, however, they have more than compensated for those early games with the publication of truly wonderful games such as *Close Assault, Dnieper River Line,* Christopher Crawford's *Eastern Front, Legionnaire,* and *Tanktics, Tactical Armor Command* (more generally known as *TAC*), and *Paris In Danger.*

Other companies are joining the wargame bandwagon. The wargame has proven itself to be a hardy contender in the realm of entertainment software, and we can expect to see more companies working to publish more games for more systems in the next few years.

2 WHY COMPUTER WARGAMING?

If you're investigating wargames for the first time, you're at a bit of a disadvantage here because you don't have anything to compare computer wargames with. So, for your benefit and for the wargamers who have never played a computer game before, let's look at what board wargames are like and then see how great an improvement computer wargaming is.

WARGAMING THE OLD-FASHIONED WAY

Let's look at the advantages of board wargames. First, their capacity for realism is endless. Given the restrictions of a computer's memory there are limits to how much realistic detail your computer can reproduce. Second, you can get up from your game whenever you want without the game being lost forever. Third, you can play a move over again, and again, and again—just by pushing the counters back into place. To be perfectly fair to board-wargame manufacturers and players, there are many games currently on the market which are true masterpieces, combining high realism and playability, great design and art.

Now for the disadvantages.

The first component of a board wargame is the map-board, which will often take up an entire card table, even fill up the dinner table. Next comes a set of cardboard squares (called *counters*) which are used to represent the various military units in the simulated battle; then player-assistance charts and cards to help the contestants with the complex rules. Rounding out the game will be a rule book and dice for settling combat results.

SETTING UP

You will find that for almost any board wargame, at any level of complexity, it will take no less than 15 to 30 minutes—frequently an hour or more—for the players to lay out the counters in their appointed places on the map-board.

If each counter is to be placed at a specific location based on the historic battle, even more time may be required. This means you will have to risk eyestrain for at least an hour squinting at the printing, identifying all the pieces in your army, and then positioning them on the appropriate hexagon on the map-board. (For the uninitiated, map-boards are divided into six-sided units referred to as *hexagons* or *hexes.*)

Now let's suppose that in order to add realism to the simulation, some of the pieces in your army must come in at specified times reflecting actual historical developments. This means that you'll have to first organize the reinforcing pieces and then figure out a way to remind yourself of the correct times to bring them in. Next you'll have to interrupt your deliberations on strategy and tactics from time to time as you add and position the new pieces on the map-board.

In some games, more than one counter can occupy a hex. This is called *stacking,* and for a good reason, since it involves precariously balancing several of these little cardboard counters atop one another. When stacking is allowed it means that you will have perilously balanced little towers of cardboard squares gracing the map, periodically falling down and requiring a break in your train of strategic thought while you repair the damage. Even if the little towers do not fall, you will have to take them apart from time to time to read the information printed on the counters . . .

The counters themselves are usually colorful and look great on a color map-board, but they have many serious disadvantages. One is that you can easily dislodge them from their proper locations on the map-board by bumping the table, opening the window to let in the breeze, allowing Kitten to play on the table, etc. Another difficulty is that the information on the counters is usually very hard to read, which is a shame since that data is usually critical to movement and combat. The legibility problem is especially evident when the game designers color the counters with darker shades of blue, red, or green that make it hard to distinguish the printing on them at all. This is an annoyance, but hardly enough to deter the dedicated wargamer. On the other hand, this is not the end of annoyances, either.

LEARNING THE RULES

Learning the rules is the next big problem. Quite a few of SPI's board wargames, which should have played well, were almost impossible to attempt

because the rules were so hard to read and understand. Of course, even a well-written rule book can be tough going when the game itself is complex. Add to this complicated game a rule book written in jargon a lawyer couldn't unravel, and the result is a game that is meant to be admired from afar but not played.

The problem of learning the rule book is compounded by the fact that if you want someone else to play against, you have to induce that person to read the same difficult rule book. This is why so many board wargames are played "solitaire"—or not at all.

Assuming you and a friend have mastered the rule book and have actually gotten to the point where your respective armies have fought a battle, the results of the combat still have to be calculated. In a laborious process called *combat resolution*, you must unstack the counters, count up their attack and defense strengths, check to see if the terrain underneath the counters gives anyone an advantage, compute the odds using an odds table, and then, using dice, actually determine the outcome. In some cases this outcome will require the stacking of additional counters to indicate loss of strength, lost morale, disorganization, rout, and so forth.

God help players of tank games or naval games which involve complex formulas for determining sighting, aiming, and range! Computing the angle of shot, resistance of armor, and so forth by hand and then going through all the rigmarole of combat resolution as outlined above is a dismayingly complex task at best.

WARGAMING THE COMPUTER WAY

Judging from what we've discovered to be the disadvantages of board wargames, the advantages of computer games should be obvious:

1. Compared to board games, setup is almost instantaneous. The time you would spend setting up is spent playing. This holds true even for "hybrid" games which include physical maps and counters and use the computer mostly to keep track of movement and combat results; though you lose time setting up, play moves fast.

2. There are, with the exception of the hybrid games, no maps and no counters of which to keep track.

3. The information usually found on counters is readily available on the video display or in the player's manual. No more squinting to read tiny print on little cardboard squares!

4. The rules aren't any easier to learn, but there are fewer rules to memorize since the computer does all the bookkeeping on movement, combat results, demoralization, loss of strength, terrain ef-

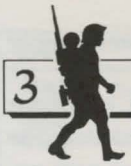
fects, weather effects, range, angle of fire, and armor strength. Not having to figure those factors out for yourself makes play a lot more fun.

5. If you can't find anyone else to give you a game, the computer will usually oblige—by putting up a good fight!

Not everyone can afford to own a home computer—yet. Until there's a car in every garage, a chicken in every pot, and a computer in every living room, board wargames will be here to stay.

If you own or plan to own a computer, then computer wargaming certainly deserves a careful look. You have all of the play excitement of a board game, if not more. You have little of the drudgery typical of board games that takes your mind off strategy.

The techniques of programming are so advanced now that in many games the feeling of being in command in a real battle is quite compelling. This is as close to real war as you can come with a home computer—and as close as any sane person would ever want to come.



3 ARMY GAMES

Commanding an army—even in a computer wargame—isn't just a matter of leading troops into battle. You'll have to keep an eye on a wide variety of elements that simulate such factors as naval gunfire, tactical air strikes, weather, supply, terrain, morale, and even luck.

In this part of the book we'll examine how army wargames work. We'll specify what troops you'll command, what they can do, how they move, and how they fight on different kinds of terrain. Finally, we'll look at tactics and strategy that can help you win against the computer or a human opponent. You'll find that nothing enhances the enjoyment of a wargame the way winning does. Of course, just knowing what you're doing gives you a big advantage to begin with. If, after reading this section, you have an idea of what's going on, we will have succeeded.

TROOPS BY MISSION AND UNIT SIZE

Exactly what kinds of troops you'll command and in what strength depends very much on the type of game you buy, the historical period of the battle, the scale of the battlefield, and the amount of time simulated in the game.

A good first step will be to define exactly what is meant when we discuss such units as *battalions, regiments,* and *divisions* and to outline the various missions different types of soldiers (called *arms* in the military) perform.

The first concept that you'll have to come to grips with is that the units you'll be playing with in these games come in different sizes, and you'll be

expected to have some sort of idea of which units are bigger and presumably stronger than others.

Although the army wargames we'll be looking at in this book represent many different eras, all the army games use similar terminology to describe the simulated units. We'll start with the smallest units and work our way up. To give you an additional frame of reference, we'll look at the rank of the officers and noncoms who typically command these units. Since the size and role of these units have changed drastically between World War II and today, we're going to go through the structure twice, once for World War II and before and once for modern games.

WORLD WAR II AND BEFORE: U.S. ARMY FORMATIONS

The smallest units in this era are *individual soldiers* and *tanks.* Believe me, that's as small as you can go. A few of the games which feature combat at this small scale are Avalon Hill's *Tanktics* and TAC and Strategic Simulations' classic *Computer Ambush* (we'll look at these games in greater detail later on). The units are displayed on the video screen by a small graphics symbol in TAC and by letters or swastikas in the SSI simulation.

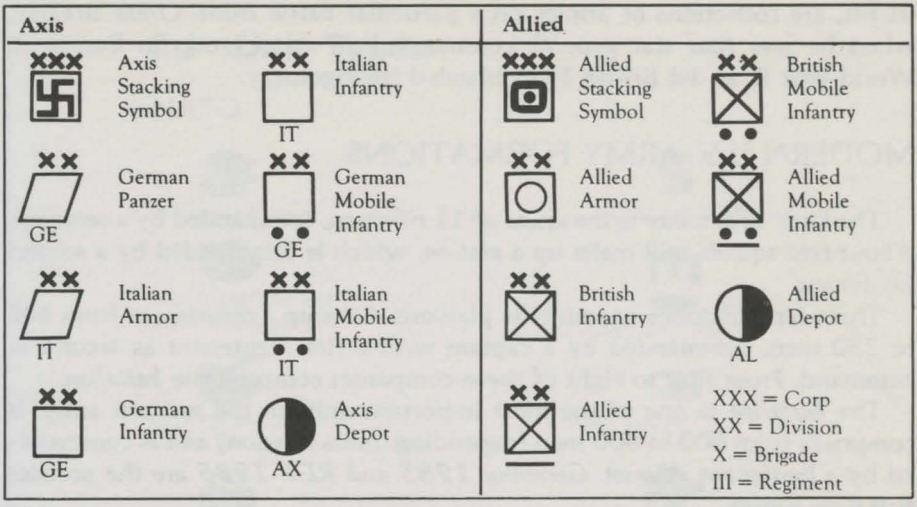
The next largest units are, curiously enough, almost completely unrepresented in computer wargaming despite the fact that the gaming problems they present are among the most interesting. They are *squads,* which are sergeants' commands; *platoons,* which are commanded by second lieutenants; and *companies,* which are commanded by captains. As I indicated, I have not run across computer wargames using units of these sizes, except for a hybrid called *Close Assault* by Avalon Hill (which we will look at closely later), and a game called *Operation Whirlwind* by Broederbund Software.

Who knows? By the time this book makes it into print, there may be a wider selection. I certainly hope so because small unit tactics—which are so exciting in board wargames—translate well into a computer format.

The *battalion,* a major's or lieutenant colonel's command, is the next largest unit in the scale. Battalions frequently appear with units of mixed size in such games as *Battle for Normandy* and *Knights of the Desert.* They may be represented on screen with two vertical hash marks (II) over the unit symbol. The two lines indicate battalion strength in standard military symbolism.

The next largest unit is the *regiment.* Regiments are the command of a full or "bird" colonel. They were the basic unit of the Civil War and remained very important in military organization through World War II. They are differentiated on screen by three vertical hash marks (III).

Brigades are the next largest units, commanded by one-star generals. Again, this is a unit seen mostly in World War II games. In the games we've seen, they are usually represented by a reduced-size version of the unit symbol. For



Unit Symbols: Knights of the Desert. **Here's a player aid card from *Knights of the Desert* showing the graphics symbols used on screen to differentiate between the types of units in the game. The labeling should be self-explanatory. The symbols for the Allied units are very close to standard military map symbols. Note the use of "X"s and "I"s to indicate unit size.**

example, a tank division is represented by a big tank symbol. A little tank indicates a brigade. They can also be represented by a single "X" over the unit symbol.

The next largest unit is the *division*. The division is traditionally the command of a major general (two stars). A Civil War division numbered only a few thousand men. World War II divisions numbered in the tens of thousands. You'll see divisions simulated most often in World War II games. They are frequently represented with a tank or soldier symbol. They may also be represented by placing an "XX" symbol over the unit.

A collection of divisions makes an *army corps*, which is usually commanded by the three-star (lieutenant) general. If you watched M*A*S*H you'll recall how Radar frequently called "Eye" Corps for supplies, assistance, understanding, etc. "Eye" Corps is actually *I Corps*—First Corps—with the "I" being the Roman numeral for *one.* In wargaming you'll find the same Roman numeral method used. All other units from battalion on up are designated by Arabic numbers (i.e., 7th Cavalry, 1st Division, 274th Armored Reconnaissance Battalion, etc.).

A collection of corps is an *army* (like the U.S. 3rd Army in Germany—Gen. Patton's command). An army is commanded by a four-star general. Four-star generals also command what are called *army groups.* These, as the name tips

us off, are collections of armies on a particular battle front. Omar Bradley, when he was four-star general, commanded an army group in Europe in World War II, as did British Field Marshal Montgomery.

MODERN U.S. ARMY FORMATIONS

The basic unit today is the *squad* of 11 riflemen, commanded by a sergeant. About five squads will make up a *platoon,* which is commanded by a second lieutenant.

Three tank platoons or four rifle platoons make up a *company* of from 100 to 250 men, commanded by a captain with a first lieutenant as second in command. From four to eight of these companies comprise the *battalion.*

The *battalion* is one of the most important units in the modern army. It comprises from 600 to 800 men (depending on its mission) and is commanded by a lieutenant colonel. *Germany 1985* and *RDF 1985* are the premier battalion games.

Two mechanized infantry battalions and one tank battalion comprise the modern *brigade,* which is the command of a full colonel. You'll notice that there is no regimental organization. For some years now there have been no combat regiments in the U.S. Army.

A collection of brigades equaling from 15,000 men (airborne) to 20,000 men (armor or mechanized infantry) is a modern *army division,* the command of a major general. From three to five divisions is an *army corps,* the command of a lieutenant general.

That about wraps it up for units and their commanders. There aren't any five-star generals nowadays, but if you like, you can assume the rank in the quiet of the room where you do your wargaming. One of the nice things about computer wargaming is that you don't have to go to West Point or spend dreary years working your way up from second lieutenant to general the hard way.

SOLDIERS AND THEIR CAPABILITIES

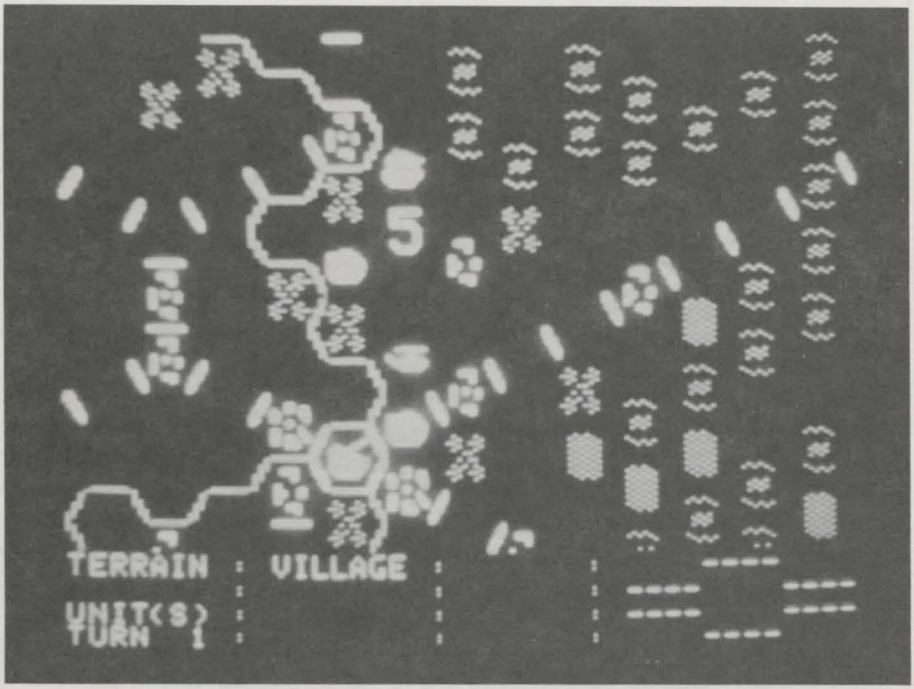
Keeping track of the basic types of soldiers in an army is a fairly simple task. Military formations fall into these basic types:

Infantry. In Vietnam they were called "grunts," in World War II, "dogfaces," and in World War I, "doughboys." All the names add up to the same thing. Any soldier who travels by foot, carries a rifle, and clears out the enemy by hand is in the infantry. It has been this way since they were handed the first muskets and pikes in the sixteenth century and hasn't changed all that much, despite advances in technology and tactics. The infantryman will always find mud on his boots.

Unit Symbols: Germany 1985. **This illustration from the *Germany 1985* player manual shows the symbols used to denote the various units in the game.**

In computer wargaming, infantry units are typically represented by a man with a rifle or a square with an "X" drawn in it. Motorized infantry is depicted either by an armored car or by a box on wheels. Airborne infantry is usually represented by a symbol resembling a parachute canopy.

Infantry posesses the least combat strength of any unit in the game. They move slowly in comparison with mechanized units. They also form the over-



Defending a Crossroads. **Five NATO battalions are defending the central crossroads city in *Germany 1985*'s "Advance to Contact" scenario. From top to bottom they are tank, mechanized infantry, air cavalry, mechanized infantry, and self-propelled artillery.**

whelming majority of your fighting force in most army games. This simulation is realistic, since nations have historically found that maintaining infantry divisions is cheaper than supporting armor or cavalry.

Armor. These are the tank units. They typically have more combat strength than infantry, can absorb more punishment, and can inflict more damage. They also move more speedily than all other units. Tanks are usually represented by the image of a tank or a box with a circle or flattened oval.

Cavalry. The cavalrymen were the glory boys on horseback for nearly 2000 years, since the end of the Roman Empire. The end of the cavalry era can be pinpointed fairly accurately as August–September 1914. This is when the British cavalry realized that horsemen charging with sabers were no match for German infantry dug in with machine guns. Exit the horse soldiers.

Until that time, the cavalry's important job was to be the eyes of the army. They would ride ahead of the foot soldiers, scouting the route of march ahead and reporting the activity of the enemy. In battle they were a mobile force

that could be used to quickly hit an enemy army at any point. Many times the sudden appearance of the horse soldiers was decisive in winning the battle.

The horse troopers are not a feature of very many computer wargames, simply because most games are set in the World War II era. Horse soldiers do appear in corps strength in *Napoleon's Campaigns* and *Gettysburg Campaign* and in smaller formations in *Shiloh* and *Legionnaire* (a Roman warfare game). Cavalry formations can appear on screen as a horse symbol or as a square with a single diagonal line through it.

Artillery. Cannons have been around since before the days of Joan of Arc. In those days the most technologically advanced fieldpieces threw rounded boulders. Today artillery includes rockets with nuclear warheads and cannons capable of throwing 3000-pound shells and atomic projectiles.

In some computer wargames the artillery appears as separate units. In other games it is figured in as a part of the combat strength of infantry or armored units. Where the artillery is a separate formation, it is usually symbolized by the image of a cannon.

Supply, depot, or *quartermaster troops.* You know these guys. They're the boys who send mosquito netting to Alaska and woolly parkas to the South Pacific. The mission of supply troops is self-evident—to get ammunition, food, and fuel to the front lines. As it was with the artillery, the supply soldiers are not always represented on the map. In some games the supply depots are shown and are movable. A depot is usually symbolized as a circle with one half shaded in.

Engineers. These are the troops who throw bridges across rivers, and fortify the position your forces occupy. In computer wargames, if they appear at all, they are represented as a stylized bridge.

SELECTING AN ARMY GAME

Allow me to offer you some guidelines that will help you to know what to expect when you select a land game.

SCALE

Scale is a tough concept to precisely define, since elements of size (the area of the battlefield) and of the amount of time simulated both enter into the definitions.

Usually, a game's advertising or packaging will give you a good idea of the size of the simulation. Look for reproduction of the video map. If you see continents or whole countries, you have a larger scale game on your hands. The descriptions of the game in advertising or on the package will frequently include an estimate of the average playing time for two human players and in

the "solitaire" (human vs. computer) mode and refer to the game as being *campaign, operational,* or *tactical* in size.

Campaign Games. These are usually the largest games in scale, covering very large areas of territory such as regions, countries, and continents. The units involved are generally divisions, corps, and armies. The strategy is on the grand scale. For the purposes of this book, any game which employs units no smaller than regiments in operations to capture large amounts of territory will be classified as a *campaign* game. Some games which I place in this category include Atari's *Eastern Front,* Strategic Simulations' *Battle For Normandy* and Avalon Hill's *Paris in Danger.*

Operational Games. Next we come to a classification I find a little fuzzy in its application by the various game manufacturers. The term apparently fits games which are not big enough to be campaign games (like *Eastern Front*) or small enough to be set-piece battles (like *Computer Napoleonics'* simulation of Waterloo). Games that would seem to fit are *Tigers in the Snow* or *Dnieper River Line.* Since *operational game* is a nebulous term, it will not appear often in this book. When it does, it will refer to a game played with units ranging from battalion to division strength.

Tactical Games. These are games which concern very limited problems relating to local terrain and small unit combat. These games simulate combat on the level of battalions, companies, squads, individual soldiers, and tanks.

ERA

Finally, you can select a game by *era.* Many historical eras are already simulated in computer wargames, but the principal areas of interest are, and will continue to be, the Civil War and World War II. The game you select will depend on your personal interests. I'm most interested in World War II battles, so I own mostly World War II games. If your interests lie elsewhere, there are games of the Napoleonic Wars, future conflicts between the superpowers, confrontations with Caesar's legions or with the Vietcong to choose from. Chances are you'll find one to suit your tastes.

4 USING TERRAIN

The Warsaw Pact is invading central Germany. It was a sudden offensive; in the early morning hours, wave after wave of Russian tanks, motorized infantry, mobile rocket battalions, and artillery began to pour across the border in the vicinity of the Fulda Gap. It's the start of an offensive that the Soviets hope will end on the English Channel, with the rest of Europe either neutralized or under active Soviet control, with Britain cut off, and the United States out of Europe forever.

The game is SSI'S *Germany 1985*, the "Advance to Contact" scenario, and you are the commander of the NATO forces. Your job is simple: You must hold your position for as long as you can against all the waves of armor, artillery, and mechanized infantry the Russians can throw against you.

Question: How do you acquire the edge you'll need?

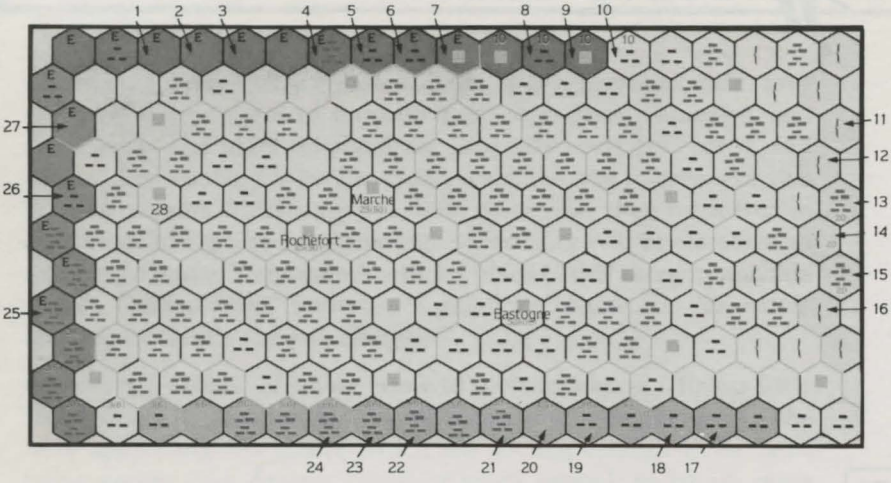
Answer: Take advantage of terrain.

Use the lay of the land to add to the defensive strength of your units. In a real battle a commander will give his troops an edge in battle by using the features of the terrain to hide his troops and to slow up the enemy. Let's see how you can do the same thing in this computer battle. You'll pick up principles and pointers that will work not only with *Germany 1985*, but with other games as well.

FOREST

Just as in a real battle situation, the *forest* in *Germany 1985* will prevent soldiers of one side from clearly sighting the enemy. In *Germany 1985* the enemy can see only two hexes ahead in the forest, as opposed to five in the

TIGERS IN THE SNOW MAP DISPLAY



Terrain Effects Chart

Symbol	Name	Movement Cost	Combat Modifier: ATT./DEF.
	Forest	6	1/2
	Rough	4	1/1.5
	Clear	2	1/1
	Westwall	4	German 2/2.75 Allied 1/1
	River		.5/1 (to attack across)
	German	+3 - +7	(to move across)
	Allied	+2 - +5	(to move across)
	Town	3	1/2.25

Alternate Reinforcement Hexes

North Edge Reinforcements

West Edge Reinforcements

South Edge Reinforcements

German Reinforcements

Numerical Code

1–28 Entry Hex

E Exit Hex

3(6) Victory Points – Human (Computer)

Local Supply States and Effects

Supply State	Defense Modifier	Attack Modifier
isolated	.5	not allowed
limited	.75	.75
supplied	1	1

ZOC Movement Costs and Restrictions

Costs

4 MP — to move into an enemy ZOC

8 MP — to move from one enemy ZOC directly into another enemy ZOC

Restrictions

Allied Infantry — may only move into a ZOC if it doesn't begin its turn in a ZOC, providing it has enough MP. EXCEPTION: Movement from ZOC to ZOC is permitted in directions 4, 5, and 6.

German Infantry and Allied Mechanized — may move from one ZOC to another if they have the MP to do it. Movement ends.

German Mechanized — may move through ZOC to the limit of their MP.

Alternate Reinforcement Positions

If a unit's entry hex is occupied, the unit will attempt to enter on a hex located in the alternate entry hex for the appropriate map edge. The exact hex selected will be either the most northern or most western hex unoccupied.

open country. In a real battle the movement of troops and armor is slowed as they pass through the woods. In *Germany 1985* it takes twice as many movement points (the alloted movement limit of a unit) for units to travel through the forest as it does for them to cross clear terrain. Attacks made through the forest, once they are detected, will advance slowly and are vulnerable to air strikes and artillery fire before they ever come into direct contact with the opposition.

Finally, units defending the forest can turn it into a natural fortress replete with barricades, ambushes, booby traps, and many other lethal hidden surprises. In the real world, and in a good simulation, the forest is a dangerous place to launch an attack.

Given all these facts, how can you make the forest work for you as a defender?

First, be sure you defend the clear hexes around the woods and the roads through the woods with your strongest, most efficient units. You should defend the forest itself with less strong units which can benefit the most from the shift in the combat resolution table (a mathematical formula used to determine the outcome of combat) in their favor.

There are advantages to defending in the woods when it comes to combat resolution. In *Germany 1985*, occupying a woods hex adds two defense points (a measurement of defensive combat strength) to the strength of a unit defending on a forest hex. In other wargames which allow you to fight in a woods hex, the defenders enjoy similar advantages. What this means in practical terms is that the weaker units in your order of battle are at much less of a disadvantage defending a position in the forest than they would be either attacking or defending in the open. (Those are the rules for *Germany 1985*. Please be aware that in many other games the forest squares are considered impassable—which is not a realistic simulation—and all movement through them is, sorry to say, *verboten*.)

In this situation, with the clear hexes occupied by the strongest defenders and the woods defended by units whose defense strength is augmented, the opposition has two choices. One is to attack your strong units defending the clear hexes and lose units in a costly battle. The other choice the enemy has is to attack your units lodged in the woods. This is also risky because of the added combat-resolution strength of units defending a woods hex. Either alternative does not make attack look attractive.

Terrain Symbols: Tigers in the Snow. **The *Tigers in the Snow* player aid card shows how the various terrains are symbolized, how they're located on the map, and what effect they have on combat. Multiply the "combat modifier" by the combat strength of the unit to learn the effect of the terrain. In defense it's best to be a German defending a Westwall fortification hex. In attack it's best to be a German attacking from that same fortification.**

You should also consider the movement point cost the opposition has to pay to get at you. If the enemy has to move through woods hexes to make contact with your units, the advance will be slow. This could stall the opposition's offensive in that part of the battlefield and perhaps cause him to lose the initiative. Stick your units as far into the forest as you can safely place them without removing them from the battle altogether, and let the enemy come to you.

The opposition's slower-moving units will travel even more sluggishly in the woods. Chances are that units crossing wooded terrain will arrive at your positions one at a time, rather than all at once. That further reduces the chances of your units begin wiped out in a massed attack by several units at once or having a retreat cut off.

Another advantage for the defender is that units in the woods can be harder to sight in some games. *Germany 1985*'s rules simulate the ability of military units to conceal themselves in the woods; the rules allow you to "hide" units in the woods. An enemy can pass by, as near as three hexes away, without ever seeing you. You can place your soldiers one or two hexes deep into the woods and then hide them, making them disappear from the Russian player's map displays (if your unit hasn't been "sighted" you can even hide it in the clear, but the woods are better). You will find that some Russian units may actually bypass yours in the attack, allowing you to counterattack them from behind. This ability to hide is another good reason to run for the woods (at least when playing *Germany 1985*) and to use the woods as cover for your movements.

To summarize: If the only way to the enemy's objectives is through or near the woods and if you have a screen of light units defending the woods, you'll be able to force the enemy to make costly attacks to dislodge you, attacks that will slow up his overall offensive and allow you to put freshly arriving reserves into place on the battle line. The lesson to be learned is, defend the clear hexes with your big units and hide your smaller units in the woods and make 'em come to you.

You might be asking at this point, "Why are attacks through the woods so difficult and dangerous?" The answer is that a game which makes travel in the forest slow and battle costly is accurately simulating real-life conditions. The forest in real life would be hard for a unit to move through, even without the presence of enemy troops.

Defending soldiers take advantage of the forest cover to make their positions harder to detect, easier to defend, more costly to attack. They make barricades of fallen logs to block the trails and slow the enemy's advance. They position snipers in the treetops to keep the enemy off balance and jittery. They set up ambushes in the heavy growth, sometimes bringing along a tank or two and a couple of pieces of light artillery for maximum killing effect. There's nothing so discouraging and disconcerting as an antitank gun you

never dreamed was there going off in your face. Attacking in the forest is hard work, and if that's the way the game plays, the simulation is that much more realistic.

CITIES AND TOWNS

One of the many excellent reasons why the West Germans are not thrilled at the prospect of having World War III fought in their country is that most of their cities and towns would be involved in the fighting, unless a Russian blitzkrieg flattened NATO resistance and crossed Germany quicker than anyone currently suspects is possible.

Quite a few German settlements would be used as strongpoints by the defenders, others would be "softened up" by the attacking Soviet air force and artillery, expecting to find just such NATO strongpoints. In a modern, mechanized war the cities and towns would be key objectives not for the loot, as in days of old, but for the roads. The towns are the centers of communications, where the main highways join and where the airfields are. If a war came to pass, both sides would fight hard for what they considered to be the key towns and cities. It would be very rough on the poor Germans, win or lose.

In most land wargames the city and village squares are just as important. At the very least, they can be used as defensive strongpoints in most games. In other games they are the key to victory.

Germany 1985 again offers good examples to illustrate the importance of cities in battle and as tokens of victory. In this game all roads pass through villages and towns. The important bridges are all in the towns. Since you—or your enemy—can move swiftly on the roads (especially through rough and forest hexes) it pays for you to capture and hold the cities to help keep those highways clear. In *Germany 1985*, holding towns also pays when the computer determines who won the game. Each city and village you hold at the end of the game adds victory points to your total. Remember, the most important thing to know about the rules of any game is what the program expects of the winner.

Now that we've established why you will want to control cities and towns, let's look at how they will help you.

In *Germany 1985*, as in real life, the settlements offer you concealment from view and physical protection, just as the forest did. In actual combat, it's always harder to defeat an enemy which has barricaded itself in the masonry of a city. Cities and towns offer any army ready-made fortifications.

In *Germany 1985*, as with the forests, the sighting distance in the city is two hexes. That means the enemy has to venture within two hexes before he can see you and fire at you. This is how the game successfully simulates the cover the city offers a defender. If you are attacked, defending a city hex adds

three points to your combat factor; a town adds two points. Again, you can use your strongest units to defend clear terrain while you use weaker units to hold the cities.

ROUGH TERRAIN

These are nature's fortifications: small hills, rocky slopes, uneven ground, and so forth. This is terrain which the defender can use to conceal himself and which offers physical protection from enemy fire. Examples from history of successful and long-standing guerrilla movements that used the hills for their bases include Tito's Yugoslavian partisans of World War II, the guerrillas who opposed Napoleon in Spain, and Mao's Communist army of the 1930's and 1940s. There are many rocks, crags, knolls, and hills behind which an army can hide, waiting for its moment of opportunity.

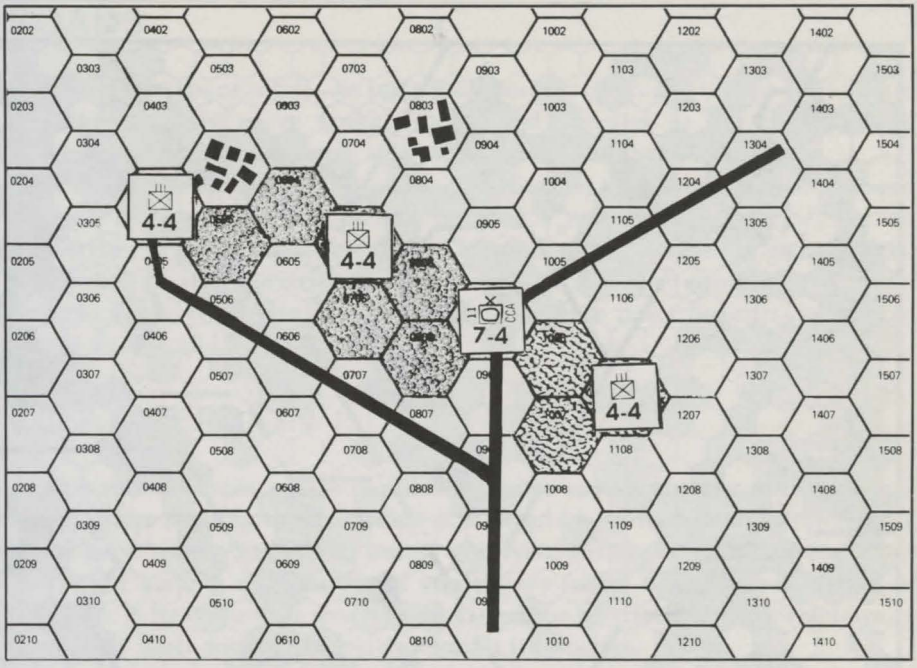
In many wargames, you are restricted from traveling over the rough terrain, and in others you may do so only by paying a heavy movement cost. In games which allow you to use the rough or hilly spaces the defender has a great advantage and the attacker's job is that much harder. We'll look at *Germany 1985* again for a good illustration

Germany 1985's rough terrain squares are not really craggy mountains and jumbles of rock, but, we must assume, rolling or hilly country, corresponding to the characteristics of the real Germany. As with forests and towns, the sighting ranges for rough terrain in *Germany 1985* are limited (three hexes for light-rough and two for heavy-rough terrain). Movement is severely restricted. Light-rough hexes cost three movement points to cross in this game; heavy-rough require four.

The game correctly recognizes the defensive qualities of the rough-terrain squares. Remember how we called them "nature's fortifications" a few moments ago? In real life even moderately rolling or rough ground can conceal tanks—or tank traps—and the rocks can shelter troops from bullets, bombs, and shells very effectively. *Germany 1985* adjusts the defense factor up one point for the light-rough and three for heavy-rough, making the rough squares very attractive places to defend.

RIVERS

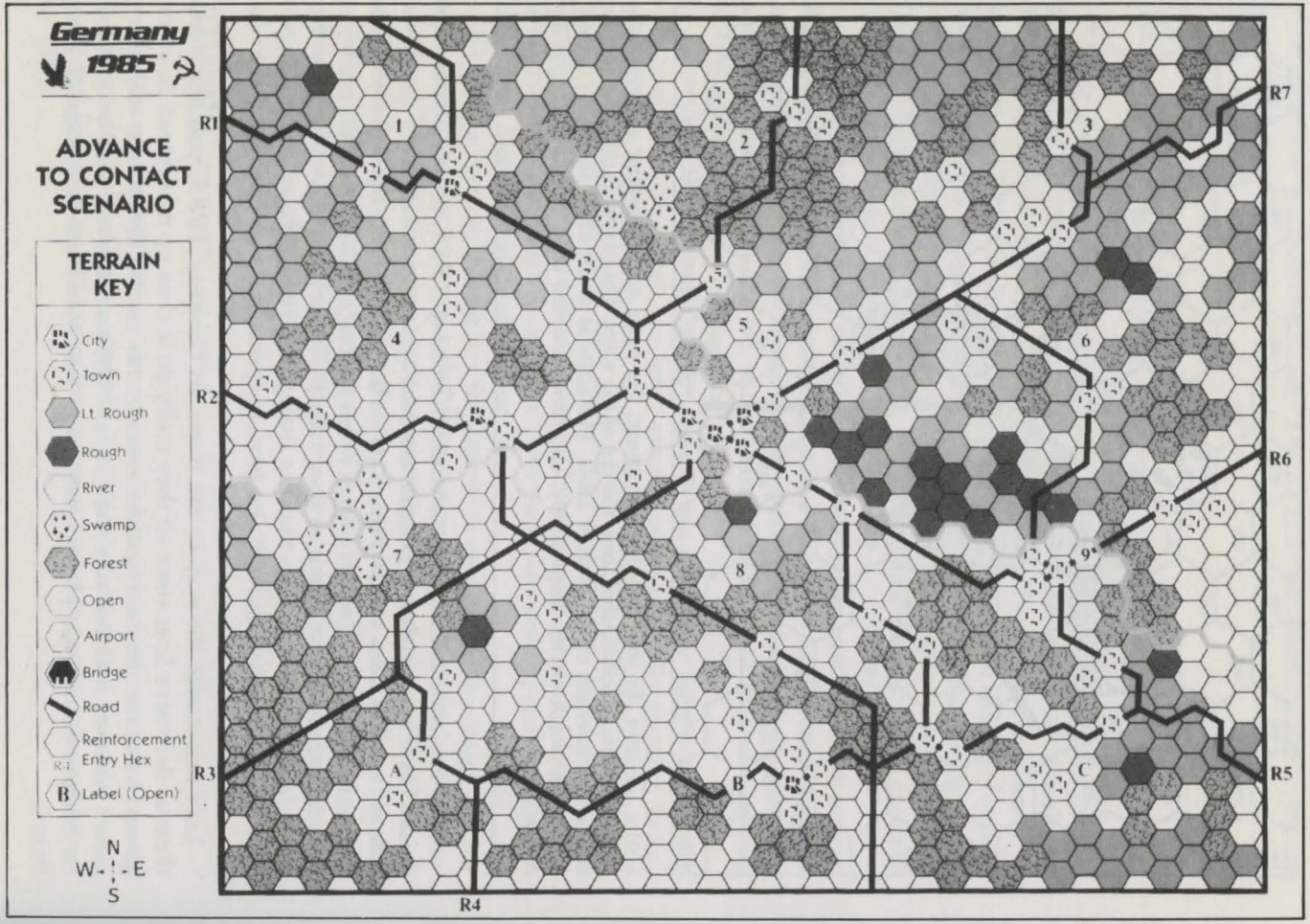
Napoleon once said that a river defense line is, at best, an unreliable barrier to enemy attack. The Rhine, after all, didn't protect Napoleon from the Prussians and Russians in 1814, nor did it protect Hitler from the Western Allies in 1945.



Using Terrain. **In this hypothetical game, the units are defending a crossroads against an attack anticipated from the top of the view. The player is using terrain to bolster the strength of the weaker units. The units at hexes 0705 and 1107 are on forest and rough terrain respectively, and have doubled their combat strength on defense.**

The "Advance to Contact" scenario of *Germany 1985*, proves Napoleon's point. There is no sighting penalty assessed against an attacker on the other side of the river from you and there are no bonus points for the defender who forces the enemy to cross the stream to get at you (although the units are temporarily vulnerable to attack as they cross). The only advantage enjoyed by the defender in this game is that the enemy will find it inconvenient to prepare to cross the river and will also have to spend four movement points to do so.

Let's summarize the way to use rivers. In *Germany 1985*, you don't use them as defensive lines since all they really do is slow up movement. In other games, however, they may confer extra points on the defense. In still other games you may find that rivers are impassable, except where they are crossed by bridges. Study your player's manual to take maximum advantage of your rivers!


Germany
1985
ADVANCE TO CONTACT SCENARIO
TERRAIN KEY
City
Town
Lt. Rough
Rough
River
Swamp
Forest
Open
Airport
Bridge
Road
Reinforcement Entry Hex
Label (Open)
N
W
E
S
R1
R2
R3
R4
R5
R6
R7
1
2
3
4
5
6
7
8
9
A
B
C

ROADS

The advantage of roads—at least the ones to your rear—in real warfare are that they quickly move tanks, troops, and supplies to the front; bridge streams; and give you a quick way out if the battle turns sour.

In wargames the advantage of roads is similar; they enable units to move through rough or wooded terrain without a movement penalty (in some games they will actually increase the movement capabilities of some units). This benefit makes the cities and towns where roads meet especially valuable. Unfortunately, roads confer no sighting or defense point benefits on the defender that would make his job easier.

CLEAR TERRAIN

This is the terrain which requires no extra movement penalties to cross, which offers nothing to an attacker or a defender by way of advantage. This is not good terrain to defend, unless you have very strong units. Even then, you're not making the best use of your heavy forces by leaving them out in the open. A heavy unit is much more dangerous to attack when it's defensive power has been augmented by the terrain it occupies.

MAKING TERRAIN WORK FOR YOU

Starting with these basic terrain types, let's look at how the NATO commander in *Germany 1985* will use the lay of the land to help himself.

At the start of the "Advance to Contact" scenario, the NATO player will be given two tank brigades, two motorized infantry battalions, two self-propelled gun batteries, and two air cavalry units. The enemy begins with three tank battalions, three mechanized-infantry battalions, and three artillery battalions. The NATO player, looking at the map, will see that his defense will center on the big city in the middle of the map, where four roads cross and the rivers are bridged in two places.

Deploying a tank battalion to defend the city would be a good idea, since the city hexes would add three extra points to a tank's great strength on defense. Tanks could also anchor the defense in the cluster of cities and towns in the south central area of the battlefield or in the forest in the north central sector.

All the weaker units should be placed on forest or heavy-rough squares

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Germany 1985 Map. **This map depicts the entire "Advance to Contact" scenario. Notice the detailed terrain key at the left.**

near the roads that the enemy will have to travel as he moves to capture the central town (the Soviets will probably attack right down the central road leading to the town and from the southeast). This placement of troops gives you a measure of safety, since an attack on units defending rough or forest squares is so risky. You'll also have the ability to sight the enemy—and call in air strikes—even if you choose not to abandon your forest or hill sanctuaries to attack on the ground. Just remember that in a situation like this, with too few units to make a continuous front line (more on the virtues of the continuous front line soon), the best thing to do is make the units you do have as hard to destroy as possible. In later turns when you receive reinforcements, you will be able to fill the gaps in your line.

SPECIALIZED TERRAIN

Now, having gotten you off to a good start with basic terrain types, let's talk about the other features that you may encounter in your travels through the world of computer wargaming.

Hills. In *Germany 1985* the hills are symbolically represented by the "rough" designation described earlier. In other games, such as *Tanktics*, hills will play crucial roles in hiding units, especially tanks, from direct fire.

Bocage. This is a term limited in use to SSI's *Battle for Normandy*. Bocage is hedgerow country—not rows of hedges like you'd find on some suburban subdivision, but towering masses of dense growth which Norman farmers use to mark the boundaries of their fields. The qualities of bocage are similar to the woods in *Germany 1985*. You can slow up enemy units by making them advance through it to get to your position, and it will confer added strength on you when you defend it.

Buildings. This is a terrain feature which should concern only *Computer Ambush* and *Close Assault* players. Using buildings for cover and as fortifications is an art we'll cover in Chapter 7, "Small-Unit Tactics."

Desert Squares. These are found in games like SSI's *RDF 1985* (based on the *Germany 1985* playing system) and *Knights of the Desert*. Desert squares are usually treated as clear terrain, with no restrictions on movement, no combat bonuses, and no penalties. In *Knights of the Desert*, you can dig in on the clear squares and artificailly increase the defense bonus for yourself.

Beach and reinforcement squares. In a number of games, like *Battle for Normandy* and *RDF 1985*, certain squares of the beach represent the sole locations where reinforcements can be landed. Many other games specify squares along the mapedge for the introduction of new units. In *Computer Napoleonics*, a simulation of the battle of Waterloo, the French player can occupy squares adjacent to the reinforcement point and hack the British and Prussian reinforcements to bits as they are introduced piecemeal to the board.

NOTES ON DEFENSIVE FIGHTING

It's pretty clear that what we've *really* been talking about in this section on terrain is *defensive fighting*. You have to be aware of terrain before you can safely attack, but to effectively defend you have to use terrain to the maximum. So we've seen.

RETREAT!

Another aspect of defense, aside from terrain considerations, is knowing when to retreat. People tend to forget that a well-timed retreat can be as effective as a well-timed assault in winning a battle.

Here's a digression to look at a case in point. In 1066, at the Battle of Hastings, the terrain and tactics of the defending Saxons had completely frustrated the attacker, William, the duke of Normandy. All day his cavalry had been charging up a hill where the Saxon foot soldiers were making their stand. Surprisingly, the Norman Cavalry was unable to break the Saxon shield-wall. Every time the Normans drew near, the Saxons would raise their shields and start hacking away with war axes. After a few climbs up that hill in chain mail, men and horses were exhausted. William could see that his army was running out of gas.

In a moment of inspiration, he ordered a fast retreat from the main field. The Normans tore out of there, looking as if they meant to gallop all the way back to the invasion beaches. The Saxons blinked once or twice in astonishment, smiled, and then came charging down from the protection of their hill into the flatland—just where Duke William wanted them.

At a signal from William, the cavalry made a snappy about-face and charged into the disordered ranks of the pursuing Saxons. The Saxons had no time to cluster together and make a shield-wall. They were hacked apart badly, and only a remnant made it back up the hill for what was now to be a futile last stand. And that, boys and girls, is how a retreat turned Duke William into King William the Conqueror.

Retreats can work for you, too. I've yet to see a game where a voluntary retreat disorders or disrupts a unit. I have seen units retreat from open hexes onto hill, forest, or rough hexes, thereby as much as doubling their combat strength. Then they are attacked by a player so obsessed with wiping out that unit that he forgets what terrain does to defense. Such a hasty attack always costs more than the attacker thought it would. I've been on both sides of that sort of battle, by the way.

A retreat is a good idea when the goal is to preserve and restrengthen a unit. In some games, when a unit is withdrawn from the line for rest and reorganization, a turn or two out of the battle serves to improve morale and bring combat strength back up to par. The one thing to make sure of is that your retreating unit does not open a hole in the line that you can't plug up immediately. If it's at all possible, you should replace the retreating unit with a unit of comparable strength.

AREA DEFENSE

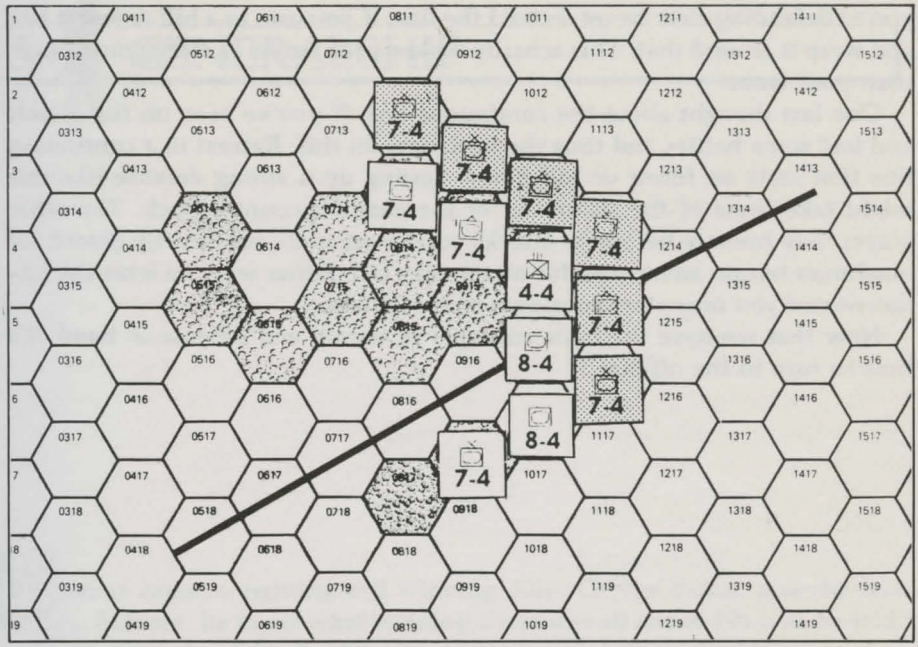
This leads us, logically I hope, into the discussion of *continuous lines* and *area defense*. A *continuous line* is, just as the name implies, a solid line of defending units, positioned shoulder-to-shoulder, stretching between two impassable map features (such as water or the mapedges).

In most computer games you'll find that you don't have enough units to stretch from one end of the map to the other. In this situation you must learn how to *defend areas*, using terrain features as anchors. This is the concept to which we've already devoted most of this chapter, so let's go back to the continuous line and wrap that up.

As we do, here's a concept to chew on. A continuous line, as we've just defined it, stretches between mapedges and also between impassable features. It may also stretch for very limited distances along rough terrain, paralleling a road or screening an enemy objective. This isn't the long, continuous line you might have visualized, but in certain areas which are critically important to defend, it's continuity and coherence makes the defense hard to penetrate.

In this sort of defense it's important to guard against allowing one unit of the line to stick out so badly as to allow your opponent to place two units adjacent to it without having to be adjacent to any of your own defenders. This sort of a line is called *salient*, and it's as good a way of letting the other player enjoy a 2:1 combat advantage over you as any I've seen.

Salients are sometimes caused by players distributing units along the edge of a line of terrain. Where the edge of the forest or hills bends, so does the player's line of units. The problem is that some players believe that you have to defend the terrain right to the very edge if you defend it at all and that the attacker gains a big advantage if he occupies any of the same forest or hill that



A Salient Defense. **In this hypothetical game, the light-colored units are in a flawed defensive line. Having bent the line around to follow the edge of the woods, the player has left his parachute unit at hex 1014 in a salient. Even with defense doubled for being on a woods hex, the unit is outnumbered by more than 2:1.**

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you do. Not so. You can allow an enemy unit or two into the forest or up the hill, if you like. Attacking from the same terrain is not likely to improve the odds for the attacker since the effect of the terrain on your defensive strength remains the same. The only disadvantage is that the enemy unit will be harder to dislodge because it is on the same terrain as you and enjoys the same benefits on defense.

The other reason players allow themselves to create salients is the desire to protect one's flank. In this situation you have a continuous line defending an area. At the end of the area you want to shield the line bends at about a 90-degree angle to prevent flank attacks. Unlike defending the tree line, this is a necessary placement of units. Leaving one unit sticking out at the end of a line is as bad as having a salient in the middle. In this situation the best thing to do is to put a very strong unit, such as a tank outfit, at the end of the line. This will discourage attacks and, if an assault is launched anyway, reduce the possibility of the assault succeeding. Ideally, the best spot to place the 90-degree bend in the line is on top of some very favorable terrain feature. If

you're defending clear hexes, extend the line, if you can, to a hill or forest hex and wrap it around that. This actually makes your flanks as strong or stronger than your front.

One last thought about the continuous line. If you've been on the assault and lost some battles and thus the initiative, do this: Retreat to a continuous line that rests on forest or hill hexes. Setting up a strong defense like this might take some of the steam out of the enemy's counterattack. The other player may hesitate before he attacks or, if your units are cleverly placed for maximum terrain advantage, his attack may fail. Either way, he loses the initiative and you may start your own counterattack.

Now that we have the basic concepts of terrain and defense in hand, it's time to turn to the offense.

5 GENERALSHIP

When it came to fighting and winning, Gen. George Patton was the real McCoy. You see, he knew what winning a war was all about. No one, he said, ever won a war by dying for his country. Wars are won by making the other poor———die for *his* country.

That's a colorful comment from a man who said lots of colorful things in his career. It's also the truth. In war, winning is killing or capturing the other guy's troops with minimal losses to your own force.

Another home truth from Patton: You win wars by seizing the offensive and holding on to it, keeping the other side off balance all the time, denying them any opportunity to rest and regroup. This is called "maintaining the initiative," and no one did it better than Patton. Patton fought the kind of blitzkrieg war that the Germans thought they held the monopoly on—only he was better at it.

In this section we're going to look at offensive warfare, not precisely the way Patton fought it—I can't presume to teach generalship at his level—but the way you can fight it successfully in a computer wargame.

We'll be looking at the broad principles of war that made Patton a winner in real life and which will help us to win in computer games. We'll look at problems of supply. We'll learn how to plan and prepare for an attack, create a breakthrough and maintain the initiative. During this exploration, we'll also go over some wargaming tactics that will help to tip the odds a little bit in your favor.

Don't expect to look like Gen. Patton the first time you play a wargame. I've been board and computer wargaming for 25 years now and any resemblance to George Patton is strictly accidental—and inexplicable. I may not al-

ways be victorious, but I always have fun. My hope is that after you've read what I have to say, you'll decide that, win or lose, you'll have fun playing too, because you'll know what you're doing.

SUPPLY

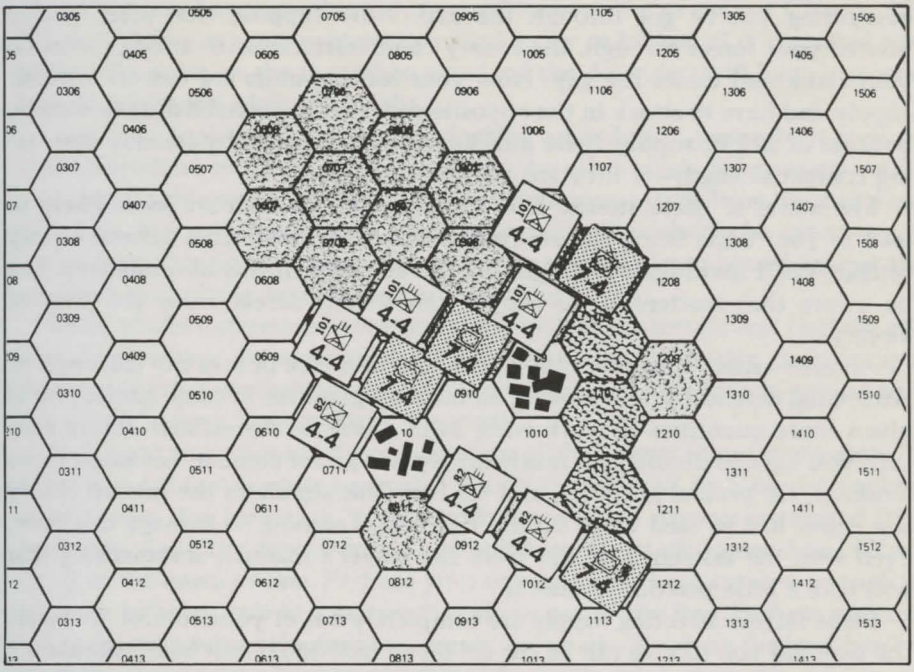
"An army," Napoleon said, "travels on its stomach." That's one of the oldest cliches in the military—probably because it's so true. In the Marine Corps it's said that Marines need only two things to fight, "bullets and beans." Add to that formula the third and equally important element of twentieth century warfare, gasoline, and you've neatly summed up the subject of supply.

As unglamorous as the subject of supply may seem (and don't kid yourself, supply is very unglamorous), it is the abundance (or lack) of supplies which very frequently determines the outcome of battles and wars. All the tactical genius in the world cannot make starving soldiers fight and win. The first thing they teach officers about command is that a good officer takes care of his troops. A good general must know as much about getting "bullets n' beans" to the troops as he does about maneuver and firepower.

Gen. Patton learned the lesson the hard way in 1944. All summer and fall that year, Patton's Third Army, the tanks in the lead, chased the Germans across north central France. By the time his army reached the borders of Germany, however, they had outrun their supplies. Patton did whatever he legally could—and pulled a few tricks not covered by the rules—to get food and ammo for his men and gasoline for his tanks. It was not to be. The gasoline ran out, the tanks came to a halt just at the border of Germany, and the chance of wrapping up the war by Christmas was gone for good. The Germans regrouped, launched the Battle of the Bulge offensive, and put the Allies in the position of losing ground and having to make it up again.

In computer wargames, supply is frequently a critical factor in determining the outcome. Take, for example, two SSI wargames by the Tactical Design Group, *Knights of the Desert* and *Battle for Normandy.* In these games you must not only manage your fighting troops, but also keep supply depots chock full of "bullets n' beans" and move those depots up close to the front line troops. If you fail to perform this task, the combat strength of your units will be depleted to an extent comparable to losing an important battle. Worse than this, the depletion of your combat strength in some games may be accompanied by an inability to continue attacking.

Is this a realistic way to simulate a battle? Judge for yourself. Look at what happened to Patton in 1944. The usual result of restricted or interrupted supply is damage to the fighting strength of your units and loss of the initiative, forcing you to retreat or take the defensive.



Defeat from Victory. **In this situation the two armored units at hexes 0909 and 0809 have just broken through the line, but have advanced into a pocket and are now cut off without supply. Don't advance on too narrow a front or your leading units will be destroyed.**

In some games, supply isn't all that mystifying. In *Tigers In The Snow,* a Battle of the Bulge recreation, you're considered in "general" supply if you can trace a line of hexes back to the "home" map edge without crossing an enemy zone of control (ZOC).

That seems simple enough, doesn't it? Yet you'll often find that individual units can be cut off without supply for any number of reasons—even for winning a battle!

Here's an example of what I mean. Assume that you make a breakthrough on a narrow segment of the enemy front line. In this situation you have pierced the enemy front, but the break is so narrow that your supply line to your leading units goes through enemy ZOCs. In this situation, the game being *Tigers in the Snow,* your forces would be out of supply. In most other games you would be at least partially out of supply.

A similar situation can occur even when you've made a breakthrough on a large front. Suppose you blow open the center of the enemy's line and pour

everything you've got through the gap. Now suppose that after you've poured your forces through, the enemy counterattacks with strong forces on your flank and closes the gap. Now your leading units are cut off without supply and have to attack in the opposite direction to reestablish their supply. Because of lack of supply, these attacks will be weakened by steadily decreasing combat strength—if they are allowed to attack at all.

The moral of these stories: Don't make attacks which are more likely to lead to your units being cut off from supply than to force a general enemy retreat. We'll investigate the right way to accomplish this in a moment. Just be aware that inattention to supply can snatch defeat from the jaws of victory.

Another aspect of supply that you should be aware of is *rate of consumption.* Attacking, defending, and moving all burn up gasoline. In some games you're given finite quantities to work with, as in *Battle for Normandy.* Before each turn you have to decide how much supply will go for combat, for amphibious landings, for general purposes, and for fuel (this simulates the limited ability the Allies had to land cargo on the beaches). Learning to manage this flow, even with the assistance of tips from the player's manual, is something that will take a little practice to master.

Some factors affecting supply are completely out of your control. In Tigers the supplies you receive can be cut off on an individual unit basis, simulating the "muddy roads and traffic jams" which delayed supplies in the real Battle of the Bulge. In this simulation you grit your teeth and think twice about using the unit to attack.

Supply isn't my favorite part of wargaming, far from it. It's all to easy for me to get wrapped up in a tactical problem only to discover—too late!—that that supplies have run out and my brilliant advances have come a cropper with all my victorious units depleted in strength or removed from the board entirely.

I'm sure that real-life generals must feel the same way about their own logistical problems. On the other hand, neither you nor the real-life generals can win without coming to grips with the problem of supply. For whatever game you play, learn the supply rules and take pride in keeping your units in "bullets n' beans."

PLANNING AND LAUNCHING ATTACKS

The first step in preparing an attack is deciding where on the enemy's front the blow will fall. This is determined by your *objective.*

Attacks that are launched with the objective of merely picking off an enemy unit that looks vulnerable are OK, but they aren't likely to accomplish much in the long run except a waste of resources and a delay in getting to the real business of winning the game. Your attacks should be geared to what the

player's manual says are the victory conditions of the game (see Chapter 12, "Victory"). If you must capture a particular city or bridge, of if you must exit units off a point on the map, then you (and the defender) will have a general idea of where the blow must fall.

You may fool the defender by adopting an indirect approach. It may be that somewhere on the map-board, where the other side's defenses are weak, you may be able to punch a hole. It may be a longer march from there to your objective, but once you have a breakthrough it will probably be easier to advance from that point to your objective than it would be to pound against the toughest part of the enemy line covering your goal.

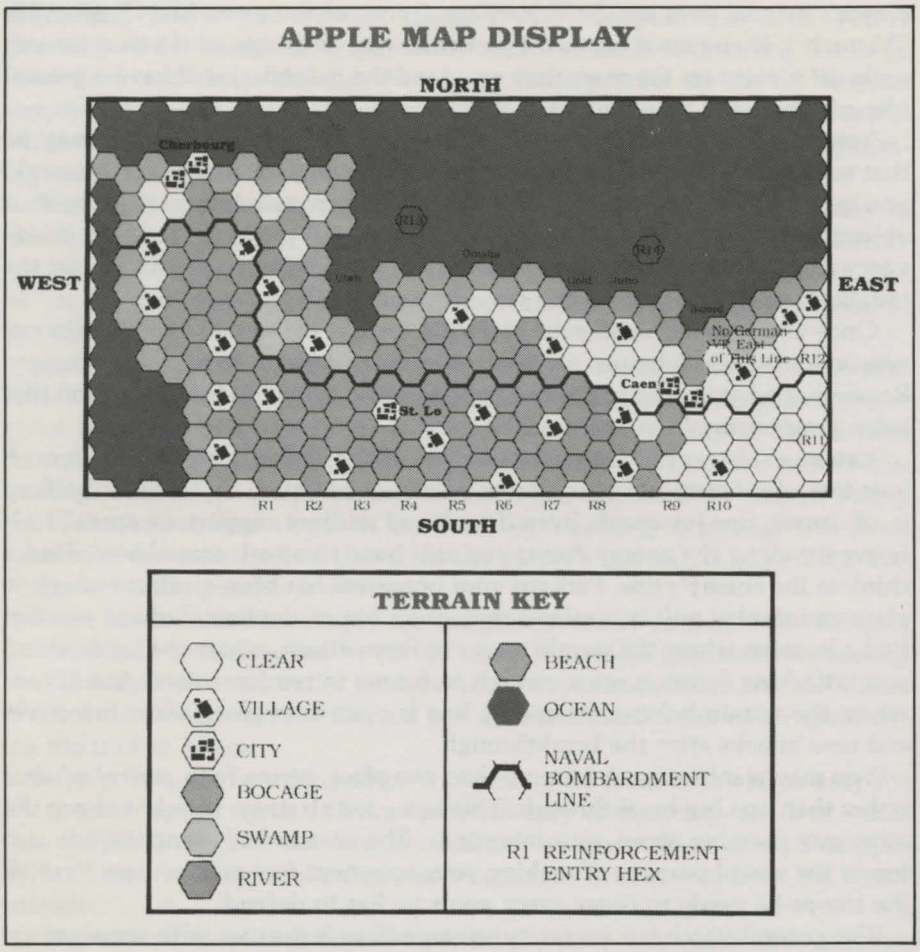
Once you're determined your objective, look at the terrain and find the enemy units whose defenses are least augmented by the terrain they occupy. Remember what we learned about terrain earlier, and look for the ground that helps your enemy least and you the most.

You must also examine the composition of the enemy forces themselves. A long line of infantry units supported poorly or not at all by tanks or artillery is, of course, ripe for attack. Even if tank and artillery support are spread fairly evenly along the enemy front, you still have to attack somewhere. Find a chink in the enemy's line. Perhaps your opponent has been careless enough to place an infantry unit in a salient that sticks out of the line. Perhaps you can find a location where the terrain seems to favor attack, where the land behind your attacking forces is open enough to funnel in reinforcements quickly, or where the terrain behind the enemy line is open enough to allow maneuver and new attacks after the breakthrough.

You may want to attack in more than one place, trying for a *general advance* rather than one big breakthrough. This is a good strategy, if only to keep the other guy guessing about your intentions. The pressure all along the line also serves the useful purpose of making your opponent feel as if he hasn't got all the troops he needs to cover every point he has to defend.

The general attack is a necessary strategy if, as is the case with some games, victory depends on taking objectives that are scattered all over the map. In *Battle for Normandy,* for example, the Allies have to secure all five beachheads and take the cities of Caen, St. Lo, and Cherbourg. These locations are widely dispersed across the map, forcing the Allied player to carefully distribute his units all along the enemy front in order to exert strong pressure at all points. This strategy keeps the Germans from concentrating overwhelming forces at any of the objectives. It also prevents them from mounting strong counterattacks.

One tip: The earlier in the game you decide where your attacks will take place, the better. As we've seen, most game manuals are very explicit about the objectives you have to capture to win, leaving you with very limited options on where to attack. Just don't delay deciding too long, or you can let the initiative pass over to the other camp. It's wise to decide where the first attacks will take place before the first turn. I believe in planning an attack strat-



Normandy Map. **This is a map for the Apple II version of *Battle for Normandy*. Notice the locations of the objective cities of Cherbourg, St. Lo, and Caen. Also note the limit of naval bombardment support.**

egy before I play a human opponent and trying it out in the solitaire mode in advance of the actual game session. This is a much better idea than delaying one or two moves while you shuffle forces around behind the front line, making it all too clear where the blow will fall and giving the other guy a chance to build up his defensive line. To play a wargame well, you have to plan in advance, just the way a real general will plan before an attack.

Having covered attacks designed to create breakthroughs and attacks meant to pressure the whole line, let me tell you the strategy I prefer. I am a

firm believer in immediate attacks along the entire front rather than going for the big breakthrough. In games like *Tigers in the Snow,* the big breakthrough is almost mandatory, but I like to sustain the pressure all along the line, making it hard for the other player to reinforce the defenders in front of my spearhead and making counterattacks on my flank less likely. As units come on the screen, I hold only a very few in reserve, sending the rest right into the battle.

This brings up the question of *reserves.* In most computer games you'll find you need to put all the units you can get into the battle line right away. If you find that the units you have are doing the job, or that there simply isn't room in the line for new units, scatter reinforcements all along the front and about two hexes behind. This allows you to plug up holes in your battle line quickly, should the need arise. Just be sure to leave that two-hex distance between your reinforcements and fighting units. If you don't and a fighting unit has to retreat, your own reinforcement units could block that retreat, causing an automatic loss of strength or of the entire fighting unit.

Of course, pregame preparation for an attack also involves deciding what forces you *will* commit to the assault. The best preparation is to make sure that you have as many tank units in on the assault as possible.

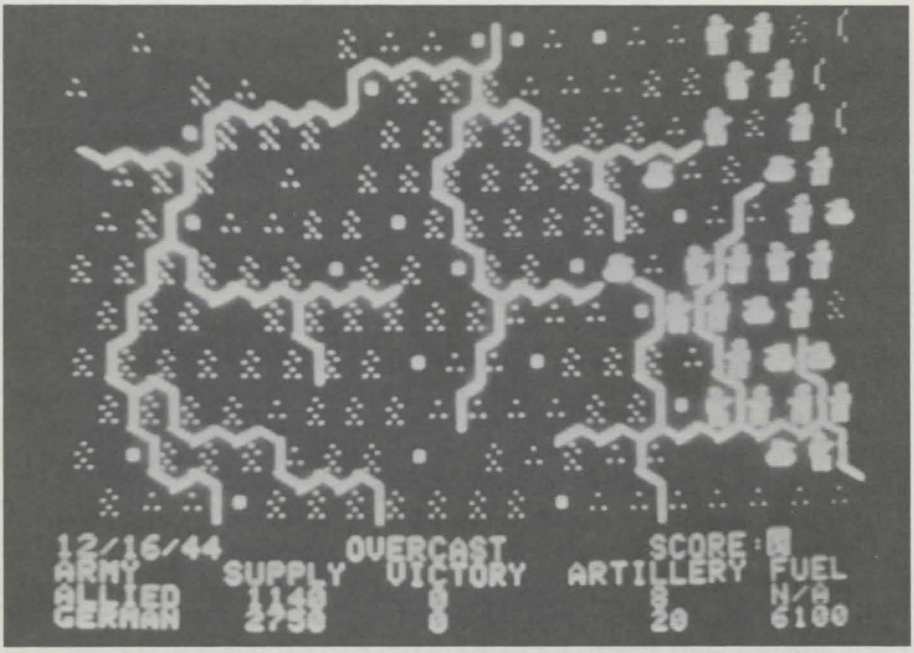
Tanks are the key to getting the job done. In every computer wargame where armored units appear, they always enjoy an advantage over infantry in range of movement and combat power. What's more important, if a breakthrough is achieved, the tanks can use this superior mobility to exploit the success with "second impulse" attacks (see Appendix III, "Glossary of Gaming Terms"), keeping the other side off balance.

If you are planning one big breakthrough, you should concentrate most of your tanks, but by no means all, at the point of attack. Save a few units to prevent counterattacks on the flanks of your army after the breakthrough. If the flank attacks do not take place, these units can be used to start secondary attacks if the enemy withdraws troops from other parts of the line to close the gap created by your breakthrough.

Selecting infantry units is also important. Infantry units are simulated by quality and size. Be aware of the strength of your individual units and pick the units with the best morale and the highest combat ratings for the assault. Match them only against other infantry units.

The other player will generally have no way of knowing your exact strength. The symbols for infantry all look the same on the screen for most games. You can tell the strength of your own units by ordering up the text on the screen. The other side can't do this with your units, in most computer games. Your opponent will have to wait until combat before he knows precisely what he's up against.

There's one last thing that you can do before the actual combat begins. Some games, such as *Germany 1985* and *RDF 1985,* feature artillery or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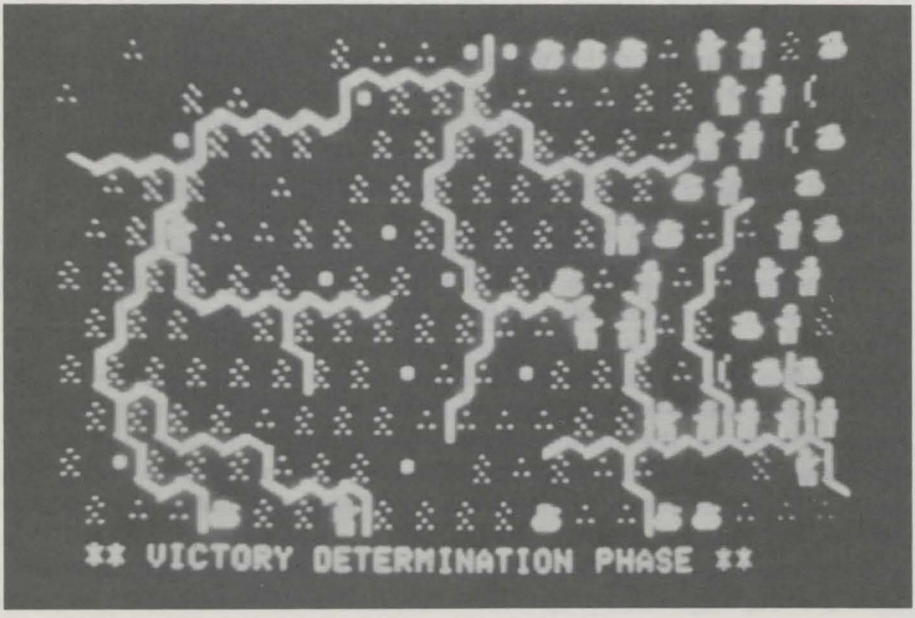
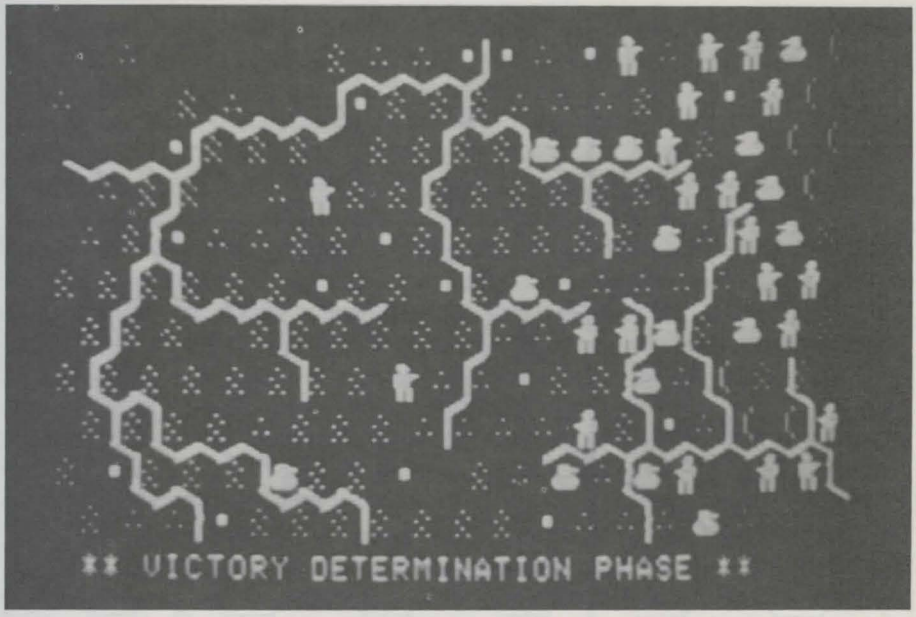
OVERCAST
SCORE:
ARMY SUPPLY VICTORY ARTILLERY FUEL
ALLIED 1140 0 8 N/A
GERMAN 2750 0 20 6100


** VICTORY DETERMINATION PHASE **



Tigers Attack. **In this sequence from *Tigers in the Snow* we see the first two complete moves of a game. In photo A the units are in the original setup positions, with German units at the extreme right edge of the map, facing left. By the end of the first German and Allied turns (photo B), the Germans have achieved a minor breakthrough four rows from the bottom of the map. The Germans have been keeping the pressure on all along the line, and we'll soon see the results. In photo C both sides have finished two turns, and the minor breakthrough is now a huge hole in the line three rows deep. The bright spot for the Allies is in the top three rows, where they have a force assembled for a counterattack. You might notice, comparing the photos, that the Allies have been pushed back everywhere by the German pressure all along the line.**

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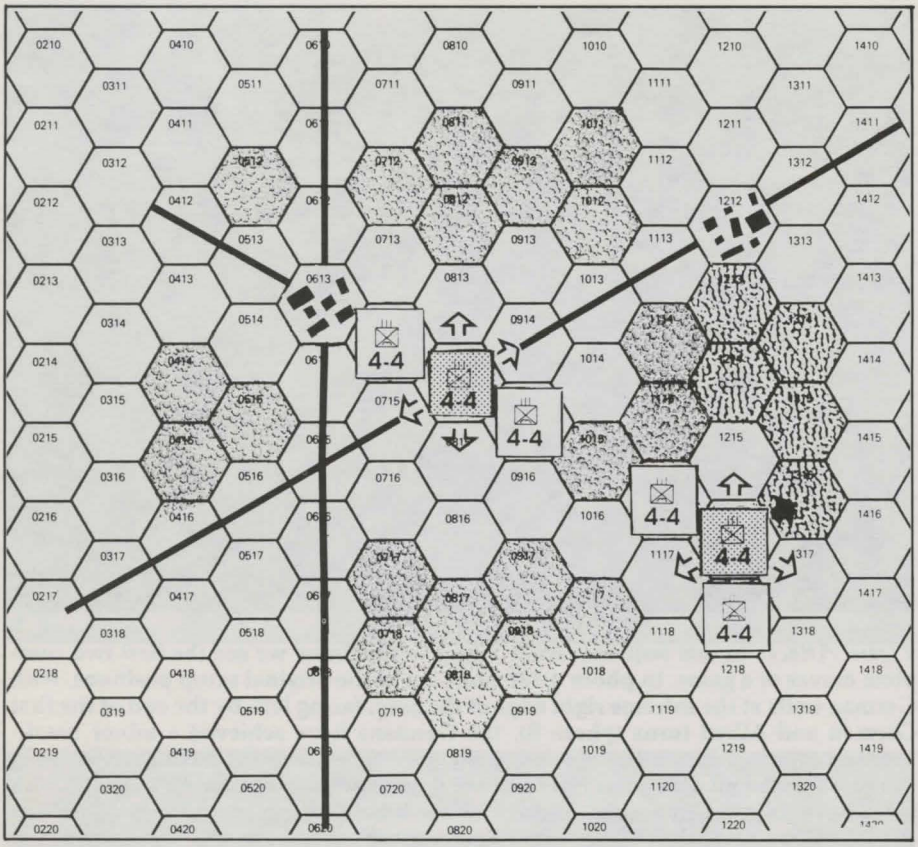
other units capable of firing over several hexes. In games like these you must be sure to use your guns for what your great-grandpa (the one who fought in World War I) called a "barrage" and what is now cutely referred to as "prep fires." This is the shelling of a targeted unit or hex prior to the attack. In a game like *Germany 1985,* where you'll seldom have the advantage of numbers, prep fires go a long way towards shifting the odds in your favor.

HOW COMBAT IS RESOLVED

We've discussed preparations for battle, but how is the actual *result* of the battle determined? In computer wargames, combat is automatically resolved



Trapped Units. **A player carelessly placing his units in this imaginary game may now lose them. The shaded unit at hex 0814 is the victim of flank attacks. Forced to retreat, all paths (arrows) lead into enemy ZOCs. Since retreats through enemy ZOCs are usually illegal, the unit will probably be lost. The unit at 1216 isn't much better off. All his escape routes lead either into enemy ZOCs or into impassable rough (dark arrow).**

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by the computer, using a formula which takes into effect any number of numeric variables simulating such factors as morale, fatigue, supply, terrain, weather, the effects of artillery fire, and combat strength, to name just a few.

Combat strength is usually the most important variable in determining the outcome. Take six units of whatever quality, in any weather, in or out of supply, on any terrain you like and pit them against only one enemy unit, and the six, with their combined combat strength, will usually win—just like in real life.

In most games the attacking troops must hold at least a 2:1 advantage over the defenders, after the barrage, in order to obtain a favorable result (e.g., de-

fender retreats, defender loses xx combat points, defender routed, defender disrupted, defender eliminated). This is where checking the combat strength of your units and sending the strongest into the attack pays off. In a battle where you attack the enemy front head-on, it's nice to have the numbers on your side.

Of course, you'll want to avoid hitting the other guy head-on if it's at all possible to launch a flank attack at the defending forces. Attacks launched squarely at both enemy flanks by attacking forces holding at least a 2:1 advantage almost always result in a catastrophe for the defender, thanks to the ZOC/retreat rule, which is a pretty standard wargaming convention.

This rule, to which we alluded earlier in the discussion on reinforcements, states that units forced to retreat after combat cannot escape through an enemy ZOC, the theory being that one hex in the enemy ZOC is just as bad as another and such an escape is no escape at all. A unit with enemies squarely on its flanks is in the heart of interlocking ZOCs. It's out of supply, and no matter where it moves (and units in a hostile ZOC usually have to spend all their movement points just to move into the next hex—this simulates the difficulty of disengagement), it's still under enemy guns. That's why the results of flank attacks are so drastic and why you should make as many flank attacks as you can.

MAINTAINING THE INITIATIVE

Now let's turn to the issue of second-impulse attacks and maintaining the initiative.

In many games, after you've won a combat in a particularly convincing way (with a result like defender retreats, or defender eliminated), you'll frequently see a text prompt, such as UNIT(S) ELIGIBLE FOR SECOND COMBAT. This is an invitation to move the unit one or two hexes (you usually have to move through the hex recently vacated by the enemy unit you attacked), into another enemy ZOC where you can commence another combat. This is called a *second-impulse attack.*

Whether or not you go ahead with the second-impulse attack depends principally on two things. First, the fighting you just finished must have left your combat strength relatively intact. Second, the odds must still be with you. If you cannot get at least 2:1 odds after the barrage, it's okay to move into the enemy ZOC without attacking, but only if your own flanks are covered and you can trace a clear supply line to the unit.

A third reason for going ahead with the second impulse attack would be if the unit you just fought is still on the board in a disorganized or severely weakened condition. The temptation to finish it off will be overpowering, and generally that will be the smart thing to do, but only if the risk to your own unit now and in the next turn is minimal.

Second-impulse attacks are a nice way of making a bad situation for the defenders even worse. Aggressive play is a good way to keep the ball rolling for you turn after turn. In one turn of *Battle for Normandy,* with second-impulse attacks I've been able to turn the entire battle around and place my opponent, who has been holding his own, into a sure-loss situation. This is called *maintaining the initiative.*

It's easy to recognize the symptoms of lost initiative. You'll feel as if the other guy has magically materialized twice as many units on the board as you have (although his numerical advantage may actually be slight—for now). You'll have recently lost one or more positions you feel are so vital that they have to be recaptured. The problem will be that the more you try to organize counterattacks to take the objectives, the more ground and the more units you seem to lose before you can ever get started. You'll plan attacks only to find that the enemy is already in your staging areas and that the units you were going to use on the offensive must be hurriedly dispatched to patch up new holes in the line.

This isn't any fun. What's fun is to be the player who's breaking up the counterattacks before they can happen and creating new crises that the defending player feels increasingly less able to cope with. The question is, how do you do all this?

The answer is, you maintain the initiative by *continuously attacking.* Some attacks will be in great strength—where the defending units appear vulnerable, where the terrain offers the least obstacle to you, where a success means gaining an objective. Other attacks will be for the purpose of maintaining the pressure on the other side. These attacks may not be at the same intensity as the serious attempts to eliminate units and break the line, but they serve the purpose of making the other player feel as if he is being pressed hard on all sides. If you follow the suggestions I've offered on attacking and start combat with adequate numbers and force, even these probing attacks will wear down the enemy before they wear down you (a battle of attrition always goes to the side with the superior numbers), paving the way for enemy-unit eliminations and retreats in later turns.

One more tip before we wrap up the subject of the offensive. In any turn you'll probably find a number of places where you may attack. At the same time you may find that your resources only permit you to make a few heavy attacks. In this situation, it is probably wisest to pick out the three or four (or one or two) places where you really *must* make progress and attack there first with as much force as you can, while keeping at least *some* pressure, in the form of light attacks, on the rest of the fighting front. That way, even while you're clobbering your opponent at his weak points, he'll still be wondering whether you intend to attack in force where your smaller attacks are going on now.

That's about it for this section on offensive warfare. Just remember these rules: Decide on an attack strategy before you begin play. Launch heavy attacks when you have sufficient force, with odds of 2:1 or better. If you have artillery, use it for prep fires against the units you intend to attack before you send in the infantry and tanks. Engage in second-impulse combat only when it does not place the attacking unit in danger. Keep up the pressure on the enemy with constant attacks all along the line so you don't lose the initiative.

Even if you do all the things you read here just as I described them, you'll still lose battles. Knowing where to attack, with which units, and at what strength is a hard skill to learn—and you'll have to relearn it every time you acquire a new game.

6 TANKS

Tanks have a special appeal for wargamers. They are, after all, the ultimate land-bound fighting machines. They seem, to those at the receiving end of a tank offensive, like steel monstrosities that no force on earth can stop. It is this sinister glamor that attracts wargamers in a very special way.

To study tank gaming more closely, we'll be examining *Tanktics* and *Tactical Armor Command* (TAC) by Avalon Hill, both simulations that between them faithfully recreate all the major characteristics of World War II tanks. In games where the fighting forces are almost exclusively tanks and other armored vehicles, you have to adapt your thinking and your tactics to meet the requirements of the game. The first thing you should be aware of is that the simulations of tank warfare tend to be very realistic. *Tanktics* and TAC, like all the other tank games I've seen, are set in World War II Europe. They're designed to accurately reproduce the characteristics of the tanks and other fighting vehicles that were actually used in the fighting.

Let's stop for a moment and consider just what the fighting and defensive characteristics of a tank are.

Ideally, a perfect tank carries a big cannon and heavy machine guns. It has virtually impenetrable armor on all sides and a power plant so powerful that it can propel the machine fast enough to make it impossible for the enemy to properly take aim at it.

The first tank the U.S. ever built to come close to that ideal is the M-1 Abrams, which came into service in 1983. Generally, the tanks built for World War II represented trade-offs of armor for speed, or speed for armor, or a big gun for speed and/or armor. We'll look at each of these elements as simulated in *Tanktics* and TAC and try to understand what these trade-offs mean in terms of wargames.

ARMOR PROTECTION

To you or me, looking at a photograph or—if one is unlucky enough—watching them in person as they rumble past in Beirut, Budapest, Prague, or Warsaw, tanks all look uniformly imposing and invulnerable. This is the biggest advantage of tanks: They appear to be so fearsomely invincible that sometimes they need only appear on the battlefield to induce the enemy to scatter.

Actually, tanks are not at all invulnerable, and the amount of armor that a tank carries is not uniformly impenetrable. The thickness and even the quality of the armor plate can vary from location to location on the tank. How armor plating is used and the thickness and strength of that plating is dictated by the most important factor that a tank designer has to consider, the size of the power plant that will propel the vehicle. If the armor is at the maximum thickness all over the surface of the tank, the engine will have an enormous amount of weight to budge. After a certain point, if the tank carries too much steel plating, the engine will be outmatched by the weight of the steel and the tank will have a slower maximum speed—a very bad quality to exhibit in a fight. Thus, the designer learns to compromise, putting as much armor on the vehicle as the engine can move at a good fighting speed.

The armor of a tank varies in thickness from place to place. Usually, the thinnest armor is in the back of the tank, by the engine. The turret and the front of the vehicle will usually carry the heaviest armor. Strong armor—though not always the strongest—will be placed on the top and flanks of the vehicle. This arrangement reflects the belief of the designers that hostile fire will be striking the front of the tank. Putting the heavy plate on the front is also excellent psychology when you stop to think of it—it encourages the tank crew to keep the front of the vehicle pointed towards the battle. It's also a characteristic of computer-wargame tanks, which should encourage *you* to keep the front of your simulated vehicles pointed directly towards the enemy. I've found that in TAC a round hitting the side or the rear of the tank is much more likely to take the tank out of the game than one hitting the armor at it's strongest point. My tanks point towards the action whenever possible.

Another aspect of armor simulated in TAC and other tank games is the angle of the armor plate. A plate of steel that is perpendicular to the ground is more likely to be broken or penetrated by a shell than a plate that slopes back. The sloped plate deflects the shell away from the body of the tank. In the manual for TAC there is a side view of every vehicle simulated; from looking at the pictures, you can draw your own conclusions as to which tanks are most likely to deflect shot and shell.

GUNS

The ideal tank, as we mentioned before, carries a big cannon in addition to its heavy armor and speed. This is one area where big is unquestionably beautiful. A small gun can, under certain circumstances, be very handy to have because it's weight allows the tank to move fast. On the other hand, the smaller guns lack two important characteristics vital to a tank weapon. These characteristics are muzzle velocity, which is the speed at which the shell travels, and the ability to throw a heavy projectile. A heavy shell fired at maximum speed and hitting an impenetrably armored turret, even if it doesn't penetrate the armor, still stands a darn good chance of knocking the turret right off the tank. This is an experience you'll see simulated over and over again in TAC, proving without a doubt that big is beautiful when it comes to guns.

In World War II the most famous tank was the German Tiger with its 88-mm (millimeter) gun. You'll find this tank in TAC, as well as some that packed even bigger "shootin' irons." You should know that U.S., German, and Russian tank guns are measured by the diameter of the muzzle in millimeters. British tank guns are ranked by millimeters and by the weight of the shell that the gun fires. The "seventeen pounders" were the big British tank guns.

SPEED

Speed is a quality determined mostly by how much metal the tank's engine has to move. Heavily armored vehicles with big guns, riding on tank treads tend to be slower than lightly armored vehicles with small guns, riding on wheels.

Here's an illustration of what I mean. It's frequently true that tank designers are not engine designers. They sometimes take an existing engine "off the shelf" and then build a tank around it. Take an engine, build a light armored personnel carrier around it, stick it on top of rubber tires, and that baby will go nearly as fast as a passenger car. Take that same engine, build a medium or heavy tank around it, and you'll be lucky to get 10 MPH.

Now it's true that you'll seldom be ordering your tanks to travel at maximum speed . . . unless you either want to break the drive train or you have no intention of firing your gun. Your chances of hitting a target are best when the tank is at a complete standstill. What is important is acceleration, the ability to stay out of the other guy's gunsights. A moving target is hard to hit and a quickly moving target is even harder (that's why the government has spent so much to put a jet-turbine engine in the M-1 heavy battle tank—so she can accelerate past 30 MPH). You'll find that the simulated tanks with faster ac-

celeration have long life expectancies, too. They can stay out of the other guy's sights, stop and fire before a slower enemy tank can train its gun.

TYPES OF ARMORED VEHICLES AND GUNS

In TAC and in several other wargames, you'll find a wide range of choices confronting you as you attempt to pick which types of vehicles you want to command during the game. In Chris Crawford's *Tanktics* the selection is very wide. Unfortunately, the manual only gives you what amounts to hints as to the relative merits of the Russian and German tanks you have to command. Let's try to clear up some of the confusion here and now. We'll define terms and then give you a basis for comparison good in any realistic World War II tank game.

A *tank* is an armored vehicle with a cannon mounted in a revolving turret. It travels on continuous tracks and is heavily armored. Aside from it's main armament of a cannon, it usually packs one or more machine guns to attack enemy infantry. Tanks sometimes carry mortars to fire smoke and high-explosive shells. The cannon is used for antivehicle fire and to hit hard targets such as gun emplacements with great precision. The mortars are used for what is called "area" fire, to bombard a location where enemy forces may be lurking and to cover a friendly position with smoke.

A *tank destroyer* is a vehicle containing a heavy, high-velocity gun that fires an antitank projectile. You can learn to hate 'em or love 'em, depending on which player in the game has the most of 'em. The gun is usually mounted in the hull or in a turret with a limited traverse of rotation. Tank destroyers frequently carry machine guns and sometimes mortars.

A *self-propelled gun* is a cannon on tank tracks (examples: U.S. M4/105 howitzer, Russian SU152, and SU76). Part of the gun mounting (the rear) is often in the open air. Sometimes the mounting will revolve in a limited traverse. Some of these vehicles will have machine guns.

Armored cars are vehicles which ride on rubber tires, carrying a small cannon and machine guns (examples: U.S. Greyhound, German Puma, British Daimler). They have much more speed than tank-tread vehicles and are harder to hit when moving. They do a terrific job against "soft" targets like infantry and field pieces. On the other hand, their guns (with some high-velocity exceptions) are not much use against heavily armored tanks, unless you can get lucky and hit the tread.

You'll also find infantry and field pieces used in TAC. How they can be best used will be discussed in a moment.

First, consult the list on page 56 of the tanks and self-propelled guns in TAC. This should give you an idea of the range of weapons, armor, and speeds available to you in the game. As I said earlier, these specifications also

apply in a general way to other games which carefully simulate actual tanks, such as *Tanktics*. Each game programmer uses different sets of values to create his own simulations.

As you examine the listing, remember our ideal of the perfect tank: speedy, heavily armed, and well protected by armor.

TANKTICS: SIGHTING AND MORE

The tank games that come the closest towards a realistic simulation of actual tank warfare are Christopher Crawford's *Tanktics* and Ralph Bosson's TAC. Each approaches realism in its own way. *Tanktics* is the game which makes the most realistic use of terrain. TAC is the best game for the player who wants to make strategic decisions while simulating actual tank driving. Between the two games you'll find just about everything you'll need for computer tank wargaming, so let's examine them more closely.

Tanktics is a "hybrid" game that combines a conventional board-wargame setup with a sophisticated computer simulation. *Tanktics* has no video graphics whatsoever. Instead, you keep visual track of the flow of battle with a conventionally printed gameboard and die-cut counters. It's the computer that does all of the other dirty work, however, and considering what has to be done to make a tank game realistic, that's quite a bit of calculating that has been lifted off your shoulders.

To begin with, the program contains a data model of the gameboard. That model contains all of the terrain features of the board. Those features include rough (elevated) ground, depressions, impassable ponds, forest, clear ground, and road.

If you recall the section of this book on terrain, you can probably predict the effect each of these terrain types has on the tanks under your command. Just in case you can't make that prediction, here are the terrain effects in a nutshell: Clear terrain (green map hexes) costs two movement points, one if there is a road. Rough (elevated) terrain, represented as brown map hexes, costs three movement points to enter, but only two if you're on the road. Entering a depression hex costs five movement points (no roads enter depressions). Entering a forest hex costs four movement points, two if roads and lakes are impassable.

Now let's talk about sighting, which is a complex matter that we'll attempt to make simple.

In a letter he wrote to me before the game was published, Chris Crawford explained the three elements which go into sighting. It's worthwhile going over them because they give you an insight into how the game works.

Whether or not an enemy tank sights your tank, or yours sights the enemy's depends on range, terrain, and probability.

TAC TANK SPECIFICATIONS

GERMANY

Tiger (PzKw VIe)—tank, 88-mm gun, heavy armor, slow.

Jagdpanther—tank hunter, 88-mm gun, heavy armor, slow.

Panther (PzKw V)—tank, high-velocity 76-mm gun, moderate armor, fast.

Hetzer—tank hunter, 75-mm gun, moderate armor, fast.

Panzerkampfwagon IV (PZK IV)—tank, 75-mm gun, moderate armor, fast.

Panzerkampfwagon IIIf (PZAUSF)—tank, 50-mm gun, moderate armor, fast.

Marder III—tank destroyer, 76.2-mm gun, poor armor, fair speed.

Puma—armored car, high-velocity 50-mm gun, moderate armor, fast.

RUSSIA

Joseph Stalin II—tank, 122-mm gun, super-heavy armor, slow.

SU152—self-propelled gun, 152-mm gun, heavy armor, slow.

KV85—tank, 85-mm gun, super-heavy armor, slow.

SU85—tank destroyer, 85-mm gun, heavy armor, good speed.

T34/76C—tank, 76-mm gun, heavy effective armor, fast.

T34/85—tank, 85-mm gun, heavy armor, fast.

SU76—self-propelled gun, 76-mm gun, poor armor, fair speed.

BT5/5A—tank, low-velocity 76-mm gun, poor armor, fast.

UNITED STATES

Pershing—tank, 90-mm gun, moderate armor, good speed.

Cobra (Sherman Jumbo)—tank, 76-mm gun, heavy armor, fair speed.

Sherman—tank, 76-mm gun, moderate armor, good speed.

Stuart—tank, 37-mm gun, poor armor, good speed.

Grant—tank, 75-mm and 37-mm guns, moderate armor, fair speed.

Wolverine—tank destroyer, 76.2-mm gun, moderate armor, fair speed.

M4/105—self-propelled gun, 104-mm howitzer, poor armor, fast.

Greyhound—armored car, 37-mm gun, poor armor, very fast.

BRITAIN

Challenger—tank, 17-pounder gun, moderate armor, fair speed.

Achilles—tank destroyer, 17-pounder gun, moderate armor, fair speed.

Sherman VC—tank, 17-pounder gun, moderate armor, good speed.

Cromwell—tank, 75-mm gun, moderate armor, fair speed.

Valiant—tank, 6-pounder gun, heavy armor, slow.

Churchill VII—tank, 75-mm gun, heavy armor, slow.

Churchill IV—tank, 57-mm gun, moderate armor, slow.

Daimler—armored car, 40-mm gun, poor armor, fast.

Range is a fairly easy concept to understand. The further off something is, the harder it is to see. If your tank is close to an enemy, the chances are great that the enemy will be sighted, even if the terrain between you and it tends to block the view. Conversely, if you are far away, sighting is less likely, with the probability reduced even further if rough or forested terrain is between you and the enemy.

You can see that the issue of *terrain* flows naturally from the discussion of range. Some terrains help to conceal an enemy. A tank in a depression has a smaller silhouette. Woods block the view, as does rough terrain. However, rough terrain can also enhance the view. If the tank happens to be on an elevated section of rough—this is determined by the computer—then the tank actually stands out in starker relief. Clear terrain and lakes do not block vision at all.

Probability is a fancy way to describe luck. In the confusion of battle, hostile units can pass quite close to one another without ever sighting each other. The formula in the *Tanktics* program which determines sightings contains a random variable to allow for this element of luck.

Another factor which effects play is not, strictly speaking, a part of the sighting equation but a result. This is a quality that Crawford calls *asymmetry. Symmetry* is the correspondence of the arrangement of articles on either side of a line or point. Your two hands pressed together is an example of symmetry. Each hand has five fingers, each in the same place. One hand is the mirror image of the other. *Asymmetry* is the lack of such correspondence.

In *Tanktics*, the asymmetry of sighting refers to the occasional lack of correspondence between what your tanks see and what the enemy tanks see. In *symmetrical sighting*, if tank A sees tank B, then tank B *must* see tank A. In the *asymmetrical sighting* of *Tanktics*, it does *not* follow that if A sees B, then B sees A.

For example, the enemy tank hiding in the woods may not be sighted by your tank in the clear terrain, but there's an excellent chance that he will see you. Of course asymmetry can cut the other way. It could be you in those woods, unseen but sighting an enemy target.

The most important thing to remember about sighting is simply to do your best to use the terrain to cover you and let the computer determine who has sighted whom. If you sight a target, the computer will let you know. Your job is to formulate a winning strategy. Here are some hints in that direction.

First, learn to use terrain to your advantage. This all harkens back to the section on terrain, but it's worth reviewing. Use the woods and the rough to hide behind. Take the roads that cross through the woods. When traveling in clear terrain, keep the woods or the rough between you and the enemy. The more rough and woods hexes between you and the enemy, the less likely you'll be sighted. Here's some additional food for thought—the same qualities of terrain that make your tank hard to sight also affect the probability of your enemy scoring a hit.

When you want to sight an enemy quickly, occupy a rough hex. The game is programmed to assume that your tank will reach the highest level and will accordingly see that much more. Despite the fact that you are in sharper relief, the chances of you being hit are not as great as if you were in a clear hex, so don't be afraid of climbing to the top of the rock pile.

A depression in the ground is a nice place to be if you want to stay put to defend an objective. In a depression, your tank is partially hidden by the ground, making the silhouette smaller and harder to see. Even when your tank is finally sighted, the target will be smaller and thus harder for the computer's tanks to hit. When you're outnumbered and the terrain is boxing you in, making any escape slow or tortuous, a depression gives you a chance to take out your tormentors before they can hit you.

Another tactic that can help you is keeping your frontal armor pointed at the enemy. It costs two movement points to rotate from one face of the hex to the next adjacent, but the computer recognizes the frontal armor as being the strongest and this will give your tank an improved chance of surviving a hit. If the computer determines that your flank or rear armor is hit by the shot, the chances are that much greater that the hit will kill your tank.

You should also learn the killing range of your guns. A shot fired from a distant range may not damage a target, while a round from the same gun can affect a kill from close-up. Be aware that guns of different types perform differently. Some guns are as good at an extreme range as others are at a much closer distance to the target. The player manual gives you a good idea of which tanks mount the best guns.

CRAWFORD'S TIPS

Crawford's tactical hints in the *Tanktics* manual more or less mirror what we've gone over so far. He advises using the terrain for concealment. He urges learning to fire from the woods and the rough. Crawford suggests directing all your fires on the closest enemy tank(s) when combat begins. He advises against holding back reserves.

Since the program sees to it that the enemy always outnumbers you 2:1, you're going to need all the firepower you can bring to bear, all the time. For this reason Crawford advises against fights at close range since the kill ratio is close to one for one, which means, given the computer's 2:1 numerical advantage at the start, that you'll run out of tanks before your computer enemy does.

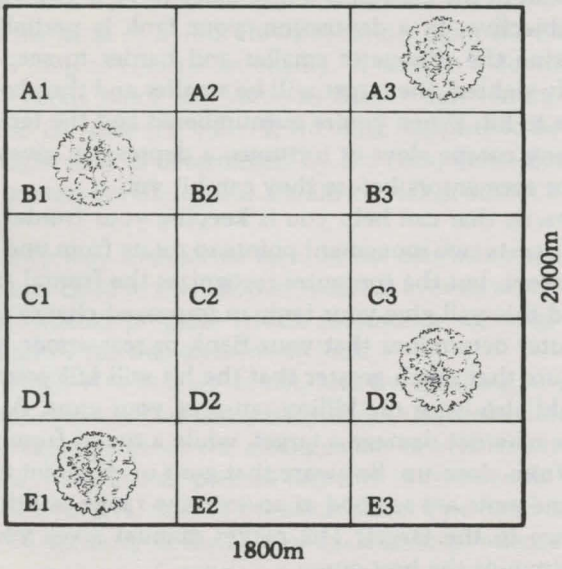
TAC: DRIVING AND MORE

TAC is a pure computer game. There is neither a printed game board nor cardboard counters. Unfortunately, there's almost no terrain, either. What's

POINTS OF INTEREST

1. DISTANCE AND SCALE

All distances are measured in meters. The entire battlefield map is 1800 x 2000 meters and has been subdivided into 15 sectors each 400 x 600 meters.



The TAC Battlefield. **This is the full battlefield used in TAC. It is divided into 15 sections, each 400 × 600 meters. The entire battlefield is 1800 × 2000 meters. Only one of the fifteen sections appears on screen at any time. You'll notice that forest terrain is located in sectors A3, B1, D3, and E1. If you drive too fast over that terrain, you'll risk breaking your tank's drive train. Forest terrain hides your tank units.**

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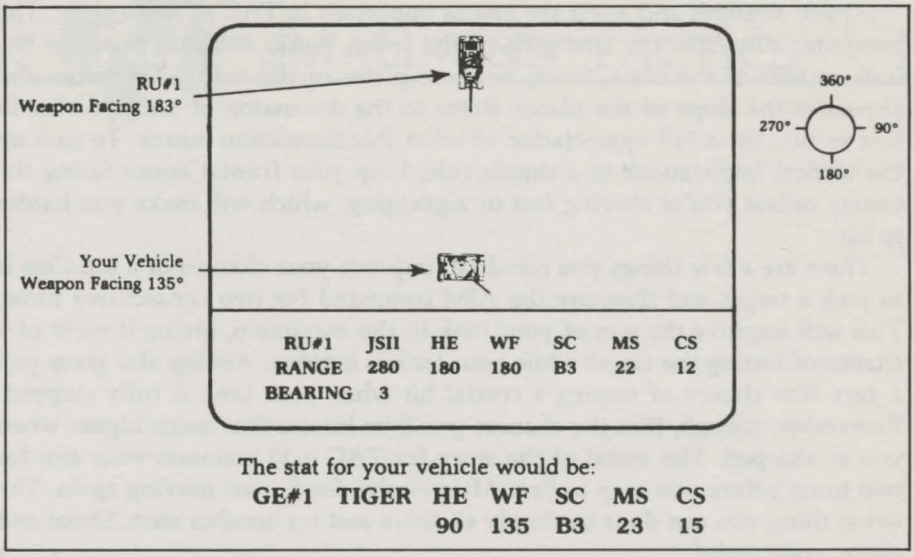
great about TAC is that you really have a chance to see the tanks in realistic action on the high-resolution color videoscreen. You're also more involved in the tank-driving aspect of the fight than in *Tanktics*.

The combat takes place on a battlefield in which there are only two types of terrain, woods and clear. There are no hexes, just 15 map sectors made primarily to assist you when trying to locate your units or the enemy's.

Terrain effects are much simpler than *Tanktics'*. The woods play havoc with your drive trains if you speed through them; if you enter them at a reasonable pace you'll be OK. Woods also restrict vision. A unit that is in the center of the woods cannot easily see out and cannot be sighted. "Quiet" units in the woods, i.e., units that have not moved or fired, cannot be sighted at all. Units that are fighting will still be hard to sight if they are in the woods.



TAC's Tactical Display. **This facsimile shows *Tactical Armor Command*'s tactical display, one of the 15 sectors in the main battlefield display. At the top of the view is a Russian tank that has just been sighted by the German one below. The text beneath the picture informs the German player that the Russian tank is Joseph Stalin II, that its heading (HE) and weapon facing (WF) are both 180 degrees, that its speed (CS) is 12, and that its gun must be trained (bearing) 3 degrees more to the left of the view to hit the German tank. As you can see from the facing of the German cannon, the Russian is about to scratch one Tiger!**

To continue the examination of sighting a little further, it's good to know that sighting is not as range-dependent as in *Tanktics*. Units will sight each other at any distance if they are all in clear areas. Exceptions are field guns and infantry, which are hard to see at extreme range.

In TAC, the missions and capabilities of your various units are brought into sharp focus. You'll come to appreciate those tanks with faster acceleration. The value of an antitank gun hidden in the woods will make itself manifest rapidly.

The first order of business will be to learn how to drive your tanks, a process which I'll leave to the manual to describe. Suffice it to say that you will be steering not just the tank, but the turret as well. In *Tanktics*, when you fire the gun, the turret is automatically turned towards the enemy. In TAC, you have to turn the gun yourself. If you're steering a vehicle without a turret, such as a tank destroyer or self-propelled gun, you'll have to face the entire vehicle at your target for the gun to bear, a process which allows you fewer options in maneuver.

Armor strength and angle are just as important in TAC as in *Tanktics*. The computer simulates the strengths of the front, flank, and rear plates of the hull, as well as the front, flank, and rear plates of the turret. The game also simulates the slope of the plates. Refer to the discussion of armor earlier in this section for a full appreciation of what this simulation means. To sum up the tactical implications in a simple rule, keep your frontal armor facing the enemy unless you're moving fast or zigzagging, which will make you harder to hit.

There are a few things you can do to improve your chances of a hit. One is to pick a target and then use the AIM command for two consecutive turns. This will improve the aim of your tank to the maximum, giving it more of a chance of hitting the target while your tank is moving. Aiming also gives you a very fine chance of scoring a crucial hit when your tank is fully stopped. Remember, though, that the chances you'll be hit are that much higher when you've stopped. The moral of the story for TAC is to maintain your aim for two turns before you stop to fire. After you've fired, start moving again. The worst thing you can do is to simply sit there and try another shot. Shoot and move, constantly!

The units under your command in TAC can do a little more to help each other than in *Tanktics*, thanks to the tank mortars. You can give a temporary reprieve to a soft target or a crippled tank under attack by having other units fire smoke mortars to lay a cloud between your distressed units and their attackers. The mortars also allow you to shell those woods you cannot see into, but where you suspect enemy units may be lurking. A tank with its turret shot off may also be able to use its mortars to keep up offensive firing.

HUMAN AND COMPUTER COMPETITION

A final word on *Tanktics* and TAC. Both of these games are playable with the computer, but only TAC allows you to substitute a willing human for the computer opponent. The best way to practice for your human opponent will be to play several rounds with the computer. The computer will probably give you a much better game than a human opponent could. After all, the computer has all the rules and all the tricks perfectly memorized. The bottom line is, if you can beat the computer when it's using it's best tanks, you're ready for anything a human opponent can dish out.

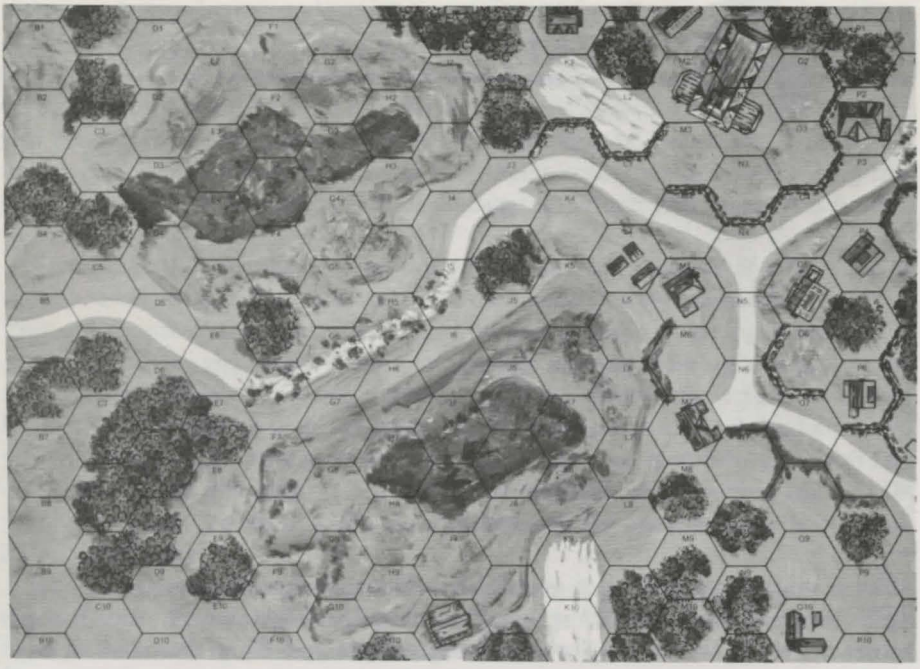
7 SMALL-UNIT TACTICS

Are you old enough to remember an old television show that ran in the early 1960s called *Combat!* starring the late Vic Morrow and Rick Jason? Morrow played a battle-wise buck sergeant named Chip Saunders, a real tough customer, in charge of a squad of about ten men. Jason played his commander, Lt. Gil Hanley (who gradually became invisible as Morrow's strong performances began to dominate the show).

There were a few other memorable characters, such as Littlejohn, the hulking soldier who carried the Browning automatic rifle (BAR), played by Dick Peabody; Caje, the Cajun soldier from Louisiana portrayed by Pierre Jalbert, and Kirby, the rifleman, played by Jack Hogan. The whole ensemble turned in excellent performances, making all these characters very real people to the viewer.

Now, if you're old enough to remember the show, and if you were a kid-type person of the male persuasion, then you probably remember playing the parts of Saunders, Kirby, Littlejohn, Caje, and all the rest yourself. Your little dramas took place not on Hollywood sound stages but in backyards, empty fields, and woods with you and your friends firing toy M-1 rifles, BARs, and tommy guns and throwing toy hand grenades at imaginary Nazis.

Actually, you might not have realized it at the time, but *Combat!* and your backyard maneuvers were teaching you quite a lot about small-unit tactics on the platoon level. What follows, then, is probably more along the lines of a review for many of you. For the rest of my readers, those who were watching more educational programs like *Mr. Novak, Laramie,* or *My Mother, the Car* when *Combat!* was on, or who were born after those shows were run and don't have any idea of what I'm talking about, this should be new material.



Since we already covered quite a few of the principles governing small-unit fighting in the section on terrain, we'll keep this discussion brief. We'll look at how you handle squads of troops (from four to ten men) carrying rifles, machine guns, flame throwers, and satchel charges by examining *Close Assault*, a hybrid Avalon Hill game. Then we'll examine the problem of commanding in a single squad of troops, as typified by SSI's popular *Computer Ambush* game.

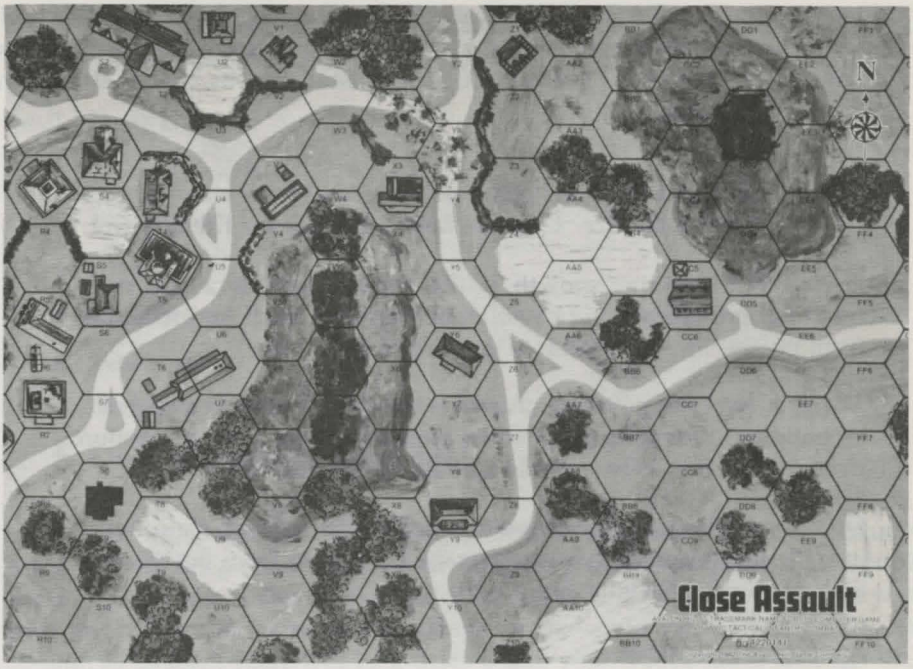
Okay, everybody ready? Caje! Littlejohn! You take the point. The rest of you guys, keep your heads down and move out!

CLOSE ASSAULT: SQUAD COMBAT

Picture a country village of about 30 buildings, sitting astride an important crossroads somewhere in Europe in the 1940s.

There are some small frame houses, a few farm buildings on the outskirts. The central village boasts quite a few stone buildings, including a church and a town hall. Small clumps of trees surround the village in all directions, and just to the east and west of town two large hills. Rounding out the terrain picture are hedgerows, stone walls, wheat and hay fields and, ominously, fresh bomb and artillery craters straddling the road.

Outside the village is your company of troops. You have 14 squads plus weapons crews to man heavy machine guns and other support weapons.



Close Assault Game Board. **This is the printed map supplied with the *Close Assault* game. Note the central village, surrounded by a circular road. Note also the hills on either side of the town.**

Inside the village are German soldiers, also in company strength, divided into 13 separate squads. They also have heavy machines guns, flamethrowers, and other support weapons. They also know you're coming.

Let's project ourselves back out of our imaginations for a moment and into the game to size up the situation.

Looking at a map of this village we can see that the Germans must be holding positions that will be hard to crack. Within the road that loops around the town are six hexs occupied by stone buildings, which give excellent cover. In addition, there are five wooden buildings, giving fair cover, and three woods hexes and a hay-field hex, giving marginal cover. Also giving some minimal cover are stone fences and bomb craters. Playing against the computer in the "Strong Point Defense" scenario, we'll discover that most of the German squads are within that circle of road, taking cover in or near those buildings. One or two units may be in the open squares south of the village and one or two might have rifles and machine guns covering the road leading east from the circle.

Let's stop here and analyze the terrain in a little more detail, so we'll know what we can expect from each terrain type by way of cover from sighting and

protection from hostile fire. We already know in a general way how each of these features modifies combat and movement. To be more specific, here's a description of each type of terrain in *Close Assault* and its special effects on combat and sighting:

Clear hexes. These offer no height, no protection from view, no protection from hostile fire. They are fair to average for friendly fire.

Forest. Here covering growth is the same height as a one-story building, providing good cover from view and medium protection from hostile fire. The forest is good for friendly fire.

Wheat fields. Here covering growth is the same height as a one-story building, providing good cover from view, but poor protection from hostile fire. Wheat fields are fair for friendly fire.

Shell holes. These slight depressions below the level of plain hexes provide fair cover from view, average protection from hostile fire, and are fair for friendly fire.

Roads. See *clear hexes*.

Light-brown hill hexes. These hills are the same height as a one-story building, offering poor cover from view and poor protection from hostile fire. They are very good for friendly fire.

Dark brown hill hexes. These hills are the same height as two-story building, offering poor cover from view and poor protection from hostile fire. They are the best places for friendly fire.

Wooden building. This structure is one story high and offers good cover from view and very good protection from hostile fire. A wooden building is a good spot for friendly fire.

Stone building. This structure is two stories high (units are always on the second story) and offers excellent cover from view and excellent protection from hostile fire. A stone building is an excellent base for friendly fire.

Stone fence. This waist-high structure offers no cover from view and fair protection from hostile fire. It is a fair base for friendly fire.

Hedge. This waste-high structure offers no cover from view and poor protection from hostile fire. It is a poor base for friendly fire.

For quicker reference, here's a list of terrain types in order of decreasing effectiveness in protecting you from hostile fire:

1. Stone building
2. Wooden building
3. Stone fence
4. Forest
5. Shell holes
6. Wheat fields
7. Hedge
8. Clear (including roads and hills)

As your units approach the village from the east and west, your primary job will be to keep them under cover until they can reach points that afford them a good field of fire on the buildings in the central section. Even if you start your forces as close to the village as the setup rules allow (and you should, of course), there will be a delay while your troops move through the terrain features to get to the points you have selected for fire bases. It will be worth the delay to secure a good spot to set up your machine guns.

Time for a definition: A *fire base*, in this context, is a point at which a heavy, medium, or light machine gun is located and from which it can lay covering fire. On the *Close Assault* map, a few potential fire bases suggest themselves. Hex M5, a wooden house next to the crossroads at N4, offers a good line of sight towards the house at O5 and P4, which will become German strongpoints sooner or later if the computer is playing the German side. Two or three squads starting in the cover of the woods at J4 will only have to cross one open hex at K4 to get to the house.

Squads starting at Y9 and Y10 can slog through woods and wheat fields and need only travel one or two open hexes (out of the direct line of sight of German units) to assault and capture the house at S8. This spot also makes a great fire base, commanding a potential five German strongpoints (Q7, R6, R5, S5, T4) in the village.

Another valuable fire base would be the southeast transept of the church at N2. Remember, this is a second-story vantage point and with its enhanced lines of sight, a nice spot to shoot from. It commands the northwest corner of the village, as does the wooden house at P2. This house makes a nice spot from which to fire on the buildings at R3 and S3. Finally, there is the wooden building at V3. This spot anchors the entire assault by cutting off an escape route.

So much for fire bases. Just note, if you will, that all of these locations are reachable almost entirely without having to cross clear hexes and take undue casualties.

From this beginning, the smart company commander will use his firepower to make nearby enemy positions untenable. Even units in a stone building will take casualties from a squad located close by with heavy support weapons.

In one game I played, a unit which set up a fire base in the wheat field at L2 inflicted six deaths on a German squad four hexes away—fairly long range—in the stone house at O5 during the course of three turns. Another two casualties were inflicted on the same squad during the game by a squad which had set up in the church at N2. These casualties forced the German survivors out of the house at O5 without hand-to-hand fighting.

With a little luck and a little skill, you could play the entire game this way, destroying enemy strongpoints using firepower and without ever having to come to grips with the other side in close combat. (In *Close Assault*, "close combat" takes place when friendly and hostile units occupy the same hex. Combat results are calculated automatically with no further intervention by the player.)

There is not much to be said in favor of close combat. It's wasteful of men when you could be letting firepower do the job for you. The actual game is likely to provide one or two instances, however, of hand-to-hand fighting, whether you like it or not—the other side may initiate it if you don't. Of course, if you're just about at the end of the game, facing the last enemy unit, you might be tempted. Sometimes, when there seems to be no other way to take a key position, you may be forced into close combat. What then?

In a nutshell, the trick is to outnumber the other guy. Two full-strength squads will always eliminate one full-strength squad. One squad with no casualties will always beat an enemy squad with casualties. It's as simple as that—except for the fact that the winning squad will take high proportion of casualties too, with a big reduction in firepower resulting. The bottom line is still this: Only initiate close combat if the objective is really worth it.

An example of an objective that is really worth it is the stone house at R3. Notice how it commands almost the entire village. A unit in the shell holes at Q3 carrying a demolition charge might be able to take the objective with firepower. It's more likely, though, that two or three squads, jumping off from your fire base at P2 will have to do the job. Just remember to keep a count of the firepower casualties you may have inflicted on the Germans and count the heads of your own force to make sure you have the advantage of numbers before you move them into close combat.

These general hints on handling squads in *Close Assault* should also apply to future infantry games played on the company level. Now, we turn to *Computer Ambush*, to learn how to command individual soldiers.

COMPUTER AMBUSH: SINGLE SOLDIERS

Remember how everyone in Sgt. Saunders's squad in *Combat!* had a distinctive personality? Littlejohn, the enormous BAR man was actually very gentle and slow to anger, but in combat he was a tiger. Caje could speak French and was able to collect intelligence from the civilians the squad encountered. Kirby, the rifleman, was a wise guy, but basically dependable in combat. Saunders was the best all-around soldier.

The characters were so strong that you could predict how each man would act in almost any situation in which the plot might land Saunders's squad. That was how well the viewers knew the strengths and weaknesses of each man. On this same principle, programmer Ed Willinger designed *Computer Ambush.*

Computer Ambush. is based on scenarios involving a squad of U.S. infantrymen who must attack a French village. In this battle we will not be concerned at all with the characteristics of the unit as a whole. What we are interested in are the performance characteristics of each man in particular.

For this reason the game comes with a set of "dossiers" in the player's manual which gives us an idea of what each of the ten members of the squad can do. This information tells us who should receive special weapons such as tommy guns, BARs, hand grenades, and plastic explosives and what jobs in combat best suit each man.

First, we'll look at each soldier's strengths and weaknesses. The strengths include marksmanship, intelligence, dexterity, power of observation (for spotting hidden enemy soldiers), hand-to-hand combat, and grenade throwing. The weaknesses are individual character traits we'll discover as we profile members of the squad.

The squad is led by a tough sergeant, J.C. "Buck" Padooka. He's the kinda guy who makes Sgt. Saunders of *Combat!* look like a sissy nerd. Padooka is the best all-around soldier in the squad. He can handle any weapon. He is also the smartest of the ten. Padooka should be given extra grenades and an automatic weapon.

Cpl. Richfield is a fairly average soldier. He has little hand-to-hand combat aptitude. His talents point towards being a rifleman with no special weapons. Pfc. Bastinelli is big and strong, good at hand-to-hand combat. He should be given a garotte (cord for strangling). Bastinelli's also a good marksman and does well with automatic weapons.

Pfc. Lawson, a rifleman, has the finest powers of observation of any of the men. He should be used as a "point man" (i.e., he's the guy who goes first and looks around corners to see if the coast is clear). Pfc. Garrity, on the other hand, is the best marksman in the group. He can make his fire count with a machine gun.

SECOND EDITION

COMPUTER AMBUSH™

SQUAD CARD
SOLDIER CHARACTERISTICS CHART

Rank	First Name	Last Name	Weapons	No. of Grenades	Wt.	Strength	Intel.	Dexterity	Power of Observation	Marksmanship Throwing	Marksmanship Firing	Hand-to Hand
SGT	J.C.	Padooka	A	2	8	7	7	5	8	7	7	8
CPL	Rodney	Richfield	R	1	6	5	7	4	6	4	5	1
PFC	Luigi	Bastinelli	A	2	10	10	4	5	5	4	8	6
PFC	Charles	Lawson	R	2	6	5	6	8	10	6	4	7
PFC	Aloysius	Garrity	M	2	7	5	5	5	7	5	10	9
PFC (P)	Lee	Cheng	R	5	5	4	6	6	8	4	3	2
PVT	Walter	Wheelock	R	1	7	5	5	4	4	4	4	3
PVT	Ben	Hoss	R	2	8	9	4	4	9	6	5	4
PVT (G)	Marcot	Marootian	A	4	8	8	4	7	6	9	4	10
PVT	Denny	Dumke	R	2	6	4	3	6	8	5	6	5
FW	Kurt	Reich	A	3	7	7	6	6	7	6	6	9
I/O	Wolfgang	Kleindorf	A	2	7	4	4	5	6	4	7	3
OG	Erich	Allbrecht	R	2	6	6	8	4	5	5	8	4
OG	Hans	Gruber	M	1	7	6	5	9	8	4	9	6
OG (G)	Oskar	Zimmer	A	2	8	9	5	5	6	7	3	7
OG	Ludwig	Schneider	R	1	6	5	4	5	5	4	4	4
OG	Erick	Braun	A	2	10	9	4	4	5	4	4	8
GF (P)	Max	Wagner	R	5	5	5	5	6	6	7	5	5
GF	Klaus	Muller	R	2	9	8	4	4	7	5	5	5
GF	Dieter	Dusel	R	2	6	5	5	6	9	10	9	4

(P) = Plastic Explosives Expert (G) = Carries Garrotte
WEAPONS: A — Automatic Rifle/Machine gun R — Rifle M— Machine gun

Soldier Characteristics. **At the squad level of wargaming, every soldier is very much an individual. This chart from *Computer Ambush* tell you just what each soldier in the game can do, rating his abilities on a 1 (poor) to 10 (good) scale.**

Pfc. Cheng is someone you'll be keeping nearby for a very special service, blowing up heavily defended strongpoints with his pack of plastic explosives. In contrast, there's Pvt. Wheelock, a rifleman with no special talent and a lousy shot, to boot. Pvt. Hoss, big as he is, is not a top soldier either because he lacks aggressiveness. He's not suited for hand-to-hand combat, but his powers of observation indicate he should be a scout or point man.

Pvt. Marootian is a good all-around soldier and the best grenade and hand-to-hand fighter in the squad. Give him extra grenades and a garotte. Pvt. Dumke, the least intelligent of the lot, is a poor to fair rifleman and a grenade thrower good enough to warrant an extra pineapple or two.

As you can see, the human tools you have to work with vary in quality. Each of the ten men in the squad has distintive strengths and shortcomings as the dossiers demonstrate. A very careful reading of these profiles and a little practice with the game will reveal how you can use their human qualities to the best advantage in combat. But when things go wrong—and they will—you'll at least have the consolation of knowing that the German player is facing similar problems with his men and that those problems will probably cost him equally.

We won't go into the German soldiers' dossiers. It is worth noting, however, that the Nazi squad from Feldwebel (sergeant) Kurt Reich right down to Gefreiter (private) Dieter Dusel reflects essentially the same selection of strengths and weaknesses as found in the American squad.

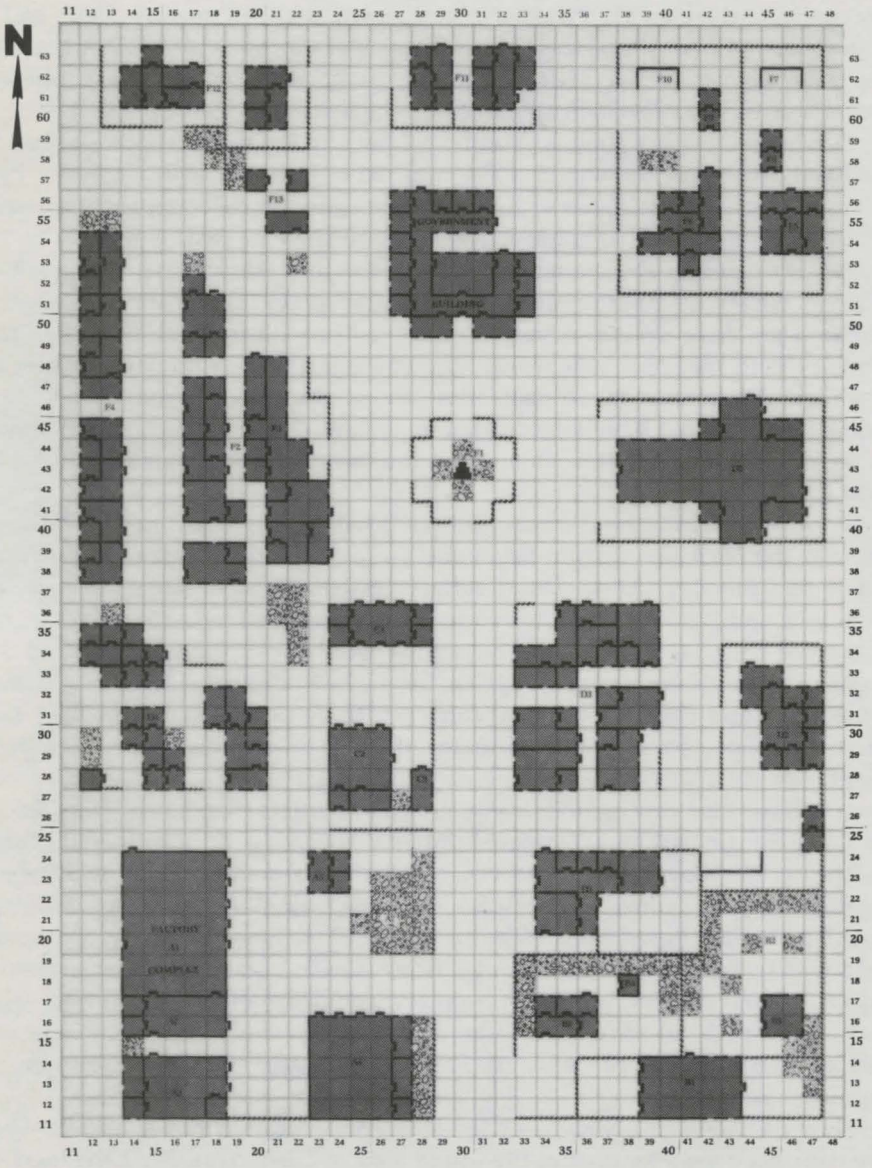
Before we go into combat, a reassuring word about the mechanics of the game. The movement/combat system seems bewildering at first, but with a little study and play experience it turns out to be exceptionally flexible. You start your move by setting the amount of time, in seconds, that you wish to elapse for each soldier during the current turn. Then you decide how your men will use that time period. If you give more orders than a man can execute in the given time, the uncompleted orders will carry over into the next turn.

During the movement period you may choose from a number of different postures (erect, prone), movements (walking, running, crawling, dodging, looking, falling down, and standing up) and actions (sneaking, dropping weapons, getting weapons, loading, firing single bursts, firing area bursts, hand-to-hand combat, throwing grenades, and detonating explosives).

In hand-to-hand combat the men can use their knives, bayonets, and garottes. You'll provide the tactics—and experience the tension of combat—yourself.

Now for the map-board (see pages 72–73). Terrain is not at all like what we have been used to, even at the squad level in *Close Assault*. At the level of the individual infantryman, the terrain really breaks down into three types—terrain that blocks the view and shields you from rifle fire, terrain that offers partial cover, and terrain that offers little or no cover at all.

In the latter group are clear squares (100% visibility) and building interiors

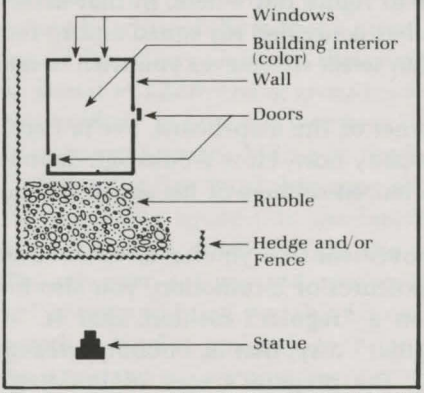


Computer Ambush Map. **This is one of two map cards included in the *Computer Ambush* game package.**

COMPUTER AMBUSH™

from Strategic Simulations Inc.

MAP KEY



The map you see on your computer screen was created with the aid of Darrell Aldrich's Higher Text program.

TERRAIN CHART

TERRAIN TYPE	MAP KEY	VISIBILITY FACTOR	MOVEMENT COST MULTIPLIERS TIME	ENERGY
Wall		0%	Impassable	
Window		25%	5	3
Statue		0%	Impassable	
Door		50%	2	1
Hedge		50%	4	3
Rubble		60%	2	2
Bldg. Interior		80%	1.5	1.5

The energy and time costs expended to cross a terrain feature is calculated by multiplying the movement mode costs by the terrain cost multipliers. *Example 1: To run through a door costs 20 (10 × 2) time points and 3 (3 × 1) energy points. Example 2: To dodge through a window into a rubble square costs 150 (15 × 5 × 2) time points and 90 (15 × 3 × 2) energy points.*

COLUMN	ROW		
		A.	**FACTORY COMPLEX**
16	20	A1.	Main Shop
16	16	A2.	Tool crib/Supervisor's office
16	13	A3.	Misc. work shop
25	14	A4.	Warehouse
23	23	A5.	Office
28	16	A6.	Scrap and junk
27	21	A7.	Raw materials and other useable junk
		B.	**FARM COMPLEX**
41	13	B1.	Barn
45	20	B2.	Small personal crops
35	16	B3.	Farm house
38	18	B4.	Outhouse
45	16	B5.	Tool shed/work house
		C.	**BUS DEPOT COMPLEX**
26	35	C1.	Passenger waiting/boarding area
25	29	C2.	Garage Shop
28	28	C3.	Tool shed Machine shop
		D.	**MISCELLANEOUS**
36	22	D1.	School
45	30	D2.	Hotel Rooming house
36	32	D3.	Small shops
15	31	D4.	Crummy complex of proletarian houses (i.e., workers' homes)
43	43	D5.	Church
30	53	**E.**	**GOVERNMENT BUILDING**
		F.	**MORE MISCELLANEOUS**
30	43	F1.	Statue
19	44	F2.	More small shops
21	45	F3.	Small cafe
13	46	F4.	Light industries and shops
46	55	F5.	Upper class bourgeois home
45	58	F6.	Servants'/Gardener's home
45	62	F7.	Garage
41	55	F8.	Mayor's home
42	60	F9.	Servants' quarters
40	62	F10.	Garage
30	62	F11.	Middle class homes
18	62	F12.	More middle class homes
21	56	F13.	Gas station/garage

SSI

Computer Ambush Map Keys. **The key and terrain chart on the map card accompanying *Computer Ambush* help you identify terrain types and their effects on sighting and movement.**

(80%). Partial cover is offered by windows (25% visibility), doors (50%), hedges (50%), and rubble (60%). In the category of complete cover are walls (0% visibility) and the statue in the central square (0%)—providing it's between you and the Nazis.

In *Computer Ambush* there are five solitaire scenarios and seven two-player games. Let's play *Computer Ambush*'s "NCO Training" scenario (*NCO* stands for noncommissioned officer). For the purposes of this chapter, we're going to revise it slightly by adding more men than in the actual scenario.

In "NCO Training" your job will be to figure out where, in that maze of half-ruined buildings, Feldwebel Reich has concealed his squad and to ferret it out. Each side has four men and you can select whomever you wish to make up your squad.

Our squad starts at the lower left corner of the map-board. We're back in *Combat!*-land with Vic Morrow and company now. How would Sgt. Saunders recon this vilage? How would the experienced soldiers of his squad go about the job?

First, remember all the options for movement that you have. You not only have a selection of upright and prone postures of locomotion, you also have styles of locomotion. You can move in a "regular" fashion, that is, in a straight line. You can move in an "irregular" way, that is, bobbing, weaving, and zigzagging. You can also "sneak," the program's way of building in stealth and caution (at a time penalty) into the moves of your squad.

Now comes the point where you must decide on your tactics. In the "NCO Training" games I've played, the Germans were always in the lower left quadrant; let's assume, in our game, that they'll once again occupy this position. Therefore, our first task is to find locations where four of our squad members can set up bases of fire to sweep the quadrant and pin down any Germans.

For this purpose, let's select the factory building at map coordinates 1620 (building A1). (Note that in the coordinates *1620, 16* refers to the map-board column and *20* to the row.) Fire from the doors on the right of the building can sweep almost all of the lower half of the battleground. Our other base of fire will be the worker's houses at 1628 (D4) and then, if they're clear, the workers' flats at 1928. If we can occupy that building safely, we should be able to set up a crossfire on the same area that the guys in the factory are covering.

That's the plan. Of course, we won't be able to walk right into these locations; the Germans may have other plans.

In the first few moves, we recon the factory complex (buildings A1, A2, and A3). Sgt. Saunders would certainly have his men sneaking most of the time, but we pass the rubble at square 1415 (which makes us more visible to a potential enemy in building A4), a drop to the prone position and a crawl sounds like the Sgt. Saunders way to go. For the rest of the way north to square 1320, we can run upright and irregularly along the building.

It's time to recon building A1, our hoped-for fire base. I'm sure Sgt. Saunders would agree that the wisest first step would be for one of the squad members to lob a grenade into the building while the rest of the squad prepares to fire at any Germans the blast flushes out. Two of the squad members could then run in through the door at 1420, run regularly to one of the doors along the right of the factory facing column 19, drop to the prone position, and fire at any Germans they see.

The rest of the squad should be in column 13, somewhere between rows 20 and 24 by now. They would cross the open squares from 1325 to 1427 at an irregular run, falling to the prone position at square 1428. From there they would fire at any Germans they see through the doors in the building at 1528 (D4) and at 1228. Using grenades would be unadvisable, since they would be just as likely to take out members of our squad at this range as they would be to kill any Germans hiding in the buildings.

Assuming this much has gone off without a hitch, now's the time to move our remaining squad into the building at 1528. Stay on the dirt! Why? Because there's a doorway into the room at 1628 and a direct line of sight through open squares and another door into the room at 1928.

I'm sorry to bring you this far only to drop you off on your own, but that's exactly what I'm going to do. I don't want to give away any of the secrets of the game and we are now uncomfortably near the Germans. Finding them and killing them is up to you.

A few tips on how to kill the Germans, though. Suppose for a moment that the Nazis turn out to be holed up in the factory at 2514 (A4), and that the doors on the north side of the building, facing row 17, are covered by additional Germans in the building at 2323 (A5). How do you get at them?

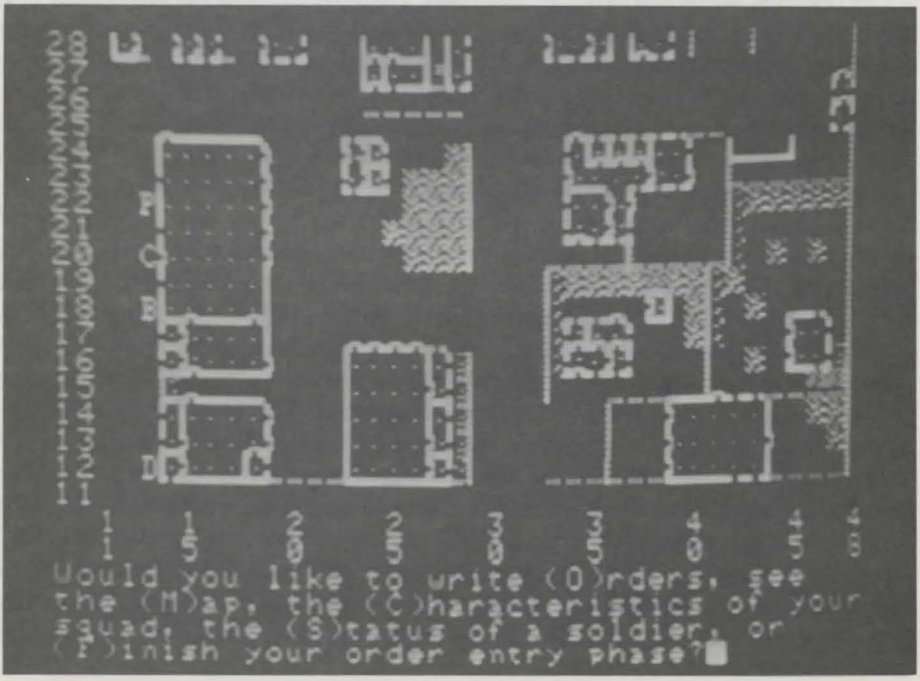
The easy way is to go along the blank wall at row 11, columns 23–28, and plant the plastic explosive there. The explosion will probably kill or wound all the Germans in the building and make "mopping up," as they say in the Spic 'n' Span ads, "a whole lot easier."

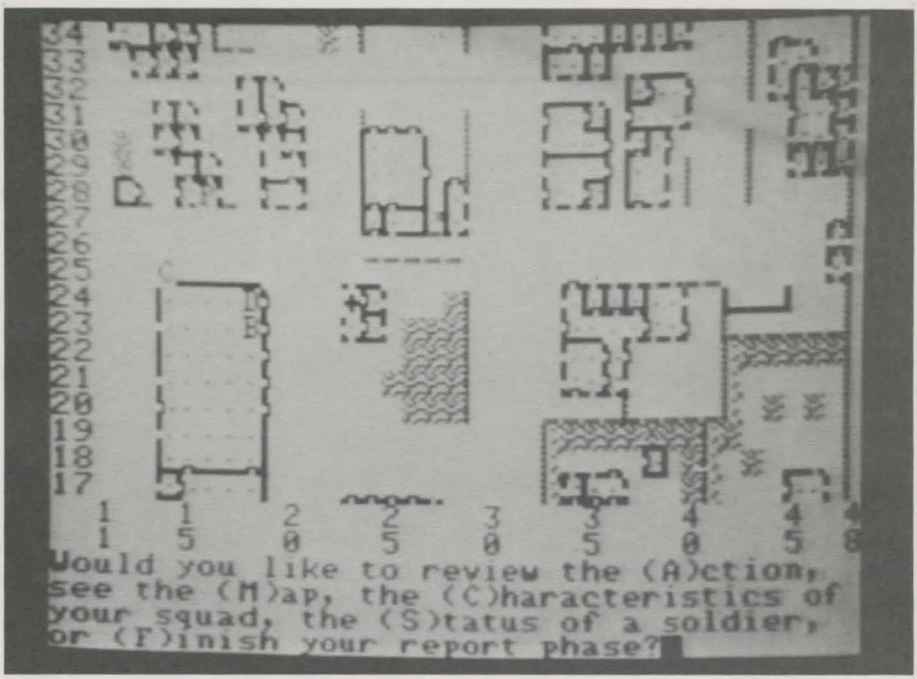
Suppose now that there were Germans in the rubble at 2721. How do you get at them? Well, if we have set up bases of fire at building A1 or at the workers' flats, machine gun and rifle fire would probably take care of most of them. If not, the proper thing to do would be to send in a soldier with grenades. Grenades are also the quick and easy solution to taking out Nazis holed up in buildings where you have access to windows and doors, and can get to them without being picked off by enemy cover fire.

In the event that none of the above methods work, the final recourse is to send in one of the men skilled in hand-to-hand combat to finish the job with a knife or a garotte.

If you've learned anything from this exercise—and I hope you have—it's the importance of finding cover and good fields of fire. The big question you must learn to ask before you move any of your men is, can the enemy soldiers


COMPUTER AMBUSH
(C) 1982 Strategic Simulations Inc.
Press any key to continue.


Would you like to write (O)rders, see
the (M)ap, the (C)haracteristics of your
squad, the (S)tatus of a soldier, or
(F)inish your order entry phase?



Computer Ambush Screen Displays. **Photo A is the *Computer Ambush* title page. In photo B, the starting positions of Dumke, Bastinelli, Cheng, and Padooka are shown along the left wall of the factory building. In photo C, Dumke and Bastinelli have taken out the German in the building at map coordinates 2324. At the same time, Cheng and Padooka are pouring fire into a suspected German position in 1928. Cheng is prone and Padooka is covered by a building at 1628.**

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see him? Cover is the name of the game. Your soldiers must stay behind cover whenever they can, and they have to cover each other with their fire.

As I said in the beginning, it's nothing you couldn't have learned watching Sgt. Saunders and his squad . . .

8 NAVAL WARGAMING

When wargames go to sea, you can forget everything we've told you about tactics and strategy. What counts most of all in a naval wargame is management of resources and a thorough understanding of the capabilities of your ships and planes. Most important of all is luck—because random elements inserted in the program determine whether or not you find your targets and the shots you fire hit their mark.

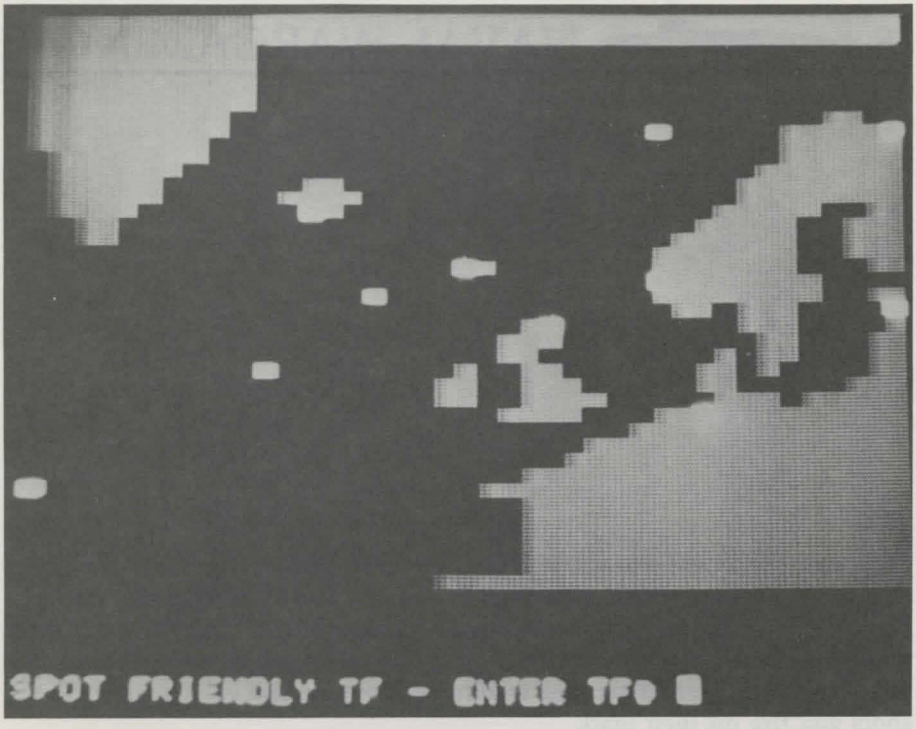
We will separate naval wargames, for the purposes of this discussion, into two basic categories, *campaign* or *"monster" games*, which require 100 or more turns and *operational games*, which feature combats between single ships or between two task forces.

In this chapter we're going to look at the monster games, which means we're going to take a good, long look at the games of SSI's Gary Grigsby. We will go over the structure of his games to discover what decisions, strategies, and tactics you'll need to win.

In the following chapter, we'll take a look at smaller-scale games, like *Pursuit of the Graf Spee*, that recreate single-ship actions of World War II. We'll also discuss *Broadsides*, which brings back the days of the sail.

MONSTER GAMES

Gary Grigsby has established himself as the master designer of monster games. His first three games for SSI, *Guadalcanal Campaign* (the World War II Solomon Islands campaign), *Bomb Alley* (the German campaign to capture Malta), and *North Atlantic '86* (World War III) are among the most complex games in any genre.

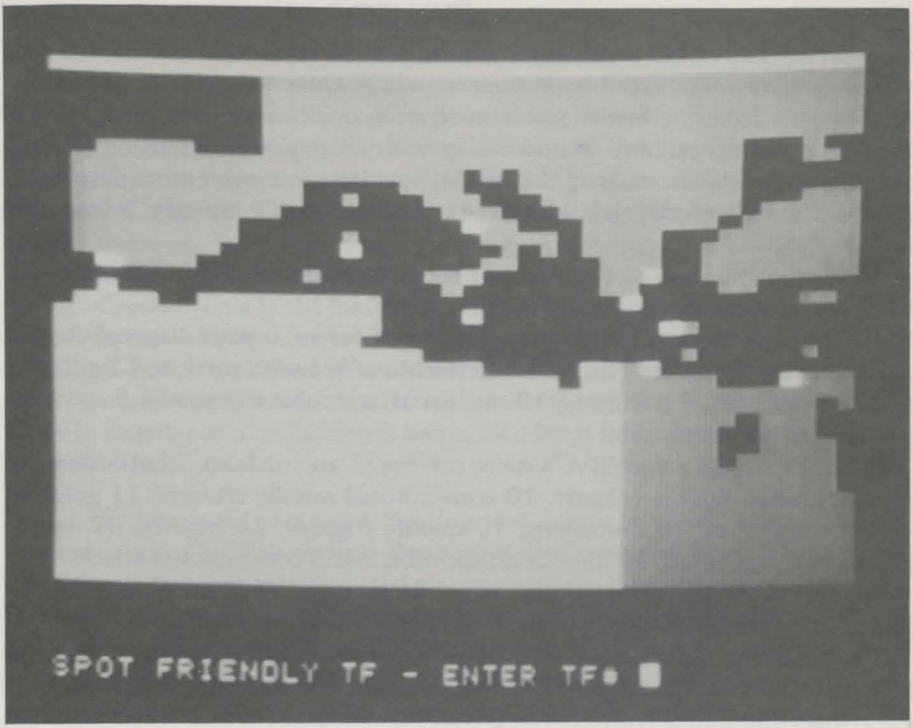


Grigsby Games. **Gary Grigsby's games pack so much ship and weapon data onto one disk that there's hardly any room left for graphics, as the low-res maps for *North Atlantic '86* (photo A) and *Bomb Alley* (photo B) demonstrate.**

Grigsby's games are created on a vast scale. His simulations include virtually every ship that actually fought in the real-life battles and, in the case of *North Atlantic '86*, every ship that is likely to participate. In the 294-turn, 80-hour main campaign scenario of *Gurdalcanal Campaign*, for example, Grigsby simulated no less than 138 Allied warships, submarines, and transports and 168 Japanese vessels of all types. Grigsby meticulously recreated every ship with painstaking attention to each detail of armament, speed, troop, cargo and aircraft capacity, and firepower.

Grigsby's attention to detail also extends to the performance characteristics of the aircraft and missiles in his games. Just as in the Falklands War, the ship-to-ship missiles of *North Atlantic '86* are deadly when they find their mark. His Japanese Zeros in Guadalcanal and his Me-109s in *Bomb Alley* are formidable adversaries in the air.

It's only in recreating land warfare that this wealth of detail lags. Apparently, Grigsby is content with allowing the players to decide the numbers of



attacking troops and the intensity of the attack, leaving the resolution of the battles to a mathematical formula in the program that calculates the odds and assigns a predictable result. It is not fair to judge this as a major shortcoming because, after all, these are supposed to be naval wargames.

To understand how these games work and what you need to do to win, we've selected the most complex of Grigsby's simulations to take apart and examine, *North Atlantic '86*.

A GRIM SCENARIO

It's 1986 and the battlefields of Europe are silent now. The only NATO troops still on European soil are either the dead or prisoners of war of the victorious Warsaw Pact armies. From the northern tip of the Scandinavian peninsula to Antwerp in Belgium, the European coast is Red, with powerful Soviet air bases established at Bergen in Norway and Hamburg in Germany.

The French have dropped out of the battle, having spared themselves from their third invasion in a century by declaring themselves neutral. Only the British hold out. The Royal Navy has been moved out of reach of the Russian

air fleet and is now based in North America. Strong air and land forces, the remnant of the NATO continental armies, remain in Britain.

The Soviets are not resting on their laurels. Russian submarines and Backfire bombers have the British in a vise of steel. Intelligence has learned that a big Soviet air/sea buildup is under way with an object of capturing Iceland and the Faroe Islands, making the British position seem even more desperate, since a Russian victory would even further isolate the already beleagured British.

That's the situation as you take supreme command of all NATO forces on land, sea, and air.

As the game begins, you have mighty naval forces at your disposal. At sea you have task forces that include 2 conventionally fueled carriers, 13 guided-missile destroyers, 11 frigates, 10 nuclear attack submarines, and 5 conventionally fueled attack subs.

In North America you have 4 more carriers (2 are nuclear), 2 battleships, 4 nuclear guided-missile cruisers, 10 conventional missile cruisers, 11 guided-missile destroyers, 10 destroyers, 10 missile frigates, 24 frigates, 32 transports of various types, 16 nuclear attack subs, and 5 conventional attack subs.

All this amounts to a powerful naval force at the disposal of the NATO player. It's certainly a match for the navy the Soviet player has.

The Russians have no big aircraft carrier to match the NATO force; the best they have are the Kiev and the Minsk, hybrids combining a guided-missile cruiser and a small carrier. The Soviet Navy is also far inferior in numbers of frigates and destroyers. The Russians have no battleships to match the U.S. battlewagons, which can launch a cloud of Tomahawk surface-to-surface missiles and which mount conventional naval guns of awesome firepower.

What the Russians *do* have are hundreds of planes and submarines. Massive air forces shelter in Hamburg and Bergen. Badger and Backfire bombers can range out far over the Atlantic, fire their air-to-surface missiles—60, 70, 80 at a time—from over the horizon, and smash a NATO task force in perfect safety.

VICTORY CONDITIONS

Your job as the NATO player is to run the gauntlet of Soviet air and sea forces to keep Britain supplied, and to retain control (or recapture, as events dictate) of the Faroes and Iceland.

Victory points are awarded to the NATO player for keeping the island of Scapa Flow in supply, maintaining morale, controlling Iceland and the Faroe Islands, and sinking Soviet ships.

The Soviet player is awarded points for reducing NATO morale to zero, controlling the Faroes or Iceland, sinking enemy ships, and preventing supplies from reaching Scapa Flow.

BUILDING TASK FORCES

For you to win as the NATO player, you first have to carefully plan the organization of your various task forces, making the most of your strengths in order to counter the Russian submarine and missile threats effectively enough to get troops and supplies to the other side of the ocean.

In *North Atlantic '86*, as in other Grigsby naval games, you have six types of task forces:

1. *Combat*. This is the basic fighting unit. In *North Atlantic '86*, combat task forces are based around a carrier and its air group. The idea is not to put together a collection of ships with great surface firepower, but to assemble a force packing effective offensive power in missiles and torpedoes. It has to be a force that can kill far over the horizon.

2. *Bombardment*. This is a fighting task force. In North Atlantic, such a force is built around the battleships Iowa and New Jersey. This is a task force that's based on conventional gun firepower. The force's mission is to pound enemy troops and supplies on shore. If the U.S. Navy's refurbished battleships can perform the way they do in this simulation, the second age of Dreadnoughts may be upon us.

3. *Undersea*. This is the exclusive realm of the submarine. The Russians have more of 'em, but ours are better, as we shall see. The mission of the sub is simple: sink ships.

4. *Transport*. Cargo ships are so vital to the winning of the game for both sides (but especially for the NATO player), that the ships in the other three categories of task forces are expendable in comparison. Without the cargo ships, you can't win. Protecting them is at the heart of the game.

5. *Evacuation*. When the enemy threatens to overwhelm you on land in the Faroes or Iceland, an evacuation task force is what you need to get your men off safely. Make sure you have enough cargo ships for all the troops you plan to rescue, and enough escort ships to protect them. Once the troops are aboard ship, the task force designation automatically switches to *transport*.

6. *Return*. This is a designation for bombardment task forces that have aborted their missions because of surface combat. The mission of a return force is considered completed and the force ready to return to port.

Having defined the task forces by type, it's time to take another look at the combat, undersea, transport, and bombardment tast forces in *North Atalantic '86* to see what sort of ships you should select for each force, based on their separate and specialized missions.

TRANSPORT TASK FORCES

Let's assume that you want to begin the game by reinforcing Iceland with troops and supplies. You will construct a transport force to perform that mission by loading as many troops as you can into all the available cargo ships that allow troop transport. Some ships allow only cargo transport, but these ships are listed after those which can transport troops and supplies. Simply keep filling your transport ships with troops until you're prompted to stop.

A moment ago we observed that the transports were the heart of the game, that they were the most important ships to protect. We also made the very important observation that you can't win without them. If your transports are wiped out en route to the battle front you can't get the victory points you need to win, which are awarded for holding onto Iceland and the Faroes and keeping Scapa Flow in supply. There is an automatic ship-replacement feature working for the NATO player, but you'll still be getting troops and cargo to their destination too slowly and in too few numbers, despite the automatic replacement of ships (the replacements have smaller cargo and troop capacity) in America. The transports you start with *must* get through.

In keeping with this principle, the next class of ships you should include in the task force are cruisers, frigates, and destroyers with a high missile-defense factor. At the back of the player's manual you'll find a table entitled "Ship Data"; among the figures representing each ship's speed, cargo capacity, defense ability, and main and secondary guns will be a rating for missile defense (MD). The top missile-defense ratings for ships qualified to join a transport task force, except batleships, are in the range of 30–35.

Our advice is to take from one-third to one-half of all available ships with that 30–35 missile-defense rating (these are, again, assorted cruisers, frigates, and destroyers) and attach them to your transport forces. Take a similar number of ships with MD ratings of up to 20 or so. (British frigates are a good choice because they have MD ratings of 12 or less.) These ships are what you might call "missile fodder." Their firepower contribution to the task force's missile defense is minimal, but they make a wonderful alternate target for incoming Soviet anti-ship missiles, since missile targets appear to be assigned somewhat randomly. The more warships you have compared to transports, the lower the odds of a transport being hit.

At first, you'll be upset to see these ships with such elegant, classical names as *Naiad, Euralyus, Sirius,* and *Penelope* being picked off by that inevitable

cloud of Soviet anti-ship missiles. On the other hand, when you compare the negligible number of victory points lost by the sinking of your frigates and destroyers, with the numbers of troops and cargo you can still deliver to the land battle, you'll feel a strange sensation of relief every time a "hit" is scored on an escort and not on a transport.

To underscore what a tragedy it is when you lose a transport, consider the consequences of losing the *Tarawa, Nassau, Guam,* or the *Inchon.* If the Russians were to sink those four ships, they would take out of the game a full 72 companies of infantry, enough to wreck your chances of taking or holding Iceland or the Faroes. Compared to a loss like this, you'll never miss the frigates and destroyers of your "missile fodder" escort.

To summarize, pack your transport task forces with as much "missile fodder" destroyers and frigates as you can without leaving your carrier task forces naked. Give the Russians lots of extra noncargo ship targets in your transport force to sink.

COMBAT (CARRIER) TASK FORCES

Assume for a moment that you have one nuclear carrier and one conventional aircraft carrier available for sevice right away. These can be the nuclei of two combat task forces. These task forces have the same mission as the escorts of your transport force, to protect the cargo ships. They do so in a different way.

First, the carriers' early-warning radar aircraft (deployed automatically without your having to remember to do so) and combat patrols provide early warning of incoming enemy aircraft and missiles. Since this function can be extended to all friendly forces within the carrier's umbrella, transport task forces in the area will automatically be at a higher state of readiness to defend themselves.

Next, the carriers provide air cover for the convoys and for all other task forces in their immediate area. This is the most important function of any ship in this game, with the exception of the transports. Planes launched from the carriers fly what are called *combat air patrols* (CAPs). All planes on long-range CAP protect not only the carrier task force, but also the forces within the range of the aircraft. The short-range CAP only protects the carrier task force itself.

The rule is to allocate planes to the two types of CAP carefully. You must have enough to cover the transport task force you're sheltering, but at the same time, you will also need enough planes to shoot down missiles aimed at the carriers and their escorts. Remember that after the transports, the carriers are the most important ships in the game. They are not, like some of the transport escorts, "missile fodder." Keep the carriers floating.

When selecting ships for combat task forces, keep speed in mind. Your two carriers can cruise at 30 knots maximum, and you will need plenty of fast escorts with a high missile-defense rating to provide protection for the two carrier task forces and escort the battleships. Among the cruisers you'll notice that all have an MD rating of 30. Now look for the ones with secondary guns (the "AA" column on the "Ship Data" table in the manual) listed at one or zero. Pick from those only. The ones with the larger secondary guns should be assigned to your bombardment task forces to fire shells at Soviets on shore.

The choice of frigates and destroyers is simple. Select the fastest of the ships remaining after you have provided escorts for your transport forces. One of the big advantages of the combat task forces built around carriers is that they can move so fast. British carrier forces move at 25 knots and U.S. carriers speed at 30. This ability to move fast—and outrace submarine wolfpacks—is a benefit you should not squander in order to keep some slow-moving, inconsequential escorts in your combat task force.

BOMBARDMENT TASK FORCES

The mission of a bombardment task force is simple: Shell enemy troops and installations on shore. Gary Grigsby has assigned suppression points for each class of naval gun firing on ground installations. One point equals one infantry company suppressed and therefore not calculated in when the results of land battle are figured. The main guns of cruisers are worth one point each. A batleship's main guns are worth three points each, and each battlewagon packs nine big guns and twelve secondary guns each. That's 39 companies of infantry suppressed per battleship.

The implications of this suppression system should be obvious when you select ships for the bombardment force. First, get the battleships *Iowa* and *New Jersey* into the act. Next, pick your six big-gun cruisers (crusisers with AA ratings of two). A task force with two battleships and all six big-gun crusiers is able to suppress up to 90 companies of infantry and will raise the firepower rating of friendly forces by the equivalent of 45 companies when the combat results are calculated.

In addition to these forces, throw in a few "missile fodder" frigates and destroyers, to give incoming missiles something to hit besides your valuable big-gun ships. Chances are that the Soviet player, knowing how important it is to concentrate on your transports and carriers, wil concentrate on attacking them, rather than your bombardment force. In solitaire play I found that it was frequently safe to leave the bombardment groups right off the shore of enemy-occupied Iceland, continuously bombarding the Soviet troops. The Soviet aircraft based on Iceland generally ignored the bombardment force and instead continued the hunt for my transports and carriers (don't count on this when playing a human opponent!).

UNDERSEA TASK FORCES

The two important rules for putting together task forces of submarines are simple: Do *not* mix nuclear subs with non-nuclear subs in the same task force, and do *not* mix subs with different maximum speeds in the same force.

American nuclear subs will travel at a maximum of 30 or 35 knots. This gives you a handy criterion for the assembly of two wolf packs. Three of the British nukes travel at 30 knots and can either comprise their own wolf pack or join a U.S. hunter group, but the three British nukes which top off at 25 knots must wander alone. NATO's non-nuclear subs travel at a maximum of 15 knots. They must not be mixed with the nukes because they will only slow them down.

NOTES FOR THE SOVIET PLAYER

So far, our discussion of *North Atlantic '86* has focused on the NATO player, but when you play a human opponent, *somebody* has to be the Soviets. So let's take a look at the ships and weapons available to you, as the Soviet player.

To begin with, your transports are important, but not as crucial to you as they are to the NATO player. If the NATO player sinks your surface tranports, their tasks can be taken over in part by your enormous fleet of Cub transport planes. Just don't lose all of your cargo ships; that's a setback from which you cannot recover.

You should also be aware that the Soviet Navy lacks battleships like those of NATO which combine big-gun firepower with heavy missile defenses and the ability to absorb plenty of punishment while remaining operational.

The Soviet side has no battlewagons, but it *does* have two heavy cruisers, the *Nevskiy* and the *Kutuzov.* These are ships whose total bombardment firepower (in this game) is actually greater than that of the *Iowa* or *New Jersey.* Problem is, the Russian ships can absorb only one-forth of the damage that the U.S. battleships can and have no missile defenses at all.

Even so, *Kutuzov* and *Nevskiy* make a fine core around which you can build a bombardment group. There are plenty of big-gun cruisers with which you can pack this group—even the Russian aircraft carriers *Minsk* and *Kiev* pack more conventional, non-missile naval firepower than any U.S. or British ship aside from the battleships.

For your Soviet bombardment group, pick mostly those ships with missile defense (MD) ratings from 0–17 and then a handful with moderate to high MD ratings (40–94) so your bombardment group isn't defenseless. Pick the escorts for the bombardment task forces from what's left after you've apportioned escorts for the transports and the carriers.

Speaking of carriers, *Kiev* and *Minsk* aren't much to write home about. In my first four games, my NATO subs sank both of the carriers before they could launch a single air strike. In the single instance in which they were able to launch their Forger jump jets (a sad parody of NATO's Harriers) the air groups from USS *Vinson* and USS *Kennedy* tore them to shreds.

You can still get good value for the *Kiev* and *Minsk* when there aren't any hostile carriers around and when you can use the jump jets in missions to support ground troops. In addition, the Forgers make mincemeat out of inadequately protected transport convoys, i.e., transports not shielded by a friendly carrier's long-range CAP.

Submarines are the Soviet player's great strength. The Soviet undersurface fleet outnumbers NATO decisively. Keeping in mind the rule not to mix nuclear with non-nuclear boats or subs of different maximum speeds, you should keep as many subs at sea as you can. In solitaire play, the Soviet side (managed by the computer) virtually carpets the sea with Russian wolf packs and gets good results knocking off transports, too.

STRATEGIES

As you must have gathered by now, I consider the first element of a winning strategy in *North Atlantic '86* to be preserving your transport ships in order to land troops on Iceland and the Faroes and to carry supplies to Scapa Flow. This is a much more urgent priority for the NATO side, which usually has less than half of the Soviet total of air transports that can be used as a backup for the surface supply ships.

In discussing how to set up a transport task force, we've already covered one important method of keeping the transports safe—maintaining a heavy escort of missile-firing ships and keeping a few less-useful frigates and destroyers around to draw some of the hostile fire.

The Russian counter to this strategy is to fire as many missiles as possible. A certain proportion will target themselves on the escorts, and the rest on the transports. The larger the number of missiles fired, the larger the number targeted on the transports and the higher proportion that actually hit—and one hit is usually good enough to sink any NATO target.

The NATO player can improve the chances of survival for his transports by keeping the transport task forces within the long-range CAP radius of a combat task force. All friendly ships within a carrier's long-range CAP will be protected by the CAP planes, which will shoot down at least some of the incoming missiles. I like to keep my transports within two squares of a combat force; that way, anything that sights my transports will be sighted by my carriers.

Another threat to the supply convoys are Russian submarine wolf packs. The Russian player has many times more subs than the NATO side, and they

should be used in wolf packs to intercept the convoys in mid-Atlantic and/or close to their destinations: Iceland, Scapa Flow, and the Faroes.

The NATO player can defend against wolf packs by having a strong hunter force of your own submarines traveling with the convoy. My experience with *North Atlantic '86* shows that the NATO submarines enjoy a real advantage over the Soviets and that in a head-to-head confrontation, it's the NATO sub that most often comes out the winner.

Another submarine tactic that works is placing subs where the other side's surface ships have to pass. A NATO submarine force stationed in the straits between Denmark and Sweden and a similar force waiting off Murmansk will insure that the Russians will have to run a gauntlet to get out into the Atlantic. In this game, though not in all of Grigsby's simulations, submarines have a detection and combat range of two squares from the point where the subs are actually located (simulating electronic detection devices and modern weaponry). A NATO submarine force in these maritime bottlenecks will have a hard time missing any large Russian forces attempting to run its blockade.

Using aircraft effectively is critical for both sides. A player is well-advised to have the reference charts provided with the game close at hand to look up the ranges of the air-to-surface missiles being used. The Russian player should be aware that the anti-ship missiles carried by his Backfire and Badger bombers have a range of 300 miles. There's no reason, therefore, why they should risk interception with U.S. carrier planes by coming any closer than 250 miles to a NATO convoy. NATO air-to-surface missiles have nowhere near as long a range as the Soviets', which means that some attacks have to be made from closer in to the Warsaw Pact target ships. On the other hand, given the fact that the Russian carrier force is ineffective at best, it's not as dangerous for NATO planes to come closer in to their targets as it is for the Soviets.

Transport aircraft can play a key role. Russian transport planes take a little pressure off the surface transports by providing a backup method of getting troops and supplies to the battlefront. The NATO air transports duplicate this function, but to a lesser extent. The loss of NATO transport planes can hurt the Allies as badly as the sinking of cargo ships—especially when the planes are loaded with troops.

Perhaps the last and most important lesson about strategy is the most simple, the most obvious: Learn to anticipate where the enemy must go, and be there to greet him with an unpleasant surprise.

For example, if you're the Soviet player and you happen to be sitting pretty on Iceland and the Faroe Islands, you know that the NATO player will be on his way as soon as possible to take back one or the other objective. Make sure that his path is strewn with submarine wolf packs. Have Badger and Backfire bombers based close enough to the action to hit the oncoming task forces on every move. Position your carriers where their planes can make missile air strikes without risking reciprocal strikes from the other side (you can do this

NORTH ATLANTIC '86™
REFERENCE CHARTS

DAMAGE POINTS

Light (AA) gun	.5	Harpoon	4	SS-N-3	12
CL Main gun	1	Tomahawk	7	SS-N-7	9
BB Main gun	7	AS-7	7	SS-N-12	9
Torpedo	8	Exocet	7	SS-N-19	8
Bomb	8	Walleye	12	AS-6	15
SAM	2	SS-N-2C	5	SS-N-22	6

DOGFIGHT RATINGS

TORNADO	4	INTRUDER	1	BACKFIRE	1
FALCON	5	HARRIER	3	BADGER	1
TOMCAT	4	FORGER	2	CUB	1
EAGLE	5	FLOGGER	4	STARLIFTER	1
CORSAIR	2	FENCER	2		

TF MISSION ENDURANCE

Mission	Endurance
C — Combat Patrol	60 turns (30 days)
B — Bombardment	60 turns
T — Transport	60 turns
E — Evacuation	60 turns
U — Submarine	90 turns
R — Return	N/A

BOMBER ACCURACY/ RADAR CAPABILITY

TORNADO	14/9	CORSAIR	7/5	FLOGGER	1/4
FALCON	6/4	INTRUDER	10/8	FENCER	9/7
TOMCAT	10/8	HARRIER	6/2	BACKFIRE	5/5
EAGLE	10/6	FORGER	3/1	BADGER	3/3

ASW MISSILE ACCURACY

ASROC	4	FRAS-1	4
SUBROC	4	SS-N-16	4
IKARA	3	SS-N-14	3

ANTI-SHIP MISSILE ACCURACY

HARPOON	9*	SS-N-7	7*	SS-N-12	6
TOMAHAWK	9*	SS-N-2C	5	SS-N-19	7
EXOCET	9*	SS-N-3	4	AS-6	5*
WALLEYE	7	SS-N-22	7	AS-7	7

*Indicates surface-skimming

RANGES OF AIRCRAFT & THEIR WEAPONS

AIRCRAFT		AIRCRAFT RANGE	WEAPON SYSTEM	SYSTEM RANGE
Tornado	-ADV	1200	AMRAAM	150*
Falcon	-F16	900	Sidewinder	10
Eagle	-F15	1000	AMRAAM	150*
Tomcat	-F14	1000	Phoenix	300*
Corsair	-A7E	600	Walleye	50
Intruder	-A6E	800	Harpoon	110
Harrier	-AV8	400	Sidewinder	10
Forger	-YAK36	300	Aphid	10
Flogger	-MIG23	1000	Apex	150*
Fencer	-SU24	1200	A-7	10
Backfire	-TU22M	2500	A-6	300
Badger	-TU16	1800	A-6	300
Cub	-AN12	2500	none	—
Starlifter	-C141	2500	none	—

*100 added to range of long-range AAMs to aid in calculating interception range.

AVG./MAX. INTERCEPTION RANGE

Long-Range CAP

		Missile + EW	Missile No EW	Dogfight + EW	Dogfight No EW
TORNADO	**-ADV**	320/440	64/70	145/290	31/62
FALCON	**-F16**	NM	NM	115/230	29/58
TOMCAT	**-F14**	450/550	70/75	125/250	30/60
EAGLE	**-F15**	300/400	63/68	125/250	30/60
HARRIER	**-AV8**	NM	NM	65/130	27/54
FORGER	**-Y36**	NM	NM	55/110	26/53
FLOGGER	**-M23**	300/400	63/68	125/250	30/60

Normal CAP

		Missile + EW	Missile No EW	Dogfight + EW	Dogfight No EW
TORNADO	**-ADV**	110/200	25/50	35/70	25/50
FALCON	**-F16**	NM	NM	35/70	25/50
TOMCAT	**-F14**	160/300	27/55	35/70	25/50
EAGLE	**-F15**	110/200	25/50	35/70	25/50
HARRIER	**-AV8**	NM	NM	35/70	25/50
FORGER	**-Y36**	NM	NM	35/70	25/50
FLOGGER	**-M23**	110/200	25/50	35/70	25/50

+ EW = Successful Early Warning
No EW = Unsuccessful Early Warning
NM = Aircraft does not carry long-range missile

STRATEGIC SIMULATIONS INC

North Atlantic Data. **The *North Atlantic '86* game is a very complex combination of weapon, ship, and aircraft capabilities, as reflected in the reference chart supplied with the game.**

thanks to the superior standoff range of your missiles).

By now you get the idea. After you've honed your skills playing the computer, you'll find that the transparent stratagems of your human opponents are surprisingly easy to counter. Thinking logically, putting yourself in the position of the other player and understanding what he has to do to earn victory points, you can learn to accurately predict where his next blow must fall, and to prepare particularly nasty surprises for him.

Though we've been concentrating on *North Atlantic '86*, the main principles we've discussed are in a general way applicable to the other two Grigsby games, *Guadalcanal Campaign* and *Bomb Alley*. Let's recap these strategies:

1. *Protect your transports.* Whether you're the Japanese attempting to reinforce Guadalcanal or the British desperately attempting to supply Malta, you can't get the bullets, beans, or gasoline to the battlefront without your transport ships. (The nice thing about these World War II games is, no air-to-surface missiles to worry about . . . Just Stukas, Zeros, U-boats, etc.) Just make sure that you have an adequate number of battleships, cruisers (especially anti-aircraft cruisers), and destroyers protecting your helpless little lambs.

2. *Protect the carriers.* In *Guadalcanal Campaign*, if you lose your carriers, you lose the game. They are much more important than in *North Atlantic '86*. The important thing to do is to organize your air strikes carefully, so you don't have masses of planes on deck, fueled and bombed up and ready to go, when the enemy dive bombers appear overhead. Assign adequate numbers of planes to short- and long-range CAP, and have lots of escort ships in each carrier task force.

   Incidentally, the World War II games have more plane-to-plane combat because there are no missiles. Almost everywhere you see the term *missile* used in our description of *North Atlantic '86*, you can substitute *aircraft*. In World War II games, in order to hit a target on sea or in the air, your planes have to do it "in person," within a few hundred feet of the target, where they stand a greater chance of being shot down.

3. *Use submarines lavishly.* With every submarine you send to sea, in all three games, no matter what side you're on, you increase your chances of victory. Sending a maximum number of subs to sea simply increases the odds that your subs will find and sink a really worthwhile ship.

   The success of subs in sighting targets and in hitting them appears to be governed largely by random factors, though in the Gua-

dalcanal and *Bomb Alley* games, and for the Soviet subs in North Atlantic, the frequency of successful sub attacks is not overly high. This may be the result of deliberate progamming or just the way the currents of luck flowed in the games I've played . . .

If nothing else, having lots of subs scattered around the board will increase your chances of spotting an enemy task force, allowing you to launch more efficient instruments of destruction at it.

4. *Be where the enemy has to go and be there in strength.* The object of each of these games is to hold onto a particular piece of real estate. The requirements for victory make the enemy's moves predictable to a certain extent, more so when the other guy has to be quick about invading your territory or resupplying a beleaguered garrison.

Anticipate the best move of your opponent. It's surprisingly easy to do so because the strategic requirements and geography of these games limits the choices that the players have. Put yourself in the other player's shoes. Then be there, at his objective, to greet him when he arrives. Make sure that your welcoming committee contains plenty of subs, big-gun (or multi-missile) surface ships, and strong air support.

We have just examined one of the most complex monster games around. In the next chapter we'll change our focus from fleets to single ships as we discuss operational naval games.

9 SHIP-TO-SHIP FIGHTS

In 1939 and 1941 naval battles took place that did more than just change history; they created legends which endure to this day.

It was in the fall of 1939 that the Royal Navy, supported by elements of the French Navy, chased the German pocket-battleship *Graf Spee* from pillar to post over the waters of the South Atlantic. It was and is a campaign that inspires the imaginations of all who hear the tale.

The *Graf Spee* was virtually alone in the South Atlantic, supported only by an oiler—the notorious *Altmark*—which it would meet at prearranged rendezvous points to pick up supplies and fuel and to drop off prisoners from the Allied merchantmen she captured and sank. At one point, the Spee would be reported operating off the West African coast, next in the coastal waters of South America.

Where would the *Graf Spee* strike next? The Falklands? Africa? The Cape of Good Hope? The Indian Ocean? Local British naval commanders and the First Lord of the Admiralty, Winston Churchill, awaited the latest reports with equal anxiety as they attempted to second-guess Kapitain Hans Langdorf's next moves.

FINDING A NEEDLE IN A HAYSTACK

History tells us that the British succeeded in out-guessing Langsdorf. A force of three British cruisers fought a battle with the *Graf Spee* in the estuary of the River Plate off Uruguay. The Spee easily outgunned the opposition. Her massive shells having all but wrecked one cruiser, HMS *Exeter, Graf Spee* should have had no trouble either fighting or running clear of the remaining

British ships. On the other hand, the *Graf Spee* suffered superstructure damage which, though it did not threaten the survival of the ship, convinced Langsdorf that he had to seek the protection of the neutral waters of Montevideo harbor. Thus, with one of the three outclassed British cruisers a floating wreck and another, HMS *Ajax,* severely crippled and barely able to attack—in short, with the battle all but won—Langsdorf unwisely retreated.

Despite the strong pro-Nazi sentiments of many Latin Americans, in and out of government/military circles, the reception the *Graf Spee* got in Uruguay was something less than one of open-handed, sympathetic generosity. The Germans were given only 72 hours to get out of town. While Langsdorf sweated out the deadline and cabled Berlin for instructions, the British were cleverly creating the impression that an entire battle fleet awaited the Spee just over the horizon.

In fact, the British Navy had been spread all over the map in their search for the *Graf Spee.* Help was on the way to the beleaguered little cruisers keeping watch on Montevideo, but if Langsdorf had promptly decided to fight it out with the enemy, or if he had sortied *Graf Spee* in the darkness, she might well have fought her way clear of her tormentors. As it was, the top Nazis in Berlin and Langsdorf on the scene were convinced that the *Graf Spee* was pinned down by an overwhelming enemy force. Hitler issued the order to scuttle the *Graf Spee* (*scuttling* is the deliberate sinking of a naval vessel by its own crew), which Langsdorf did just outside Uruguay's territorial waters. Langsdorf later committed suicide, a gallant sailor, but an unlucky and unwise commander.

In late May of 1941, with a net of U-boats already intercepting massive numbers of ships laden with supplies for Britain, the Admiralty's worst nightmare was realized. Reliable intelligence revealed that the enormously powerful Nazi pocket-battleship *Bismarck* had broken out of the Baltic Sea into the North Sea, presumably en route to the North Atlantic where it could attack and break up Allied convoys with impunity, beyond the range of the land-based RAF or Royal Canadian Air Force.

The British hastily covered all the exits from the North Sea into the Atlantic. In the Denmark Strait, between Greenland and Iceland, the patrolling battleships HMS *Hood* and HMS *Prince of Wales* finally encountered the *Bismarck* in company with the heavy cruiser *Prinz Eugen,* heading for the North Atlantic.

The two British ships should have been a match for the *Bismarck,* but the battle ended only scant minutes after the first salvos were exchanged. A plunging shot from the *Bismarck* penetrated *Hood's* decks and exploded in an ammunition magazine. Mighty explosions literally tore the *Hood* to shreds and sent enormous chunks of its superstructure hundreds of feet in the air, borne on pillars of bright flame. In an instant the *Hood* and its crew had simply ceased to exist.

Catching the *Bismarck* and avenging the *Hood* took most of the available resources of ships and men available to the Royal Navy in the North Atlantic—and a lot of good luck. Just as the *Bismarck* was about to make its escape from the persuing British to the umbrella of German air cover based in France, a torpedo attack by ancient-looking Swordfish biplanes from the carrier HMS *Ark Royal* damaged *Bismarck*'s rudder. The hounds closed in and *Bismarck* was destroyed by the vengeful British.

These are the stories as they stand, and they have become sea epics. Yet all could have been different if only a few of the breaks had gone the other way. What if the British had guessed wrong about *Graf Spee*'s intentions and had not been covering the River Plate estuary? What if the *Hood* had not blown up? What if the *Bismarck*'s rudder had not been jammed by that one lucky torpedo?

That the breaks went the way of the British is probably the result of their desire to see to it that all that could possibly be done to intercept their enemies *was* done. They improvised techniques to seek out and destroy their enemies that worked very well in these two crises.

These two campaigns are the subjects of *North Atlantic Convoy Raider*, published by Avalon Hill, and *Pursuit of the Graf Spee* and *Computer Bismarck*, both published by SSI. These games simulate a very specialized naval situation, the search by a powerful fleet of battleships, cruisers, destroyers, and aircraft carriers for only one or two powerful enemy ships in an expanse of several thousand square miles of water.

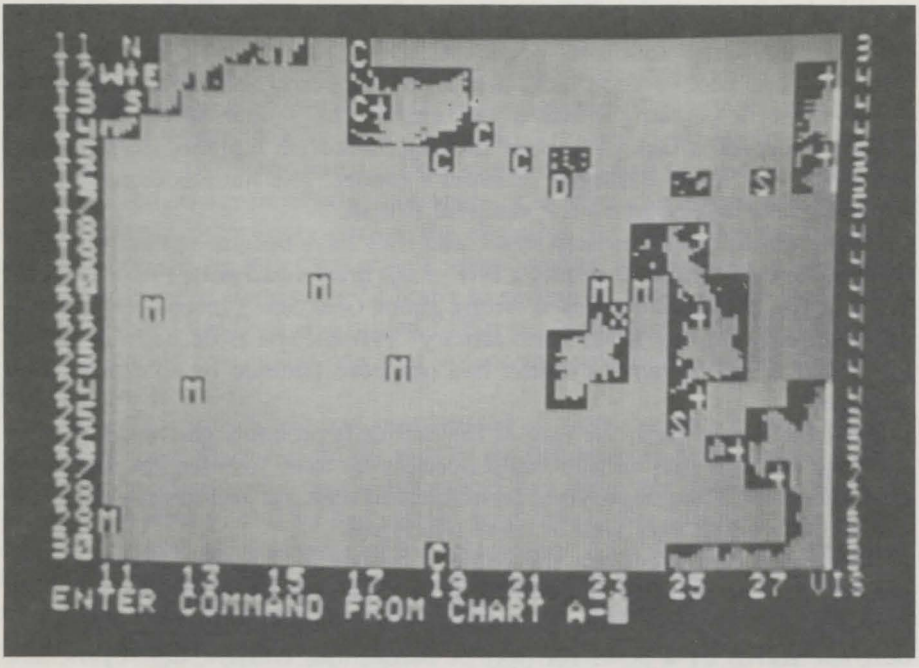
We'll look first at *Pursuit of the Graf Spee* in some depth. We'll see how the British can reduce the odds against their finding the German ship, and we'll offer hints to the German player for keeping the Spee afloat. Since *Computer Bismark* is a similar game, we'll glance at it as well.

Lastly, we'll briefly examine single-ship tactics as they apply to a very different game, simulating the age of sail, called *Broadsides*.

BRITISH TACTICS: SEARCHING FOR THE *GRAF SPEE*

There are probably many things more fun to do than sitting for an hour staring at a computer-graphic map of the South Atlantic. Chances are that you'll be doing just that at least once in a while when playing the British side in *Graf Spee* (in solitaire mode you'll automatically be British). Here's why.

You have a limited number of ships—ten cruisers or battleships and two aircraft carriers—spread out along the South American and African coasts to patrol many thousands of square miles of empty ocean in which are hidden only two German ships. Assume for a moment that the squares into which the map is divided each represent 100 sq. mi. (The game manual does not ac-

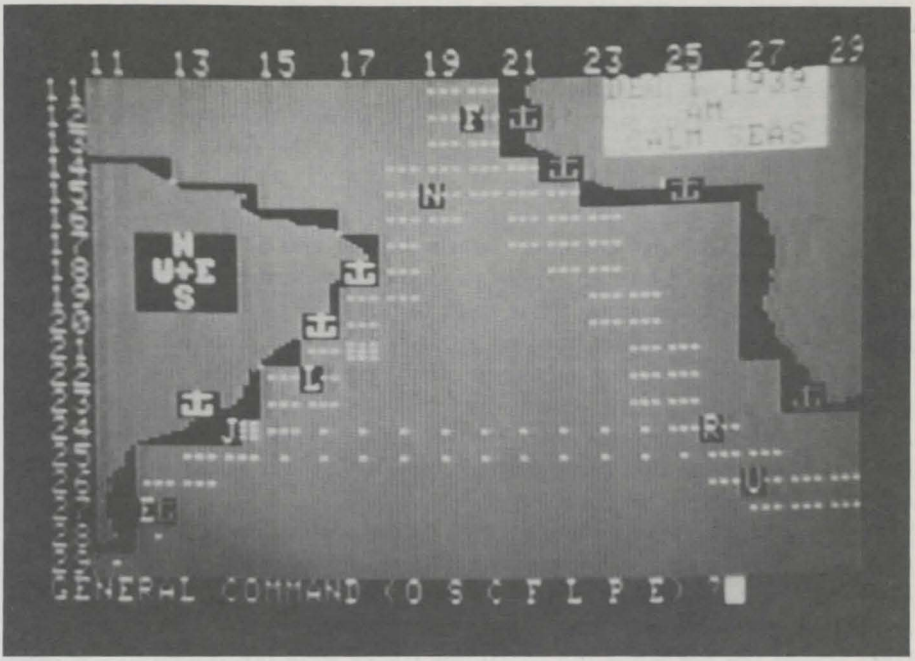


tually define the area of the game squares, so we will use 100 sq. mi. as a convenient guesstimate). That means you have about 24,000 sq. mi. of navigable ocean to search for the Germans.

That's bad enough, but even if you have a good guess as to where the *Graf Spee* may turn up, there's still a chance you might miss it. Picture a rectangle in the ocean 100 sq. mi. in area. Now place one of the Allied cruisers—HMS *Ajax* for example—into the middle of that rectangle. So far, so good.

Now imagine that you are a lookout atop the *Ajax*'s mast with a pair of high-powered binoculars. How far can you see? 25 mi.? 35? Whatever the range of your vision may be, it's certainly not enough to cover the full 100 sq.-mi. of the rectangle you're occupying. If you were to draw that 100-sq.-mi. rectangle on a sheet of paper and then draw a tiny dot (to represent HMS *Ajax*) and then a shaded circle around that dot to represent *Ajax*'s 35-mi. radius of vision on a clear and calm day, the unshaded area would illustrate the amount of sea room *Graf Spee* could occupy in that same square without *Ajax* ever sighting it.

Let's make just one more supposition. Let's suppose that the luck of the game is flowing with the British side and that the *Graf Spee* blunders into the radius of *Ajax*'s vision. What happens then? Very probably, the *Graf Spee*'s more numerous, heavier guns sink the *Ajax*. Having that happen after you've



Graf Spee and Bismarck. **The video display for Computer Bismarck as the game begins (photo A) shows the positions of British units in the North Atlantic. The "M"s in mid-ocean indicate merchant convoys. The "C"s indicate cruisers. The "S"s mark the locations of submarine wolf packs and the "D" marks the location of a destroyer squadron. Finding Bismarck is up to you.**

Photo B shows the initial map display for *Pursuit of the Graf Spee.* The white dots in mid-ocean and along the coasts indicate merchant shipping lanes. The letters are codes for various British and French ships. The anchors indicate port facilities.

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conducted such a marvelous search makes you want to tear out your hair in frustration.

As you can see by now, your job as the British player is three-fold. First, you must correctly anticipate where the *Graf Spee* and the *Altmark* will go and have forces waiting there. Second, you have to successfully sight the *Graf Spee*. Third, you have to have enough force to sink or seriously damage the German raider. Let's address each of these tasks briefly.

Anticipating the German player's moves. On the computer map and on the printed maps that come with the game, the hunting grounds the German player will be attracted to—the merchant shipping lanes—are shown clearly by white dots (in *Computer Bismarck* the shipping is in convoys which are not shown on the German player's map unless he encounters one). The more

white dots in a square, the greater the likelihood that there will be merchant targets to sink. It's likely that the German player will go after at least a few of those targets during the game.

Of course, there are many more squares to protect than you have ships to protect them, but you can at least make sure that the two squares with the highest concentrations of shipping, at 2414 and 2117 (note that squares are numbered first by their horizontal row and then by their vertical column) are covered. You might also consider covering either end of the east-west shipping lanes in rows 24 and 25. There's a chance the German player, who starts near Africa, may cross along those rows in hopes of picking off a merchantman on the way to happier hunting grounds off South America.

Since the *Altmark* is allowed to exit off the north mapedge, you may find it profitable to bottle up the narrow part of the ocean between squares 1717 and 1321 with the aircraft carrier *Hermes* and the cruisers *Foch*, *Dupleix*, and *Neptune*. Even if you don't bag *Altmark*, you have the makings of a force that can be used like a net to bag *Graf Spee*.

In one solitaire game I played (albeit at the easiest level), I brought these four ships southeast, in line, four-squares abreast, when a "radio report" sighted *Graf Spee* sinking a merchantman off South Africa. As the ships moved further southeast, other Allied fighting ships in the African merchant lanes joined the net while my remaining forces were positioned in the east-west merchant lane, in case *Graf Spee* strayed in that direction. Ships in the South American lanes stayed put, in case *Graf Spee* eluded my net. As it turned out, a second sighting report allowed me to quickly encircle *Graf Spee*, which was heading northwest along the African merchant lanes, and a sighting of the German resulted.

That's one way to handle a reported sighting. If the Spee is sighted near a number of your units, the best policy is to try to cover the nearest and most populous shipping lanes in as many directions as you can and hope that you bag her. Do not send all your ships racing to the square where *Graf Spee* was just sighted. Your ships can only move one square per turn, and by the time they arrive on the scene *Graf Spee* will be long gone. In fact, she could be prowling the very places you left uncovered when you raced to chase her.

In short, guessing Spee's direction and assigning the right number of ships to chase her is a tricky proposition. At some point it will involve a gamble. You'll bet the merchant ships and locations you leave uncovered that you have figured out where *Graf Spee* will show up. If you're right, you'll have a chance to find her. If not, the Spee will get free and you'll lose more merchantmen and the game.

Sighting the Graf Spee. As you already know, one ship can search only a certain limited area of the square it occupies, and the *Graf Spee* can slip past you. It helps if you have two ships in the square and three almost (but not quite) insures that you'll make a sighting.

Factors that increase the likelihood of sighting are good weather, daylight, additional friendly ships in the square, aircraft carriers (they have the sighting power of three ships, thanks to their air patrols), and ships in PATROL mode. A word about PATROL mode—this is a command which keeps the ship in the same square but which triples it's search factors. Patrolling also saves fuel. During night turns, ships that move consume three fuel points, ships in PATROL mode consume zero. Don't be afraid to use the PATROL mode.

Factors which work against a sighting are bad weather, which reduces visibility, and darkness.

These factors, positive and negative, are represented in the game program as variables. A formula is applied to determine the probability of sighting, based on these variables, and this determines whether or not you spot the *Graf Spee*. You must do what you can to influence the variables in your favor, but beyond placing two or three ships in a square through which you feel Graf Spee must pass—a feeling that will occur rarely—you will depend mostly on luck to shift the variables your way.

Sinking the Graf Spee. This is the tricky part. The *Graf Spee* is, with the exception of HMS *Renown*, the most powerful warship in the game. Her guns can make short work of a cruiser while the cruiser's shells will impact harmlessly on the superstructure of the Spee. So how do you sink her?

To do the job properly, you need a number of ships. If you spot *Graf Spee* with one ship, the thing to do is to try to "shadow" the German battleship. When you first spot the *Graf Spee*, the program goes immediately into a single-ship combat mode. The program automatically goes into a shadow-determination phase when combat is broken off. If the weather is good and if the British or French ship is not out of fuel, there is a good chance that the shadow will succeed. From this point on, the Allied ship will go wherever the German goes, without your having to give further orders. This allows you the ability to concentrate your forces. Three cruisers should be able to do the job of sinking *Graf Spee* for you. Other workable combinations are three cruisers and an aircraft carrier, or HMS *Renown* and either a cruiser or an aircraft carrier.

Now comes the most important part. You have *Graf Spee* in sight and your forces assembled. How do you fight *Graf Spee*?

You have to remember that *Graf Spee* has long-range guns that can hurt your cruisers while they are still trying to bring the German into range. If you do not have a superior force, break off combat and hope for a shadow. If you have sufficient force—at least two cruisers—bear in on the German, accept your losses, and do what you can to cripple *Graf Spee*, to slow her down and reduce her offensive force in hope that *Renown* or other reinforcements can come to your rescue.

Here's a useful tip: Keep an eye on the damage to your ship. Once your damage surpasses about 40 percent, give serious thought to breaking off the

battle. Chances are that the next salvo from Graf Spee will actually sink you once the damage is that bad. Also, keep an eye on your speed. If the *Graf Spee* has crippled one or more of your cruisers and if you still have one capable of full speed, break off the combat and hope the computer gives you a successful shadow. Then bring up more ships to finish the job.

PLAYING THE GERMAN SIDE: HIDING THE *GRAF SPEE*

The German player has few of the problems that the British faces. He doesn't have to find any warship that is hiding from him. All he has to do is sink merchantmen, keep *Altmark* out of danger, and deflect the feeble Allied cruisers *Graf Spee* may encounter.

I might be oversimplifying things a bit, but life is a little less complicated for the German player. Here are some tips to help him keep the *Graf Spee* afloat and the British in confusion.

Remember that the tendency of most players you face will be to send all the Allied ships to the site of the last British ship you sink. When you sink a merchantman, head for the other side of the ocean.

Remember also that the location of some of the British units will be fairly predictable, based on the intensity of merchant shipping in some places on the map. If you want a fight with powerful Allied units that can hurt you, attacking the shipping in 2414 and 2117 or squares immediately adjacent, is the way to go. Otherwise, stay away from there. Frustrate the expectations of the British player, who will be waiting for you off the River Plate (2414) just as if you were forced to do everything Kapitain Langsdorf did in real life. Hunt in African waters to start. Then, when the Allies are presumably rushing to the squares you attacked, try your luck in South American waters. Hit and run!

One further thought on hitting and running: If your opponent is as clever as you, then you can't assume that he'll go rushing off blindly wherever you strike. In this case, your best bet is to try to be unfindable between raids. You'll be expected to attack shipping lanes, but you can throw the other player off balance by hiding *Graf Spee* in the waters above Brazil (north of row 15 and west of column 18) or to the extreme south of the board, in rows 27, 28, and 29.

Don't be afraid of cruisers. In battle, take aim on them early and keep firing. They are smaller and carry less armor. In battle you'll find that *Graf Spee* can polish off two cruisers long before the enemy can seriously harm you.

The *Renown*, on the other hand, is a ship that can really hurt you. Its guns are as powerful as yours and *Renown* has more of them. In a single-ship combat, the odds are weighted slightly in *Renown*'s favor. If *Renown* is in compa-

ny with a cruiser, you are in big trouble and must break off combat if you can. *Renown* has a 3-knot speed advantage over you, so this may be difficult. If you are able to inflict enough damage on *Renown* to slow her, don't stick around in hopes of a kill; remember *Renown*'s big guns and get out while you can!

After a battle, avoid going to a neutral port. There is a 50 percent chance the program will decide that the *Graf Spee* is scuttled if you do. Your best bet for provisions is the *Altmark* (which, one hopes, you have been hiding far from the shipping lanes). So far as battle damage is concerned, I think you just have to accept it. There's no point in risking a scuttle in a South American port, even to repair damage. After all, even if the program does not scuttle you, there is still the probability that the British will assemble a sizable fleet, with the *Renown* among the units, to catch you when you leave.

Keep *Altmark* handy. You can move her off the board if you like, but once it's gone, it stays gone. It's wiser still to keep her out of the way, ready to refuel you as needed.

COMPUTER BISMARCK TIPS

Computer Bismarck is essentially similar to *Graf Spee* but there are some differences. First of all, the Germans have two fighting ships instead of one. There are differences in the British side as well. The launch of British aircraft in battle is not automatic; carrier and land-based strikes must be ordered in advance. The British player must also manage convoys and see to it that they get to their destinations at the assigned times, or victory points are lost.

In *Computer Bismarck*, both players have submarine forces. German wolf packs can be used to attack the British convoys, and British subs can be used to intercept *Bismarck* and *Prinz Eugen*. Another difference is that ship-to-ship combats are resolved automatically, without any tactical control by either player.

Let's not get into a prolonged discussion of *Computer Bismarck* here. Here are just a few tips on strategy. First, for the British:

1. The German can come out of the North Sea by four "exits." Have all of them covered by warships.

2. Use your planes wisely. Send out as many as you can on recon, but save about a third of your force for attack if *Bismarck* is spotted.

3. In the game, you can employ the "farthest-on" technique of searching. In this method, you take *Bismarck*'s last known position and then, estimating how many squares she can move since she was

spotted, draw a line on the game map to indicate how far away from that point she can be. After about two turns from the last spotting, the farthest-on method reduces in value dramatically, but if you have lots of ships at sea after a sighting, you can virtually surround the *Bismarck*.

4. If you're playing against the computer, chances are it will try to sail *Bismarck* and *Prinz Eugen* past the Faroe Islands, around to the west of Ireland, then on to Brest or St. Nazaire and safety. A few ships, if you can spare them, could be well employed watching the French coast.

5. If you have an eastbound convoy that is being shadowed by submarines, there is a chance *Bismarck* will drop by to join the hunt. As convoys are shadowed or as they approach the British Isles, it's worthwhile to dispatch a surface escort to them.

6. Finally, pay attention to the rule which requires a certain number of air-search points over Bergen before the program releases your reserves.

Now for some German tips:

1. Keep your eye on the numbers to the side of the screen; they tell you whether or not there is fog in any given horizontal row of squares. If the *Bismarck* is surrounded, you stand a better chance of sailing through the cordon in a fogged-in square.

2. Keep *Prinz Eugen* in company with *Bismarck* through the British screen of North Sea exits. Eugen can help shake off any cruisers you may encounter. Later, you can split up and use Eugen to divert attention away from *Bismarck*.

3. Note the start positions of the British convoys on your player map and keep a farthest-on record of their progress. Remember that they are on a fairly strict timetable that restrains them from standing still, moving far off course, or using other protective maneuvers. The British more or less have to move in a straight line, and with a little luck and a farthest-on guesstimate, you'll be able to find at least one and rack up points in a big way. Your subs can also be used to shadow and attack convoys. Shadowing gives you a precise track of their movements, for an easy intercept.

That's the story on *Computer Bismarck* and *Pursit of the Graf Spee*. There are elements of strategy and tactics here that carry over into Grigsby games like *Guadalcanal Campaign* and *Bomb Alley*, and Avalon Hill games like *North Atlantic Convoy Raider* and *Midway Campaign*. The sea chase is a great theme of naval warfare, from the Spanish pursuit of the *Golden Hind*, to the chase of the CSS Alabama in the Civil War, to the hunts the British mounted for *Scharnhorst, Gneisenau,* and *Tirpitz* in World War II. It's reasonable to expect that games simulating these battles will be issued sooner or later. Now you're prepared.

IRON MEN, WOODEN SHIPS

For a lot of people, a naval battle isn't quite the real thing if the combatants are locked in iron ships spewing smoke from their stacks. For the more romantic-minded, a naval battle is an affair of wooden ships and billowing sails, of boarders with cutlasses, of roaring broadsides splintering the oak hulls of the battling ships.

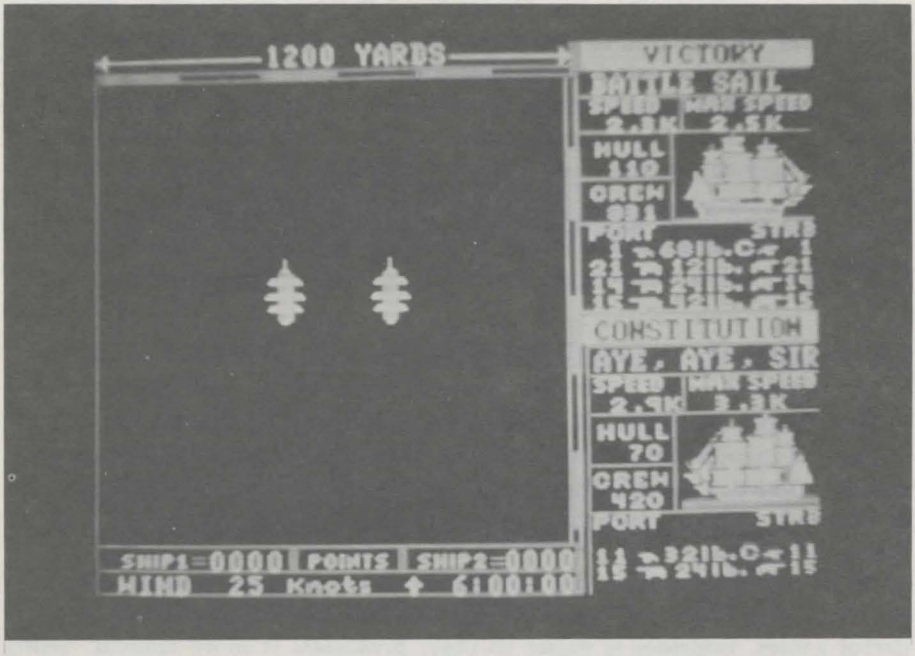
As of this writing there are two games which simulate wooden-ship battles, SSI's *Broadsides* and Xerox/Weekly Reader's *Old Ironsides*. Both are wonderful games. Ironsides is easier to play; *Broadsides* is more realistic. Using *Broadsides* as a basis for discussion, let's very briefly go over some of the basics of wooden-ship battles.

There are thee kinds of ammunition your cannons can fire in *Broadsides*—solid shot, chain shot, and grapeshot. *Solid shot* is the technical name for cannonballs. In this setting, it is an all-purpose ammunition, but it's most important role is in piercing the enemy's hull. *Chain shot* has only limited range, but it is best in shredding sails. *Grapeshot* is reserved for the last moment before your ships collide and boarding takes place. Grape is made up of small musket balls. A cannon firing this ammo is just like a big shotgun and will snuff out plenty of enemy crewmen when fired at point-blank range.

The most important skill you can learn is that of anticipating the next maneuver of your opponent. You may notice that some players tend to steer their ships to the left most of the time. If you train yourself to notice, you can use that player's penchant for port-side maneuvers against him, either to escape or to place your ship in a more advantageous position for firing a broadside.

It might be belaboring the obvious for some, but for others it is worthwhile to remember that these wooden ships have no bow or stern guns, only *broadsides*. That is, the ship can only hit a target that is facing one of the ship's sides, not targets ahead or behind.

Got it? Good. Now hear this: A maneuver you should learn to appreciate is one sailors call "crossing the T." This is when your full broadside is squarely



Broadsides. **Photo A shows the *Broadsides* screen on which the positions of the ships are displayed and you enter movement and combat commands. Photo B is a view of the screen showing boardings.**

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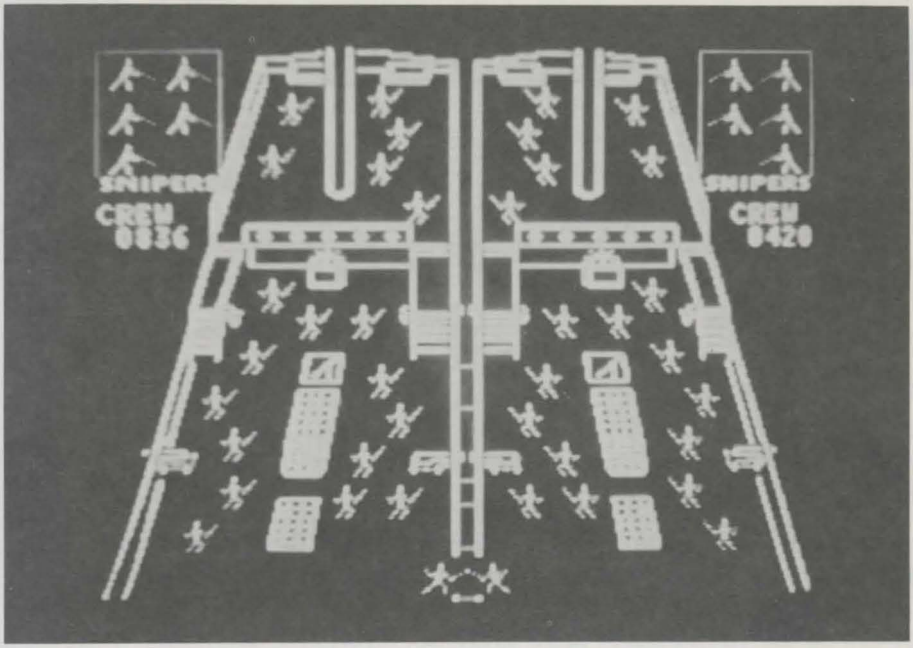
aimed at the defenseless bow or stern of your adversary. In this position, you can damage him without receiving any fire in return. The trick is not to let him put you in that position after you've finished crossing the "T." The best way to do this is to cross his stern, rather than his bow.

If you have a smaller crew than the other ship, avoid a collision at all costs, because this will mean a boarding. The crew with the most men can easily afford a boarding. The player with the larger crew knows that losing men on a one-for-one basis leaves the ship with the larger crew the winner. So here's the rule in a nutshell: If you have the advantage in numbers, board the other ship if you can. If you're outnumbered, keep clear of the enemy and don't allow him to collide with you.

As you play either *Broadsides* or *Old Ironsides*, you'll quickly learn that there is a certain lag in time between the point you give an order and the time it is executed. This simulates the time it took for crewmen to climb the lines to set the sails, for the rudder to bite into the water and turn the ship, and for powder and shot to be loaded into the cannons. Once you have acquired a



feel for the time lags involved, you'll be able to time your maneuvers better to bring the maximum number of broadsides against the enemy.

10 WAR IN THE AIR

By midsummer 1940, Hitler had finished gobbling up all of Western Europe and was poised on the English Channel, ready to launch an invasion of Britain.

It never happened. The Royal Air Force made it impossibly dangerous to attempt an invasion by sea or air, and nothing the Germans did could make the RAF disappear. This Battle of Britain ensured that the British would stay in the war and persevere until victory.

Have you ever wondered why, with a numerical advantage of almost 3:1, the Luftwaffe couldn't blow the RAF out of the skies? If you were the Air Vice Marshal in charge of the RAF Fighter Command, could you have done as well in keeping the Nazis at bay?

In this chapter we'll encounter the strategic and tactical problems of managing a bomber campaign and a fighter defense via SSI's *Fighter Command*. We will see how the game is played, explore the tactics and strategies that both sides need to win, and discover some methods for making play easier. Then we'll assume control of RAF Fighter Command for one day, 7 September 1940, as the RAF rises to battle the Luftwaffe at the beginning of Germany's daylight blitz of London.

In the next chapter we'll take a different approach, examining a purely tactical game, SSI's *Computer Air Combat*, which simulates the decisions *pilots* make in the thick of combat.

FIGHTER COMMAND

The only strategic-level air-warfare game available as this book was written was SSI's *Fighter Command* by Charles Merrow and Jack Avery. It's fortu-

nate for the aficionados of air warfare that *Fighter Command* is one of the most enjoyable wargames of any description. My hope is that this game will get the support it deserves from wargamers so that SSI will be encouraged to produce other games using the *Fighter Command* game system to simulate World War II bombing campaigns in Germany and Japan.

Fighter Command is a very realistic simulation of what it's like to be at the high command of all fighters or bombers in a major war theater. You have the option of heading the RAF Fighter Command against a human or computer opponent, or you can play the role of Reichsmarshal Hermann Goring, and take command of Luftflotten (Air Fleets) 2, 3, and 5.

To understand what's going on we have to look at what both sides are trying to do and how they plan to do it.

The Germans are trying to nullify the RAF as a fighting force so that the German Luftwaffe will enjoy air superiority over the English Channel, allowing the German Navy and airborne troops to stage a successful invasion of southern England. To do this, they are attacking aircraft factories, coastal radar stations, and RAF airfields. The strategy is to force the RAF to defend these targets, which are crucial to its survival.

AIRCRAFT

The bombing raids sent to cripple the British are best visualized from an overhead point of view, looking down on the raid from above as it flies towards its objective.

On the outside perimeters of the raid are squadrons of *fighters*. They protect the raid from the front, rear, and sides and from above and underneath. Their job is to sight and intercept the defending fighter planes. In a real air raid, if escorting dive bombers or low-level bombers, they would also be used to strafe the target area to suppress anti-aircraft fire.

In *Fighter Command*, there are two types of fighter aircraft available to the German side, Messerschmidt Me-109E "Emil," one of the best fighters in the entire war, and the Me-110C, which was of little use in daylight dogfights, but did fine work intercepting night bombing raids over Axis-held territory. In this game the Me-110s are overmatched by two Bristish aircraft, the Supermarine Spitfire and the Hawker Hurricane. What Me-110s have going for them is that they can escort the bombers further into enemy territory than the short-range 109s.

In the center of the German raid are the planes that the fighter pilots will give up their lives to protect, the *bombers*. The mission of these planes is self-evident, but they do their job differently, depending on type. The *horizontal bombers*, the planes which attack in straight flight over the target, are the

Heinkel He-111H, a big workhorse bomber which needs plenty of fighter defense; the Dornier Do-17Z "Flying Pencil," another plane that requires fighter support; and the speedy Junkers Ju-88A, which needs little or no escort for it's low-level attacks.

The Ju-88 was occasionally used for dive bombing, but the Junkers Ju-87B, the dreaded Stuka, was the *dive bomber* that symbolized Luftwaffe power and terror. Unfortunately for the German player, there is nothing about the Stuka which need terrify the British player. The Ju-87 is meat on the table for Spitfires, Hurricanes, and Defiants. Unescorted by fighters, Stukas will be massacred every time a British squadron encounters them.

Selection of bombers is simple. To adequately hit targets the farthest distance from base (Midlands and northern industrial targets and London) and for maximum damage to the closer targets (airfields and cities in southern England), go with the He-111 and the Do-17. Just be sure you have an escort of fighters to adequately defend the formation.

For quick attacks against airfields, bombing coastal radar sites, and nuisance raids and feints, the Ju-88 is the weapon of choice, since it can frequently get to the target and get back out faster than Fighter Command can intercept it. One would prefer not to use the Ju-87 at all, knowing what British fighters can do to it, but it is well-suited to these missions, given adequate fighter escort.

GERMAN STRATEGY AND TACTICS

The "turn" in this game is one day long. The German player's turn begins with an intelligence report on the damage done by yesterday's raids and an estimate of damage to British airfields, radar sites, and cities.

When you as the German player receive this report, write down the names of the damaged radar sites. These will make excellent places to cross the British coast without detection. Chances are the British player will send up fighter squadrons to cover for the lost radar site, so make sure these raids are well protected by fighters or that they are composed of Ju-88s which can get in and out fast.

Use decoy raids and all-fighter sweeps to attract the attention of operating radars and to bring up the RAF for some harmless fox hunting. Schedule heavy raids to follow, once Fighter Command has committed itself to attacking the dummy raids. Remember this: When Fighter Command commits a group to intercept a particular raid, the group cannot be ordered to switch to a different target. All it can do is attempt to intercept, then land, refuel, and await further orders. If the raid it has been sent to intercept turns away and escapes, the fighters will not be able to attack your more important raids for many precious minutes. This is why dummy raids are so important.

The next task is selecting targets for the raids. Remember what we said about victory conditions? That's the section of the rules you should read first, because it tells you what you have to do to win the game. The most points are to be gained by attacks to Fighter Command airfields. Depending on the scenario, you win from 6 to 12 points for knocking out sector airfields and from 2 to 4 points for satellite fields. If you can keep fighters out of the forward British fields of Lympne, Hawkinge, and Manston, you win from 5 to 10 points. Obviously, you should make airfield attacks a priority, and attacks on Lympne, Hawkinge, and Manston a *top* priority.

Points can go in the reverse direction too. By *failing* to destroy at least one British radar station per day you can lose from 10 to 50 victory points. On the other hand, each crippled radar is worth 2 or 3 points per turn that it's out of action. Therefore, you should always include one or two radar sites as targets of your planned raids for the day.

You lose additional points—1 each—for each German bomber lost. Escort your bombers adequetely. Only in one-day "Eagle Day" scenario do you lose any points for German fighters lost, but each Briton you destroy is worth 1 victory point. By mounting big escorts and fighter sweeps you have nothing to lose and a lot to gain.

Once you have determined the targets and the assembly points for the raids, you can exercise a vital tactical option, the selection of "offset approach points." In plain language, this is the place where the formation makes a turn. The manual suggests that you use this feature so that most of your raids will follow the same path into England, presumably through areas not covered by radar, the theory being that the first raids will sweep clean a corridor of fighters, allowing later raids to follow the same path at reduced risk. This tactic also makes it less than worthwhile for distant fighter fields to send planes to join in the chase. Even if you have raids crossing the coast at all points of the compass, it's worthwhile to use offset approach points to mask your true intentions.

You also have a chance to pick the time your planes will arrive over their targets. This effectively translates into start times for the various assembly points. If the British player seems to be in the habit of sending up his patrols promptly at the same time every day, such as 0630 hours (the game is timed according to the 24 hour clock system; play begins at 0630 and ends at 1800 hours), time your raids to cross the coast 110 minutes after the estimated start of the British. It's at that time that the British player is prompted to renew the patrol with another fighter squadron. This means that for each patrol in the air there will be a squadron on the ground refueling, out of the battle. Crossing the coast with five, six, or seven British squadrons out of the battle is a little more comforting. Who knows? Maybe you'll bomb a base with a refueling squadron on it, destroy some planes, and lock the others in on the ground until repairs to the field are finished.

In *Fighter Command*, you as the German player have the ability to assign as many of your fighters as you please to escort a bomber raid. As you choose your fighters, you will have information on each fighter unit's strength, combat experience, and morale. It is wise to select fighter units that are not suffering from low morale due to overwork. Give the units a rest sometimes. In the various scenarios of this game you can always rest some or all of your units (when the weather is 100 percent overcast over England, rest is almost mandatory).

A good idea would be to schedule your Stukas as the last of a series of raids. Attacking in small forces at the tail end of operations, chances are the British player will have already sent most of his strength after bigger formations of bombers attacking industrial targets. With German raids of 350 plus aircraft in the air, chances are the British player will take little note of 100 Stukas.

Finally, have your fighters closely escort the bombers. You may lose many fighters this way, but you *won't* lose victory points, as you do for each bomber the British player bags.

BRITISH STRATEGY AND TACTICS

The first priorities you, as the British player, have are to keep your fighter airfields and radars operational and to shoot down German bombers. The German player will be after your radars especially, because they are on the coast, and can be attacked quickly, with very little loss. Big German scores can also be tallied by putting your airfields out of operation. If the Germans render Manston, Lympne, and Hawkinge nonoperational before you can station groups there, they will roll up big scores right away.

You can expect a German bomb attack on Lympne, Hawkinge, and Manston fields in the first moves, so set up intercept patrols over the Channel to thin out the attacks. You can also expect attacks on the coastal radar stations in southeastern England; set up intercept patrols as you did for the fighter fields. Note that some of the patrols for the fighter fields will do for the protection of nearby radars.

As you are setting up your missions, you will note that you can change the instructions for your fighters. You don't win points (except in one scenario) for shooting down German fighters. Make the *bombers* the priority target for all of your fighters.

The main burden of the battle will fall on 11 Group fighter sqaudrons in southeastern England. As the game begins you'll notice that there are some squadrons in 11 Group equipped with Blenheim light bombers and Bolton-Paul Defiant fighters. Against Messerschmidts they'll be chopped to bits. Here's what you do: At the first opportunity, transfer all of your Defiant and

Blenheim squadrons to 12 Group, which covers the north and Midlands. There they can be used to shoot down bombers raiding northern cities which are out of German fighter range. Fill up 11 Group to its 35-squadron maximum strength with Spitfire and Hurricane groups from 13, 10, and 12 Groups, in that order. Just make sure that 12 Group has at least a minimum of Hurricane and Spitfire squadrons to tackle raids from Norway. Those raids will be made by bombers and Me-110s only, so it is permissible to intercept them with Blenheims, Defiants, and even Gladiator biplanes, as well as Hurris and Spits.

Remember that the German player will probably launch as many as eight or nine raids. *Don't* bother intercepting raids over a coastal target the instant they are detected. These fast-moving Ju-88 raids and fighter sweeps are designed to make you waste groups by assigning them to pursue raids they can't catch.

Always intercept German raids of 200 planes or more. In solitaire play the computer almost always composes these raids of He-111 bombers and Me-109 escorts. A raid this size is what the Germans need to do any appreciable damage to a city or a sector airfield. Start with just two or three squadrons, tops, and see which way the Nazis are headed before you commit more planes to pursuit. If the raid seems to be on its way to a big inland target, scramble squadrons ahead of and behind the formation. This tactic will ensure that the enemy meets fighters coming and going. If this is one of the last German raids of the day (designated raid F, G, H, or I on the screen display) send everything you've got after it. If this is raid A, B, C, D, or E, send up two or three squadrons, as we suggest above, and wait for further developments.

MORALE

A factor both players should monitor carefully is morale. This is measured by a number from 0 (low) to 9 (high) and is displayed when you examine Readiness at the beginning of a turn. A squadron that is rested will maintain or increase its morale. A squadron with air victories or successful bomb raids under its belt will enjoy increased morale.

A formula is applied at the end of every turn to penalize players who have allowed morale to slip. Morale can be lost by losing planes and simply flying missions (this simulates fatigue). The British player keeping his units on a constant Runway or Cockpit Alert (high states of alert) will also suffer decreased morale. These alert levels allow you to launch fighters within two to four minutes, but the loss of morale may offset any victory points scored by timely bomber intercepts. The British player should keep his pilots in the airfield huts (Hut Alert) until the last possible moment. As big raids are spotted, you can then assign them to Runway or Cockpit Alert.

A British squadron will also be demoralized if the Germans successfully bomb its home field. This is a double threat because the German earns victory points for damaging the field and additional points for demoralizing the British squadrons based there.

IN COMMAND: BATTLE OF BRITAIN

Now that we've seen how *Fighter Command* works, let's play the first day of Scenario III (7 September to 15 September 1940) and take charge at RAF Fighter Command Headquarters. As we play we'll examine why we make certain tactical decisions and see how they influence the outcome of the game.

It is 7 September 1940, and the Germans have decided to switch the objectives of their bomb raid from the fighter fields to the cities, especially London. This is a development of which intelligence has already informed Fighter Command. Tactics will be adjusted accordingly.

BRIEFING PHASE

In the *Briefing Phase* of the turn you can select from briefings on Yesterday's Operations, Intelligence, Readiness, Damage, and Weather.

Let's look at the Intelligence Report for today; it shows no operations yesterday, no loss of aircraft or pilots. The Ultra code-breaking facility's report predicts a German raid on the sector airfield at Biggin Hill and heavy German penetration in 11 Group's area.

Intelligence has also issued the following estimate of current German strength, indicating the number of each type of aircraft:

Fighters:	
Me-109s	748
Me-110s	271
Bombers:	
Ju-88s	556
Do-17s	276
He-111s	508
Ju-87s	308
TOTAL:	2667

It's a formidable force.

Having scanned the Intelligence Report, we turn to the list of active squadrons and see that in 11 Group we have 7 Spitfire squadrons, 14 Hurricane

units and 2 Blenheim units. Adding the squadrons in 10, 12, and 13 Groups, this is Fighter Command's total strength:

Fighters:	
Spitfires	322 (20 squadrons)
Hurricanes	503 (32 squadrons)
Gladiators	7 (1 squadron)
Defiants	20 (2 squadrons)
Light Bombers:	
Blenheims	72 (5 squadrons)
TOTAL:	924 (60 squadrons)

We are grossly outnumbered, 2.88:1. On the other hand, the total German fighter strength of 1,019 gives them only a slight advantage, and of these, 271 are the inferior Me-110 fighters. So now it looks at though we have a chance at those bombers . . .

The Morning Damage Report shows that Middle Wallop sector field and Gravesend satellite field are still out of commission thanks to earlier German raids. Damage is heavy at Boscombe Down, Warmwell, Biggin Hill (where the Germans are expected to try again today) and Croydon fields.

The Germans have succeeded in knocking out the radars at Truleigh near Brighton and at Ventnor on the Isle of Wight. Damaged radars still operating are at Beachy Head, Poling, Pevensey, Rye, and Worth. Protecting these radars is a priority.

The flying weather is expected to be good. With a maximum cloud cover of 5 percent, the interceptors will have no problem finding the German bombers— and the bombers will have no trouble finding their targets. We now exit the Briefing Phase.

ORDERS PHASE

In the *Orders Phase*, you can Establish Patrol Stations, Change Individual Squadron or Airfield Readiness, Change Default Readiness and Tactics, and Transfer Squadrons Between Airfields.

The first priority is to beef up 11 Group using the Transfer Squadrons option. From 12 Group (Midlands and northern England) we grab three Spitfire and two Hurricane squadrons. From 13 Group (Scotland) we take two Spitfire squadrons and one Hurricane unit. Lastly, we grab one squadron each of Spitfires and Hurricanes from 10 Group (Cornwall, Wales, and western England). These units we disperse around the city of London. We should now have 35 squadrons of top fighters in 11 Group, the maximum allowable.

Now the orders for squadron readiness must be issued and tactics be defined (Change Default Readiness and Tactics). All airfields except 13 Group (which is in Scotland and effectively out of today's battle) are placed on Hut Alert. The Spitfires and the Hurricanes are instructed to ignore enemy fighters if possible and concentrate on shooting down bombers. All pilots are ordered to be bold and daring in their attacks for maximum bomber kills.

Having given the men their orders, it's time to establish patrols (Establish Fighter Patrol Stations). We first have to protect our airfields, so we station a squadron each over Biggin Hill and Croydon. For these we use units based in Debden and Wittering. This gives these nothernmost units of 11 Group a chance to get in the battle while we hold the southernmost units in reserve.

Patrols are also established over the Channel, covering the sectors usually scanned by the damaged Ventnor, Pevensey, and Rye radars. Coastal patrols are also established off Hastings and Brighton. This string of sea patrols should be likely to sight and catch incoming German raids.

Since we know the Germans will try to bomb London, we also station two patrols over the city to distract the Nazi bombardiers while they're aiming. We now exit the Orders Phase.

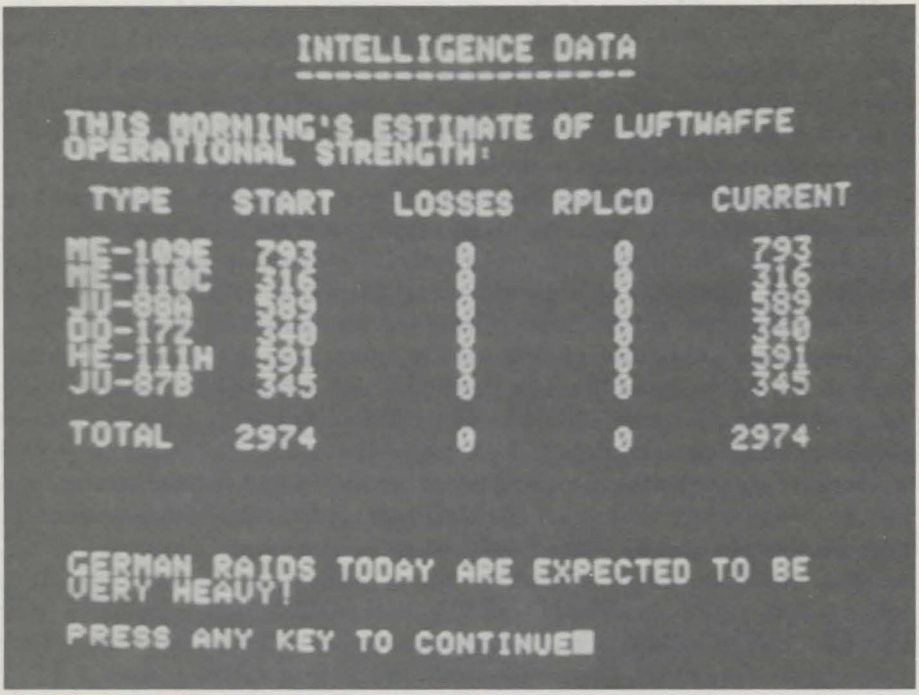
INTERCEPT PHASE

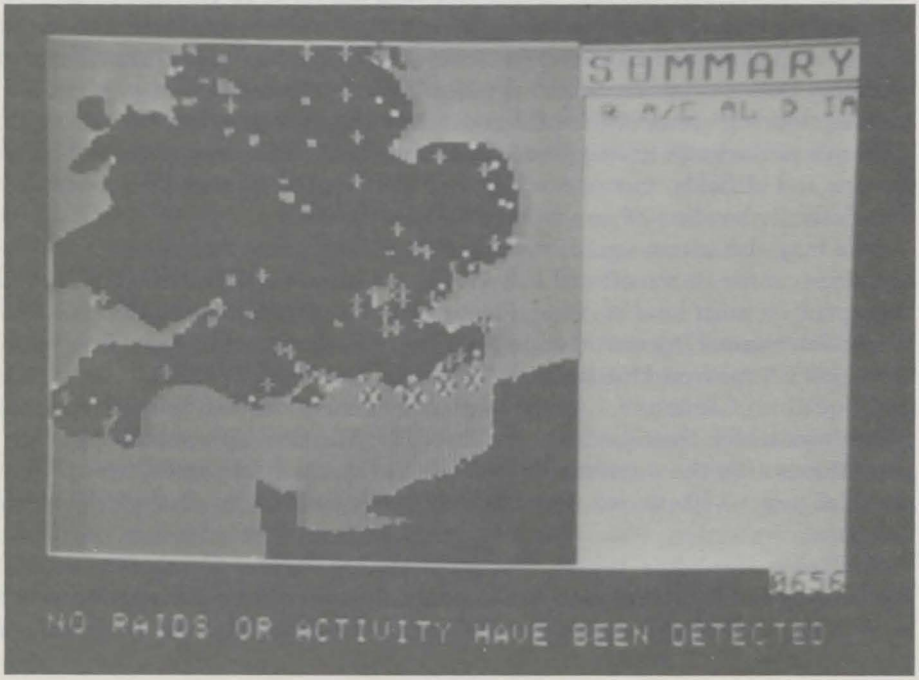
In the *Intercept Phase* you have video map displays to plot the course of battle and a text window that updates sightings and battle reports. The main Britain map shows all fighter fields, cities, and radars as well as the German assembly points over France and the North Sea. Other maps you may choose include close-up views of the Midlands, the London region, and the Channel.

In this phase you can also pause the action, order data on the status of your Groups and airfields, increase or decrease alert readiness, transfer squadrons, and flash the location of any sighted raid on the map.

You may also assign squadrons to intercept raids (once assigned to a raid, a squadron cannot be transferred to another raid and once the intercept is made, the squadron must land at once). Please note that squadrons are identified in the British manner, by unit number, type of unit, then aircraft type. Examples are "No. 1 Squadron Hurricanes," "No. 152 Squadron Spitfires," and "No. 247 Squadron Gladiators." As the battle commences, we will refer also to the fields from which the squadrons are launched. The field names will appear in parentheses after the squadron names. When you see field names, refer to the map on page 119 to see how to allocate squadrons to the battle as it develops.

And now the battle begins. We arrive at the Fighter Command control bunker just outside London at 0600 hours, and the first of many status reports is handed to us.


INTELLIGENCE DATA
THIS MORNING'S ESTIMATE OF LUFTWAFFE OPERATIONAL STRENGTH:
TYPE START LOSSES RPLCD CURRENT
ME-109E 793 0 0 793
ME-110C 316 0 0 316
JU-88A 389 0 0 389
DO-17Z 240 0 0 240
HE-111H 591 0 0 591
JU-87B 345 0 0 345
TOTAL 2974 0 0 2974
GERMAN RAIDS TODAY ARE EXPECTED TO BE VERY HEAVY!
PRESS ANY KEY TO CONTINUE


SUMMARY
NO RAIDS OR ACTIVITY HAVE BEEN DETECTED

Fighter Command. **As *Fighter Command* begins, the British player gets an intelligence report on German activities and capabilities (photo A). A map of Britain (photo B) helps the British player place air patrols during the action, while a close-up view of southeast England helps in defending London (photo C).**

0600–0630 Hours: No German activity is detected as the patrol squadrons take station over London, Biggin Hill, Croydon, and the Channel off Hastings and Pevensey. The squadrons are positioned to plug holes in the radar chain opened by previous German attacks and to protect the approaches to London and the surrouding airfields.

0630–0730 No German activity is reported.

0800 The patrols are beginning to run out of fuel and must be recalled. New squadrons are ordered to take up the patrol stations. The nine original patrol squadrons will be out of action for a while, refueling and rearming for 20 to 40 minutes. We are hoping the Germans aren't coming soon . . .

0840–0848 So much for our hopes—German activity has been detected. No definite sightings have been made, however.

0848 Intelligence reports German raids are imminent. We order the alert readiness of all 11-Group airfields raised to Cockpit Alert (pilot in their planes, engines running, takeoff within four minutes of an interception order).

0850 Radar sights German Raid A, 300+ aircraft at 17,000 feet assembling over Calais. Two of the original patrol squadrons report they are refueled and ready to take off.

0852 One more of the original patrol-squadrons reports ready for action.

0854 We're betting that Raid A is targeted on London, so we send No. 64 Squadron Spitfires (Hawkinge) and No. 249 Squadron Hurricane (North Weald) up to intercept Raid A. We expect No. 64 Squadron to intercept Raid A over the southern coast and No. 249 to catch up with A over London.

0856 Radar detects German Raid B just off Hastings, 100+ aircraft flying low at 1,000 feet. This is probably a nuisance raid by Ju-88s and/or Stukas. Meanwhile, No. 79 Squadron Spits (Biggin Hill) and No. 152 Squadron Spits (Warmwell) are ordered to intercept Raid A as we stake more on our gamble that A is targeted on London.

0858 Radar picks up Raid C, 50+ aircraft flying at 1,000 feet, crossing the British coast at Foreness. We send No. 602 Squadron Spitfires (Westhampnett) after Raid B and No. 111 Squadron Hurricanes (Croydon) and No. 72 Squadron Spitfires (Croydon) to meet Raid A when it arrives in London.

0900 More bad news from radar, which has detected Raid D over Calais, 200+ aircraft at 9,000 feet, probably a bomb mission. No. 1 Squadron Hurris (Heathrow) and No. 504 Squadron Hurris (Northolt) are ordered to intercept Raid C. Raid B is identified as a fighter sweep. We'll order no more interceptions of that flight!

0902 Raid C is over Lympne airfield but not attacking. Raid A is crossing the French coast, headed for England. One of the squadrons newly arrived on patrol, No. 234 Spitfires, has sighted Raid B and is automatically pursuing.

German Strategic Map. **This is the map that the German *Fighter Command* player uses to identify targets in England. The white and black circles are radar stations; the crosses are fighter airfields. The swastikas are the rendezvous points for German raids on their way to Britain.**

FIGHTER COMMAND
GERMAN STRATEGIC MAP

0904 We issue no new orders as Raid C overflies Rye. Raid A is inbound over the Dover Straits. Raid B is cruising in hopes of finding action off Beachy Head.

0906 Raid C bombs the Fairlight radar station! One Stuka is shot down. Raid C is spotted and chased by two patrol squadrons. Three more of the refueling squadrons are reporting themselves ready for action, but we are going to wait for now, keeping a reserve in case new, larger bomb raids materialize.

0908 Raid C is heading home as Raid A crosses the British coast near Hawkinge airfield, on course for London. It looks as though our bet that Raid A is London-bound may pay off. Raids B and C are now on their way home over the Channel.

0910 Raid C is intercepted by No. 601 Squadron! Three Stukas are shot down. Another patrol squadron has been refueled and now reports ready for action.

0912 Raid E is detected over the Channel with 200+ aircraft at 3,000 feet. Raid A is still en route to London. Raid D has crossed the French coast heading for England.

0914 Our pursuers are catching up to Raid A as it passes south of Gravesend. Raids D and E are mid-Channel, off Dover.

At this point, we pause to check the various 11-Group fields for available squadrons. Ten fields still have available squadrons that we can throw at Raids D and E. We still bide our time to see what the enemy will do next before we commit our reserves.

0916 Raids D and E cross the British coast north of Dover. Raid A is about to overfly London from the southeast.

Betting that Raid E is targeted on or near London, we order intercepts from Debden and Martlesham (far, northern fields—it's a long shot that they'll catch Raid E), Manston and Tangemere (the Tangemere Squadron may catch E on the way home, we hope). Against Raid D we send three squadrons from Kenley, Lympne, and Stapleford. Against Raid A we send another three squadrons from Hornchurch. Now every available 11-Group fighter is in the air . . .

0918 Raid A is intercepted over London by No. 64 Squadron! Three Me-109 fighters and two Spitfires are shot down. Next, No. 1C Squadron Hurris intercept Raid A, killing two He-111s. An entire He-111 group turns back! The raid seems sure to fail. Next, No. 229 Squadron attacks A, but scores no kills.

0920 Raid A is over London but dropping no bombs; they are too busy saving themselves from No. 249 Squadron! Five He-111 bombers fall in rapid succession. No. 79 Squadron intercepts A, but scores no kills and loses a Spit. No. 310 Squadron, patrolling London, sights and chases Raid A. Meanwhile, Raid E approaches Manston airfield.

0922 Raid E bombs the Foreness radar station and loses one Stuka in the process. Meanwhile, Raid A is intercepted by No. 111 Squadron. An He-111 and a Hurri go down. As No. 111 Squadron breaks off the attack, in comes No. 229 Squadron, killing two more He-111s at the cost of one Hurricane. Following close behind comes No. 310 Squadron shooting down three more He-111s at no cost to British planes or pilots. Now No. 73 Squadron, patrolling London, sights Raid A and gives chase.

At the same time, radar sights Raid F in mid-Channel with 100+ aircraft at 2,000 feet. Raid D has turned west and is heading for the radar at Dunkirk.

0924 Raid A still hasn't dropped its bombs as No. 73 Squadron catches up with it over London's West End only to lose three Hurricanes in the melee. Meanwhile, Raid F is bombing Dover.

0926 Raid A calls it quits without bombing and turns to the southeast to avoid London's savage defences. Raid D has turned southwest towards Hastings and Brighton.

0928 Raid E is intercepted by No. 54 Squadron, which quickly kills four Stukas.

0932 Raid A is taking its lumps again from the interceptor squadrons we sent after it: No. 603 Squadron Spitfires (Hornchurch) encounter the enemy raid and destroy two Me-109s at the cost of two Spits.

Raid D, which has turned east, is hit by No. 610 Spitfire Squadron (Hawkinge), which shoots down a Do-17 and two Me-109s at the cost of two Spitfires.

0934 Raid A is intercepted again, this time by No. 222 Squadron (Hornchurch) which loses two Spits while shooting down three He-111s.

0936 Raid G is detected approaching Hastings with 250+ aircraft at 1,000 feet. Raid A is hit again, this time by No. 41 Squadron (Hornchurch) which loses one Spitfire while shooting down five He-111 bombers.

0938 No. 257 Squadron (Martlesham) intercepts Raid E only to lose two Hurris. Raid D is jumped by No. 66 Squadron (Kenley), which takes out three Me-109s at the cost of two Spits.

Meanwhile, with all but two of 11 Group's squadrons already committed to other missions or refueling, we launch seven squadrons from the southernmost 12-Group airfields, Wittering and Coltishall, and the nearest 10-Group fields, Boscombe Down and Pembrey, gambling that Raid G is also after London and that the fighters can catch up with the enemy formation on its way home. Rather less of a gamble is the commitment of No. 10 and No. 72 Squadrons from Croydon, which is near London. Now all we need is for the Germans to cooperate and make Raid G a slow-flying London mission . . .

0940 The Germans are cooperating with us on Raid G; it's headed for South London. It's spotted by patrolling No. 253 Squadron (Kenley) which gives chase.

0944 Raid G is now over Kenley, on the outskirts of London. Raid H is detected off Brighton with 150+ planes at 6,000 feet. We've got nothing left to send after it . . .

0946 Raid G bombs Kenley airfield! Anti aircraft fire downs three Ju-88 bombers.

0948 Raid H is northbound over Hastings.

0950 No. 253 Squadron intercepts Raid G but accomplishes nothing. No. 1 Squadron at Heathrow reports ready for action and is dispatched after H.

0954 Raid G crosses the British coast over Hastings while swift-moving Raid H bombs Biggin Hill at the cost of two Ju-88s.

0956 Three squadrons report ready at Manston, Croydon, and North Weald airfields. No. 92 Squadron Spits (Lympne) attack Raid G, killing an Me-110 fighter. The squadrons at Croydon and North Weald are dispatched after Raid H.

1000 No. 601 Squadron Hurricane (Tangemere) report ready for action and are sent after Raid H. H is the only enemy raid still over England.

1004 Raid H crosses the coast headed home.

1012 All the fighters assigned to intercept Raid H are in pursuit, but the Ju-88s are outrunning them.

1014 Raid H reaches the French coast; the British pursuit breaks off.

1016–1800 No further German raids are launched. Fighter Command stands down.

OVERNIGHT ASSESSMENTS AND BRIEFING, 8 SEPTEMBER 1940

The computer awarded the German player 42 victory points, not a high total at all. Were the Germans to perform at this level for the entire Scenario III, the outcome would be a British "marginal" victory.

The British Briefing Phase for 8 September 1940 reveals that the Germans lost 10 fighters and 27 bombers in the day's fighting for 7 September. The Germans launched eight raids, one of which was a fighter sweep. Of the seven bomb raids, only five reached their target. The largest attack, Raid A, never hit a target at all. On the whole, the defense of London by Fighter Command worked very well.

ANALYSIS OF PLAY

The principles we discussed at the beginning of this section have served us well in the Battle of Britain. The German side, commanded by the computer, did most of the right things, but it made a few wrong decisions, too. The computer launched nuisance raids and fighter sweeps in an effort to keep Fighter Command guessing, and it used the fast Ju-88 bombers to make effective lightning raids against airfields and radar stations.

The computer's main error was to send it's main-effort bomb raid against London, Raid A, into the game ahead of all the others, thus neutralizing the value that the smaller attacks and nuisance raids had in keeping the British guessing.

You can tell when the main raid has come on screen; it's usually a force of 250 or more aircraft, flying at more than 15,000 feet and moving relatively slowly. Raids by fighters, Stukas, and Ju-88s tend to fly faster and much lower, from 1,000 to 5,000 feet above sea level. We could be pretty sure that it was a safe gamble to commmit a large number of squadrons to this single raid because the evidence pointed to Raid A being the Germans' main effort.

What could we have done better? The timing of our intercept orders could have been better, getting even more squadrons into the battle against Raid A. If we had this battle to do over, we could have made even more intercept assignments against A; it was a slow moving raid, not too closely escorted, and ready for a good pummeling. It also would have been nice to have had extra squadrons available when Raid C's defenseless Stukas made their attack on the Fairlight radar station. Considering the fact that Raid C crossed the coast at Foreness at 0858 and stayed over Britain until 0910, there was plenty of time for a patrol squadron, had one been in station, or a squadron on Cockpit Alert to make an interception. As it was, two squadrons far away from C were

assigned to chase it (and never caught up), and a patrol flight ended up making the actual attack (bagging three Stukas).

Damage from the raids was relatively light. The Fairlight radar station and the airfields are all functioning, and London remained unharmed. The German effort did little to damage British military or civilian targets. The defense made by Fighter Command was a success.

As we pat ourselves on the backs, let's also take a moment to thank programmers Charles Merrow and Jack Avery for a strikingly realistic command.

11 DOGFIGHTS

As vividly as it recreates the adventure of the Battle of Britain, *Fighter Command* dosen't put you into the cockpit. It puts you in the command bunker. To experience the tactical challenges of a World War II/Korean War-era combat pilot, you need another game by Charles Merrow and Jack Avery called *Computer Air Combat* (SSI).

Before I attempt to be profound about this game, let me preface my tips on play by saying that many of them are adapted from the tips in the player's manual, which is one of the best in the computer-wargaming field. I have a few suggestions of my own, but let's start with some of the points the authors have covered.

KNOW YOUR AIRCRAFT

The first tip is to know the capabilities of your plane and, as in *Fighter Command*, pick the right plane for the job you propose to do. In the dogfighting scenario, for example, if the U.S. player is equipped with P-51 Mustangs, you as the German player will want a plane of comparable or superior performance, like the FW-190, the Me-109E, or the Me-262. Planes like the Me-110, Ju-88G, and Ju-87 can't provide real competition for the Mustang even when both players are equally skilled.

For help in selection, consult the list of each country's planes on pages 126–130. These descriptions are meant to provide you with a general basis for comparison of the aircraft. The planes are listed in order of performance, as I rate them; you may rate them differently, but I think you can trust my judgement. Fighters and bombers are listed separately, within the entry for

COMPUTER AIR COMBAT: AIRCRAFT CAPABILITIES

U.S. FIGHTERS

P-51D "Mustang"—High speed, heavily armed plane (six machine guns) with excellent all-around performance. High maneuverability. Good match for all top fighters. Speed—440 MPH.

P-47D "Thunderbolt"—Fast and damage-resistant fighter with great all-around performance. Eight machine guns. Good visibility. Good match for all top fighters. Can dive out of almost any scrape. Absorbs damage well. Speed—430 MPH.

P-38G "Lightning"—Twin-engine fighter with excellent all-around performance. Heavily armed with a 20-mm cannon and four machine guns. High climb rate, superb in a dive. A match for all top fighters. Speed—410 MPH.

F4U-1 "Corsair"—Superb single-engine fighter. Armed with six machine guns. Fast and nimble, it can dogfight anyone's best. Speed—420 MPH.

F6F-3 "Hellcat"—Fine single-engine fighter with armament of six machine guns. Fair visibility. Not a first-rank fighter, it's a good match for planes like the A6M2 Zero, the Me-110C, and the Hurricane. Speed—380 MPH.

P-40C "Warhawk" (Known as "Tomahawk" in Britain)—Great in its day, the P-40C is not a match for most of the fighters in this game. Not as maneuverable as top fighters, it still absorbs lots of damage without failing. Armed with four machine guns. Speed—350 MPH.

F4F-4 "Wildcat"—In same class as P-40. Obsolescent as World War II began. In this game, armed with six machine guns (in real life it carried four guns). Speed—318 MPH at 19,400 feet.

P-61A "Black Widow"—A night fighter that's meat on the table for first-rank fighters in daytime. A good match for the Me-110G and the Beaufighter I. Perfect for shooting down bombers. Heavily armed with four foward-firing 20-mm cannons. Speed—360 MPH.

U.S. BOMBERS

B-29 "Superfortress"—The most awesome four-engine bomber of the war and also the best defended, carrying 24 turret guns, including tail weapons. Absorbs damage very well. Very, very dangerous to attack from any direction; the safest attack is from below and head-on. Speed—360 MPH.

B-17G "Flying Fortress"—The most famous bomber of World War II. Heavily defended by 16 machine guns, including tail weapons. Dangerous to attack at any angle, even head-on. The Fort can absorb lots of damage. Best attack is from below and behind. Speed—300 MPH.

B-25 "Mitchell"—A twin-engine medium bomber. Adequately defended by eight machine guns, including tail weapons. Best attack is from below and head-on. Speed—280 MPH.

SBD "Dauntless"—A single-engine navy dive bomber. Authors Merrow and Avery may have had in mind a torpedo plane, the famous Douglas Avenger, when they created the simulation model for this aircraft, because in addition to the two forward-firing machine guns the Dauntless had, they've attached a turret gun it never had! Despite the turret, the Dauntless should still be an easy kill if attacked from below. Speed—253 MPH.

BRITISH FIGHTERS

Spitfire IX—One of the finest fighters of the war. Heavily armed with two cannons and four machine guns. Excellent maneuverability, speed, climb, and dive. Can dogfight with anyone. Speed—420 MPH.

Spitfire I—The classic fighter of the Battle of Britain. Great in maneuver. Carries heavy firepower with two cannons and four machine guns. Speed—360 MPH.

Tempest V "Typhoon"—A derivative of the less successful Typhoon. Performs well at low altitude (under 11,000 feet) against second-rank fighters and V-1 flying bombs. Armed with four cannons. Speed—440 MPH.

Hurricane I—A classic, despite its second-rank status. Top fighters outspeed the Hurri, but it is nimbler in a dogfight. Heavily armed with eight machine guns. Speed—330 MPH.

Beaufighter I—Not a first-rank pursuit plane, the Beau is a twin-engine craft suited for night-fighter and bomber-destroyer missions. Heavily armed with four 20-mm cannon and six machine guns. speed—330 MPH.

Mosquito II—A very successful twin-engine night fighter. Fast enough to knock down V-1 buzz bombs. Heavily armed with four cannon and four machine guns. Speed—420 MPH.

BRITISH BOMBERS

Wellington II—A rugged twin-engine bomber with light defensive armament (six machine guns, including nose and tail weapons). Attacks from all directions can succeed; the safest are from behind and head-on. Speed—250 MPH.

Lancaster I—A big four-engine British workhorse. Heavily armed with ten machine guns and especially dangerous to approach from behind. Safest attack is from below and head-on. Speed—270 MPH.

GERMAN FIGHTERS

Me-262A "Swallow"—Twin jet engines make this the fastest German fighter in the game. Maneuvers well at high speed, but is subject to instability and can be unforgiving when mishandled. Can dogfight anything in the air and is a great Flying-Fortress killer. Heavily armed with four 30-mm cannons. Speed—540 MPH.

FW 190D "Long Nose"—Excellent overall fighter. Fast, maneuverable, and moderately armed with two 20-mm cannons and two machine guns. A good match for the P-51. Good visibility. Speed—430 MPH.

Me-109G-1 "Gustav"—This famous German fighter combines speed and great maneuverability. Advantages offset by less-than-heavy armament (one 20-mm cannon and two machine guns). Speed—390 MPH.

Me-109E "Emil"—See Me-109G-1 above. Good at high altitude, but less maneuverable as speed increases to 400 MPH and over. Speed—360 MPH.

Me-110C and 110G-4—This design failed as a day fighter in 1940 (110C), but became Germany's best night fighter. Heavily armed with

machine guns fore and aft (five machine guns, two 20-mm cannons). Good visibility. 110C speed—350 MPH. 110G speed—340 MPH.

Ju-88G—The night-fighter version of the speedy bomber. Heavily armed with weapons firing fore and aft (one machine gun and six 20-mm cannons). No chance against day fighters. Speed—340 MPH.

GERMAN BOMBERS

Ju-88A—Defense against fighters is adequate. See Ju-88G above for details. Safest approach is head-on and from below and behind. Speed—270 MPH.

He-111H-6—A medium, twin-engine, bomber and torpedo plane. Fairly vulnerable against day fighters. Defended with only six machine guns firing fore and aft. Safest attacks from below and ahead and from below and behind. Speed—260 MPH.

Ju-87B "Stuka"—This single-engine dive bomber was the symbol of the Luftwaffe but easy pickings for day fighters. Despite aft machine gun, it's virtually defenseless against attacks from behind and from ahead and below. Armed with two forward machine guns and one rear-firing gun. Safest attacks from ahead at an angle away from the forward-fixed guns. Speed—240 MPH.

JAPANESE FIGHTERS

Ki. 84-1 Hayate "Frank"—A better fighter than the Zero series and the Oscar, this single-engine craft is a match for any first-class fighter. Maneuverable with good visibility. Armed with two machine guns and two 20-mm cannons. Speed—430 MPH.

Ki. 43-IIa Hayabusa "Oscar"—This single-engine plane is fast and maneuverable, but not very sturdy or durable. Lightly armed with two machine guns. Speed—330 MPH.

A6M2 and A6M5 Zero Sen "Zeke"—An all-around great single-engine fighter, it is an interesting type to pit against the best of other nations. Maneuverable and turns very sharply. The way to shoot it down is to make a diving pass at it; don't turn with it. Armed with two machine guns and two 20-mm cannon. A6M2 speed—320 MPH. A6M5 speed—360 MPH.

JAPANESE BOMBERS

G4M1 TYPE 1 "Betty"—A fragile multi-purpose bomber defended by five turret guns. Safest attacks are from ahead and below and from head-on. Speed—270 MPH.

D33A "Val"—Japan's navy dive bomber is virtually defenseless to attacks in all directions except head-on, and even that attack is not too hazardous. Defended by two forward-firing fixed guns and one rear-firing gun. Speed—240 MPH.

each country. Bomber performance rankings are based on defensive capabilities. The speeds listed for all planes are those listed for the simulation; they are not necessarily the same as those you may find in historical records.

One last word on the selection of aircraft. The game comes with a representative sampling of the World War II aircraft of Germany, Japan, Great Britain, and the U.S. Though there are only 36 aircraft represented in this sampling, persons with the updated version of *Computer Air Combat* (version 1.1) can purchase a data disk from SSI with 50 more aircraft from which to choose.

Once you "know your aircraft," you can create some interesting match-ups for the "Dogfight" scenario and the other games in *Computer Air Combat*. Be aware that match-ups don't have to conform to historical alliances. If you want to match a Japanese Zero against a German Me-109E or a U.S. Mustang against a British Spitfire IX, that's OK.

Some match-ups you might enjoy (with scenarios in parentheses) are:

P-40 vs. Me-110C (Dogfight)

Me-262 vs. P-51 (Dogfight)

P-51 vs. FW-190 (Dogfight)

P-61 vs. Lancaster (Night Fighter)

Spitfire IX vs. Me-109G (Dogfight)

A6M2 vs. Me-109E (Dogfight)

Me-262 vs. B-29 (Bomber Intercept)

Me-109G vs. Ki. 84 "Frank" (Dogfight)

Spitfire vs. B-17 (Bomber Intercept)

These battles represent historic pairings as well as some argument-settling match-ups of great aircraft and their equals. If you're lucky enough to have the data disk with 50 additional aircraft, you'll also be able to construct some other very interesting confrontations.

IN THE PILOT'S SEAT

"Knowing your aircraft" isn't restricted to being familiar with its performance specs. You also have to practice "piloting" your plane to become familiar with its handling characteristics and idiosyncracies. Each plane requires a certain amount of time to climb a given distance. Every plane has a different

radius of turn. If your plane takes longer to turn than your opponent's, you can't expect to beat the other plane by turning with it. Eventually, the other guy will make more turns, wind up on your tail, and shoot you down.

You can learn the turning characteristics of your plane very easily by practicing flying it in a relatively safe scenario like "Air Race," "V-1 Intercept," or "Bomber Intercept" in which you can be sure no one will chase you.

We haven't gone into the mechanics of commands and keyboard procedures for any game thus far, but we'll make an exception here because the technique of turning your aircraft in the shortest possible time is a crucial skill in playing this game.

Let's assume you're flying a P-51 at 350 MPH with the nose and wings level. Roll the aircraft two points over into a bank (RR = roll right, RL = roll left), and then order a turn (TR or TL).

Your plane will not turn right away. A CURRENT MANEUVER message in the text window will read TR or TL as long as you are still turning right or left. To execute the turn, issue the command ST (the command means *straight* or *continue to execute the current command, then go straight afterwards*). You will then be prompted to input how far you want to fly "straight," from .1–3.5 distance units (.1 distance unit per each one of the P-51's current 350 MPH).

At this point, .1 is your input. The CURRENT MANEUVER will still read TR or TL because the distance traveled (.1) is not enough room for the P-51 to complete the turn. You continue by inputting .1 over and over and *keep count!* When you finally complete the turn (the CURRENT MANEUVER line will read NONE and the heading will be different), you will have a count of the number of .1 distance points it takes for a P-51 to complete a 45-degree turn at that speed.

If you repeat the process for other planes you will find that the results vary. This will give you a feeling for the maneuverability of various types of aircraft. By noting how far a plane will go in a straight line on the map before the turn is executed, you'll also be able to plan your attacks with more precision.

"Expect the unexpected," advise the authors of the player's manual. By this, they mean that you should expect attacks out of the sun and attacks from behind and below. This is good advice, considering that the simulation allows for reduced visibility in the direction of the sun. In real life, the first lesson a fighter pilot is taught is to watch out for "bandits" diving out of the sun. The second lesson he's taught is to attack out of the sun.

So far as attacks from behind are concerned, your vulnerability is strictly defined by the type of aircraft you're using and the numbers you have. Obviously, a P-51 or an Me-109E are very vulnerable to attacks from behind because these planes have no rearward visibility. Aircraft like the Me-110C, the Ju-87 Stuka, and the D33A Val are less vulnerable since they have rearward-facing crewmen to spot attacks from behind and guns that have at least a lim-

ited field of fire to the rear. Craft like the B-17 and B-29 are the easiest to defend against attack from the rear, since they have ample crew and weapons facing rearward.

If you're using one of the more vulnerable craft, such as a single-place fighter, the authors recommend occasional changes of course to throw off the timing of would-be attackers. Another tactic, when there are several planes involved, is to put your planes in a formation that allows each member of the flight to cover every other. A "finger-four" formation is ideal for this purpose. For an idea of how the finger four should look, stretch out the fingers of one hand and imagine a plane at the end of each one (except the thumb). That's a finger four.

The manual also suggest that you "be aggressive." You can't win the dogfight without trying to find and attack your opponent. The trick is keeping the upper hand in maneuver. Knowing the turn characteristics outlined earlier is also important in planning an attack.

One last tip in the manual is to conserve speed and altitude. If you lose 1,000–2,000 feet of altitude by a dive maneuver or if a climb cuts your speed by 100 MPH or so, you may find yourself spending a half hour of real time trying to regain your former position. Some planes, like the Me-262 jet interceptor, offer little trouble in climbing and acceleration, but waiting for the P-47 to gain altitude is like watching beach erosion; they both happen, eventually, but the wait can kill you. Again, know what your plane can do before you execute any maneuvers. Don't try any tactic—for the sake of a single firing pass at a target—that effectively removes your plane from the rest of the game.

A tip of my own would be to learn how to execute a half loop followed by a roll. This is the Immelman, a maneuver named after a German fighter ace of World War I; it's the most efficient way of changing direction with a minimum loss of speed and altitude. Assume that your plane is a Me-109G intercepting a Wellington bomber head-on. Both planes are at 11,000 feet, the Wellington headed east at 210 MPH and the Me-109 going west at 310 MPH. After your firing pass at the Wellington, you are moving away from each other at the equivalent of 520 MPH.

This is where the roll comes in. Command the Messerschmidt to bring its nose up (NU command). Order ST (straight), then answer .1 over and over to the HOW FAR request until the NU in the CURRENT MANEUVER command line disappears, and the text box shows the message NOSE N1. That means the nose is raised at a shallow angle. Repeat the sequence until the nose is at N2. Repeat again. At the end of the third nose-up maneuver, the heading message line (HDG) should read E for *east.* You have completed the loop and are now headed in the opposite direction.

A message will ask how high you want to climb. Input the maximum amount in the range offered. Execute a roll to fly right-side up. By the end of

the roll sequence, your plane should be about 1,000 feet higher than the Wellington. You are now chasing the Wellington, but at about one-third less speed. Given your height, you can order nose down (ND) and in a shallow dive to, say, 11,200 feet regain most of your speed by the time you catch up with the Wellington. At the same time, you'll be a little above the plane and in an excellent position for another firing pass.

12 VICTORY

Winning isn't always equivalent to victory in computer wargaming. Unlike simpler games where the matter of who wins is clear cut—as in bankrupting your opponents in Monopoly or checkmating the king in chess—wargames frequently have goals above and beyond massacring the other player's troops. If you achieve those stated goals, you can, in some games, win even if the other side has been mopping up the floor with your forces.

DEGREES OF VICTORY

To understand the concept of computer-wargame victory, you first have to understand how game designers define winning.

In virtually all computer wargames, your performance on the battlefield will earn you "victory points." These points are gained for reaching objectives, eliminating enemy forces, and so forth. In your manual or rule book, the section describing the goals you must reach is usually called "Victory Conditions."

The amount of positive or negative points you earn, compared with those earned or lost by the other side, determines not only who has won, but how decisively. The terms most typically used to describe the results of the games are *marginal victory*, meaning you just managed to beat your opponent, *tactical victory*, which means you've achieved just about all of your objectives but at the cost of moderate to heavy casualties, and *strategic* or *decisive victory*, which means you've achieved your goals with very few casualties. These are the terms found in most games. You'll encounter variatons on these terms, but the meanings will remain basically the same.

There's actually a very good reason why we talk about victories as being marginal, tactical, or strategic/decisive. The issue of victory magnitude is very important when you're dealing with a simulation of a historical battle. For example, your "marginal" victory compared with a "decisive" historical result gives you, the player, a very good idea of how your performance compares with that of the historical commander—in this example, the comparison is not very favorable. Most wargames find great satisfaction in at least matching, if not bettering the historical results. There is just as much fun to be had by changing the historical results entirely and winning where the historical general met defeat. Beating the Russians in *Eastern Front* or trouncing Montgomery and the British in *Knights of the Desert* is a very invigorating experience for a wargamer.

THE OBJECT OF THE GAME . . .

You have to bear in mind that in creating simulations of historical battles, game designers attempt to make the object of the game the same as the goals of the real-life commanders. Therefore, you can expect that the key to victory in your game playing will rest not just in causing the most enemy casualties but in reaching certain objectives or in preventing specific things from happening.

In *Battle For Normandy*, for example, the casualties you inflict are secondary to the goals of capturing three French cities, Cherbourg, St. Lo, and Caen. Those towns were the immediate objectives of the Allies in the 1944 D-Day invasion of Europe, and they are your goals as the Allied commander in the computer simulation. Never mind all the German units you've destroyed in combat. Never mind the work you put into linking all the beachheads. If you don't have those three cities firmly under your thumb when the game ends, you'll probably lose. If you're the German commander, forget about driving a wedge between the beachheads. Forget about slaughtering the enemy. Just hold on to those three towns and you'll win. The game designers force you to make the goals of the historical battle your own.

Another example is *Tigers in the Snow*. As the German commander, your job is once again defined by history. You must break through the Allied line and exit units off the map at a certain point to win. Once again, the casualties you inflict on American units are not nearly as important as bringing your own units safely to their exit points.

In naval games you would think that the goal is pretty easily defined—sink the enemy's ships. This is not always the case. In *North Atlantic '86* the NATO player can lose points for failing to keep Scapa Flow in supply. In *Computer Bismarck* the British player will lose a substantial number of points for failing to bring his convoys to certain points on the map in time. In both

of these games, winning can be defined as keeping Britain supplied just as much as it is defined as beating the enemy in battle.

Air-power games are not much different. In *Fighter Command*, the British player can lose points by the bushel for failing to prevent the enemy bombers from attacking their targets. You may think that you're doing well, attacking and destroying German fighters, but they earn you no victory points. Bombers, on the other hand, are worth many points becasuse by eliminating them you protect the targets you defend. Again, sheer slaughter isn't the goal, so much as destroying the right targets.

The moral of the story is that there is more to winning wargames than slaughtering the enemy and there is more to learning about wargames than learning how to kill the enemy. You have to learn how to attain the objectives the game sets for you with the least amount of blood spilled.

It pays to carefully read the player's manual so you'll know just what you're fighting for. Once you know that, you'll at least have an advantage over the millions of soldiers who, over the centuries, had no idea at all of what they were fighting for.

13 FANTASY/ ROLEPLAYING GAMES

When we watch movies or read books, most of us tend to size up dramatic situations side by side with the fictional characters. Don't you find yourself making your own decisions on what to do next in the dramatic situations at hand?

When the hero runs into trouble—because he selected a course of action different from the one you would have picked—you say to yourself in triumph, "See! Now if he had only done it my way . . . " That's part of the fun of fiction, as is the feeling you get when the hero takes the course of action you would have chosen and everything turns out OK.

This is called *escapism*, and it's one of the best ways to transport yourself briefly and safely from your daily routine to a world where you can find action, adventure, and romance. This is roleplaying that everyone enjoys.

As much fun as this activity may be, the fantasy remains out of your own control. The film or book doesn't "interact" with you as you decide on the hero's next move. You might be able to imagine what would happen if your own plotting were substituted, but the finished work of art will run its course unaffected by your actions.

An obvious improvement would be fiction that interacts with you, letting your decisions and actions influence the outcome. This is what fantasy games are all about. A fantasy game is actually a novel that you write, within certain bounds and conventions as outlined by the rules. A fantasy game puts the fictional experience under the player's control. More concrete than daydreams, more involving than passively watching a movie or reading a book, these games let you escape into fantastic worlds of your own choosing.

In these lands of adventure, the rules of conduct are as highly structured and as rigid as they can be made, but this does not restrict action. Instead, the structure allows the player to act heroically, winning rewards or suffering the consequences, as his actions dictate.

THE ROOTS OF FANTASY

Fantasy games were not produced through spontaneous generation. Though they *are* a fairly recent phenomenon, the preparation of the ground for them has been going on since time past remembering.

The earliest traceable roots of formal fantasy/roleplaying (as opposed to daydreaming and escapism) lie in ancient and eldritch primitive rituals, folk stories, and legends. Today we call these old folk stories *fairy tales.* They became especially popular in the nineteenth century because of the Brothers Grimm, who relentlessly collected European folklore and adapted it for an audience of child readers.

These haunting stories, which have been sanitized and sweetened through retellings since the days of the Grimms, are compelling tales of magic, violence, child abandonment, good and evil. Kids nowadays seldom get the full, uncut Grimm product (which, considering the scary and gory nature of the stories, may be a good thing). But no matter how tame the version one reads may be, certain basic themes always come though loud and clear, and we remember them and remain fascinated by them all our lives. Through these tales, the foundations for the modern fantasy boom were laid.

MODERN FANTASY FICTION

Fantasy writing for adults flowered in the 1960s and 1970s with the popularity of J.R.R. Tolkien's *Lord of the Rings* novels. Suddenly, it was perfectly acceptable for adults to enjoy fairy tales, since they were written at a grown-up level of sophistication. A whole school of writers like Tanith Lee, Michael Moorcock, Roger Zelazny, Andre Norton, John Crowley, Anne McCaffrey, and Ursula K. LeGuin have found a large and receptive audience for their fantastic tales. As a result of all this activity, people have become—if I may use a trite way of describing it—fantasy-conscious.

It is only natural that the popularity of fantasy literature has spawned an interest in fantasy/roleplaying games. This interest has been growing rapidly and steadily, with no sign of abating.

DUNGEONS AND DRAGONS

The first game manufacturer to successfully ride this wave of interest was TSR Hobbies, the giant in the fantasy-game industry, with the all-time cham-

pion roleplaying game series, *Dungeons and Dragons*. Within a few years of its creation, D&D clubs and groups were active all across the country, especially among high-school and college students. Fantasy gaming had arrived and nothing, including the invention of computer games, would displace the D&D series from the hearts of players.

We won't go into extensive detail about D&D here—this is supposed to be a book about computer games, after all—but it's only right to give TSR Hobbies and authors Gary Gygax and Dave Arneson the credit for *Dungeons and Dragons* and for their originality in devising the first realistic and satisfying roleplaying game system. D&D's roleplaying system is the inspiration—in varying degrees—for many computer fantasy games.

One of the most remarkable things about the *Dungeons and Dragons* games is that they are so popular despite their long and involved rule books. Playing D&D is really a replay of the wargame experience. In order to make the experience realistic and for it to work properly, the D&D games require a lot of rules. These rules must be studied very carefully by the players, especially the player who takes on the Dungeonmaster's chores.

Looking at the Dungeonmaster's job, we can immediately detect a drawback of conventional fantasy games. Because there's no computer referee, one of the players has to forego the pleasures of fighting and spell-casting to be the Dungeonmaster. His job is to operate the maze in which the adventures take place and to umpire the action of the game. Unlike even a board wargame, in which the rules are enforced by general consent, the fantasy game requires an umpire who can change conditions in the maze (such as placing monsters and traps) and police the action.

THE COMPUTER STEPS IN

It's easy to see that having a computer act as Dungeonmaster is a great idea because then everyone can play! Another advantage of computer fantasy games is that the rules can be digested in one short sitting. Much of the action of a conventional roleplaying game like D&D can only be controlled if the players have memorized lengthy and complex rules. In computer fantasy games, the action is umpired automatically by the computer. This eliminates the need for a big, bewildering rule book.

Considering this, it seems that just as computer wargames were a logical development from board wargames, computer roleplaying fantasies were the inevitable outgrowth of the D&D craze. Unlike D&D, the typical computer game has no long and difficult rule book to master. Sometimes the rules are printed on a single card! Best of all, no one need assume the role of Dungeonmaster in order to umpire the game. With the rules in the computer's memory, the player can concentrate on play while the machine administers the game as an electronic Dungeonmaster.

We are going to explore the world of computer fantasy games largely through an examination of three of the most popular games currently on the market. The games we'll be studying are two instant-fantasy/roleplaying classics, *Wizardry* and *Ultima*, and a fantasy game in which you experience the responsibilities of kingship, *Excalibur*. Among them, these three games embody the most important and interesting features of fantasy gaming. In the process of examing them, we'll encounter many general principles of play that hold for other computer fantasy/roleplaying games as well.

14 WIZARDRY

In the land of Lyllgamyn, several ages ago, the people were oppressed by an evil wizard named Werdna. Having taken from Overlord Trebor a valuable magic artifact, Werdna lived in Trebor's dungeons. Under Werdna's spells, the dungeons became an insane complex of underground passageways peopled by thousands of nightmare creatures—monsters, vampires, maddened animals, and criminals of almost unimaginable evil. This subterranean warren of horrors was known variously as "The Maze" or "The Proving Ground of the Mad Overlord."

The Proving Ground was so named because adventurers flocked to Lyllgamyn in hopes of winning fame by vanquishing the Maze monsters and killing Werdna, thus proving their heroic stature. The Maze only swallowed up these brave warriors, never to be seen again.

Now you're going to give it a try, eh? Good luck to you. Here's what you'll need to defeat Werdna. First, you'll need six stout-hearted adventurers equipped with weapons and spells, ready for anything. Next, you'll need some magic items that Werdna has hidden in the Proving Ground. I can't tell you what they are or where you'll find them. The only way to get them is to go in after them. Once you have all the items you need, you must find your way to the tenth and lowest level of the Maze, locate Werdna and kill him before he drains you of all life and vitality.

That's the legend of The Proving Ground of the Mad Overlord, the first in the great *Wizardry* series of fantasy/roleplaying games. As we explore the mysteries of *Wizardry*, we'll discover how characters are created; what roles they play in the game; how they can obtain weapons, spells, and armor; and how they explore the Maze. Finally, we'll go over some basic tips for play.

Before we do, it's time for a little *Wizardry* geography to help you find your way around.

THE TERRAIN OF FANTASY

Let's first get familiar with the above-ground features of the *Wizardry* universe.

All the action of the game starts and ends in the Castle. From the Castle you can go to Gilgamesh Tavern, the Adventurer's Inn, Boltac's Trading Post, the Temple of Cant, and the Edge of Town.

From the Edge of Town you may go to the Training Grounds to create characters (more on this in the next section) or to examine the Character Roster (a listing of all the characters you've created), to the Maze, or out of the game.

Gilgamesh Tavern is where you'll assemble up to six characters for a trip into the Maze. You may add characters there and you may also drop as many as you like and replace them with others from the Character Roster.

Boltac's Trading Post is the only place you may buy spells, weapons, or armor (although you may find these items in the Maze). Boltac will also buy articles you no longer want to keep. Boltac's services include identifying items you've found and uncursing the evil ones so your characters can use them.

At the Temple of Cant you can resurrect characters killed in the Maze—for a fee. Even characters who have been turned into ashes can be saved, but characters who have been utterly obliterated by clumsy attempts at resurrection inside the Maze are lost forever.

The Adventurer's Inn is our last stop. Here tired magic-users can refresh all their spells, the wounded can find healing treatment (for a fee), and those who have advanced a level can find out what their new powers and hit-point ratings are.

Now let's look below ground, briefly.

In computer fantasy games, the land almost always slopes downward into dungeons, mazes, and dark caves. The Maze is no exception. It is a place, ten levels deep, where you must be prepared for the unexpected—before it jumps out of the shadows and claws you to shreds.

In wargames we expect to find predictable terrain—hills, forest, rivers, oceans, swamp, and so on. We also have a good idea of what happens when you set foot on any of those terrains. This isn't so in the Maze, where things aren't always what they seem to be. A blank wall may have an invisible door in it. What you find beyond the doors changes from place to place. You may find rooms, vast or tiny, empty or full of monsters; corridors; black areas where you see nothing; spaces where magic doesn't work; pits; turntables; and even space warps that bring you back to where you started on that level.

Anything is possible—and likely. The trick is to have characters in your party who are up to the rigors of the quest. Let's turn to that problem now.

THE CHARACTERS OF FANTASY

Who inhabits the land of fantasy?

You have to understand, first of all, that the inhabitants of a fantasy world aren't always, strictly speaking, human.

In *Wizardry* a character is first established by race, and then his attributes are determined. These attributes point to the functions the character is best suited for in the game.

There are five races available for character creation in *Wizardry*: *elves, humans, dwarves, gnomes,* and *hobbits.* These characters may become *fighters, mages, priests,* and *thieves,* with the possibility of later becoming "elite" characters—*bishops, samurais, lords,* or *ninjas.*

All *Wizardry* characters have certain attributes; these are *vitality, strength, agility, wisdom (IQ), piety,* and *luck.* Each character must have a moral alignment as well, choosing among *good, neutral,* and *evil.* Before we make any choices, let's first look over what the attributes mean.

Vitality is the ability of the character to absorb wounds. This is roughly translated into *hit points.* Each wounding, each poisoning, saps hit points from your character (poisonings do it progressively, until the character is all but dead). When the supply of hit points reaches zero, your character is dead. At first, your characters will have very few hit points, even if the vitality of the character is high. As the game progresses, a high-vitality player will acquire additional points rapidly—assuming that you don't kill him some other way before he gets them.

Strength is the measurement of a character's ability to dish out punishment. In short, it measures how hard a blow he can strike. This is, of course, crucial in combat.

Agility is speed and the ability to hop, skip, and jump around traps and barriers. It's also a nice quality to have when you're attempting to disarm a trap in a treasure chest. Thieves are among the most agile characters in the game.

IQ is the most important attribute when it comes to mages. The more wisdom a mage has, the more spells he'll be able to learn and cast effectively. some spells come in very handy in combat.

Piety is to a priest what wisdom is to a mage, the basis for his ability to learn the spells of his trade. The piety of a priest may well spell the

difference between life and death for wounded party members when the priest tries to heal or resurrect them.

Luck is just that—good fortune. In a fight, it sure helps to have luck, since it may mean evading the wounding slash of a kobold or the sword thrust of a brigand.

So much for attributes; now for the roles these characters will assume.

Fighters have a function that's pretty easy to figure out. They take care of the rough stuff when monsters, undead spirits, evil magicians, or human enemies attack. The determining attribute in creating a fighter is strength. IQ isn't important, although good agility, luck, and vitality are a plus.

So far as moral alignment is concerned, fighters can be good, neutral, or evil. A good or neutral fighter can become a *samurai*. Samurais eventually learn magical spells for use in combat. Evil fighters may become *ninjas,* the "human fighting machines" of *Wizardry.* Under the right circumstances, a fighter with sufficient piety and a "good" alignment may become a *lord*. This fighter may then use priestly healing spells.

Mages are the real wizards of *Wizardry*. They practice a profane magic, which is used primarily in fighting and in shielding the party. Their spells are vital to the defense of the entire party of adventurers. The use of weapons and armor is severely limited for mages. Mages may be good, evil, or neutral.

Priests practice sacred magic. They have a few spells which can be used in combat—and some are very, very effective indeed—but their main purpose is to cast healing spells which patch up members of the party after combat. The primary attribute of a priest is piety. Like the mages, the priests' use of armor and weapons is very limited. Priests may also be good, evil, or neutral.

Bishops can use either priest or mage spells and can also identify magic items found during the adventure (the alternative is schlepping the item back to Boltac's Trading Post where Mr. B. will make the identification—for a heavy fee). Characters with enough wisdom and piety can eventually become bishops. Bishops must be either good or evil. They cannot be neutral.

Thieves have the ability to open treasure chests without setting off the deadly traps sometimes hidden within. They have a limited ability to fight and are allowed a small selection of weapons and armor. They must be either evil or neutral.

Now that we have an idea of what the various classes of characters do, let's try to match up the races with the character classes that best suit them—as recommended to me by *Wizardry* author Andrew Greenberg.

Dwarves make the best fighters, Greenberg says. They may be short, but they are burly and disproportionately strong for their size.

Elves, being magical creatures to begin with, make the best mages. *Gnomes,* on the other hand, are just naturally more pious and make the best priests. Both make good bishops. *Hobbits,* because of their compact size and great agility, make the best thieves.

Humans are not particularly interesting creatures, I'm sorry to report. They are "sort of good" at everything but don't specialize in any one skill the way other races do. Still, I find that I most identify with any human character in the party I'm adventuring with.

ORGANIZING YOUR PARTY

Once you have created characters, it's time to build a party to explore the Maze. Many roleplaying games concentrate on a single character, but *Wizardry*'s focus is on a party of from one to six characters whose varying skills and talents complement each other in the struggle for survival in the Maze of the Mad Overlord.

The mix of characters recommended in the manual as the strongest for the beginning player with characters in levels 1–3 (we'll talk about levels in a moment) is two fighters, one thief, one priest, and two mages. This gives you five characters (the fighters, mages, and ostensibly the thief) who can fight monsters and one (the priest) who can heal the casualties.

I having found this grouping to be less than ideal when I take a party into the maze for an adventure. My recommendation is a party balanced between magic-users and fighters—three fighters, two mages, and a priest. Over the course of many hundreds of hours adventuring with characters old and new, I've found the value of a thief to be marginal at best, while the third fighter has almost always justified his presence by helping to save the party.

Before I leave the subject of parties, let me point out that I have received differing recommendations from other *Wizardry* players. The "keep the thief" school of thought runs this way: "You have to keep the thief because he is the only one in an inexperienced party who can disarm a trapped treasure chest. Without that skill, you can't get the gold, magic objects, or weapons that the chest holds."

Now for the argument of the "lose the thief" school: "Lose the thief! Thieves are such bad fighters that in a combat he's going to be killed right away, so what use is he? The treasures and objects you find when you're building a character through the first three levels aren't worth the risk of

WIZARDRY SPELLS

Here's a list of the spells that priests and mages can cast in *Wizardry*, plus descriptions of what these incantations do:

PRIEST SPELLS

Level 1

KALKI - Improves all characters' armor strength by -1.

DIOS - Heals from 1–8 hit points per person.

BADIOS - Combat spell; inflicts 1–8 damage points on one monster.

MILWA - Allows whole party to temporarily see more of the Maze and all secret doors.

PORFIC - Improves the priest's armor for one combat.

Level 2

MATU - Improves the whole party's armor -2.

CALFO - Allows priest to detect traps in a treasure chest.

MANIFO - Combat spell; completely immobilizes one monster group.

MONTINO - Prevents a monster group from casting spells.

Level 3

LOMILWA - A longer lasting MILWA.

DIALKO - Cures paralysis and un-MANIFOs and un-KATINOS (see Mage Spells, Level 1) for one character.

LATUMAPIC - Identifies monsters.

BAMATU - Improved MATU.

Level 4

DIAL - Heals one character 2–16 hit points.

BADIAL - Combat spell; inflicts 2–16 damage points on one monster.

LATUMOFIS - Unpoisons one character.

MAPORFIC - Shields whole party.

Level 5

DIALMA - Heals 3–24 hit points for one character.

BADIALMA - Inflicts 3–24 hits on one monster.

LITOKAN - Burns one monster group for 3–24 hits each.

KANDI - Locates dead characters in the Maze.

DI - Resurrects dead characters . . . sometimes.

BADI - Instant monster heart attack.

Level 6

LORTO - Spray of blades through one monster group for 6–36 hits.

MADI - Heals one character completely.

MABADI - Removes almost all hit points from one monster.

LOKTOFEIT - Teleports whole party out of the Maze . . . maybe.

Level 7

MALIKTO - Inflicts 12–72 damage points on all monsters in all groups.

KADORTO - Resurrects one character.

MAGE SPELLS

Level 1

HALITO - Fireball that causes 1–8 hit points of damage.

MORGREF - Improves armor of spell-caster by -2.

KATINO - Puts one monster group to sleep . . . every so often.

DUMAPIC - Gives the exact location of the party for teleportation (see MALOR, Level 7).

Level 2

DILTO - Blinds one monster group.

SOPIC - Makes mage nearly invisible and improves armor by -4 for one combat.

MAHALITO - Explosion that does 4–24 points of damage to one monster group.

MOLITO - Sparks that cause 3–18 damage points to one monster group.

Level 3

MORLIS - Creates fear in one monster group; double the power of DILTO.

DALTO - Frozen gales chill one monster group for 6–336 damage points.

LAHALITO - Firestorm version of DALTO.

Level 5

MAMORLIS - Same as MORLIS, hitting all monster groups.

MAKANITO - Kills all monsters under Level 8.

MADALTO - Same as DALTO, but good for 8–64 damage points against one group.

Level 6

LANKANITO - Smothers some, all, or no members of one monster group.

ZILWAN - Dissolves any one undead monster.

MASOPIC - Improves the whole party's armor by -4.

HAMAN - Miscellaneous help for the party in a terrible fix. Caster must be Level 13 or better; casting reduces mage by one level. May or may not affect whole party.

Level 7

MALOR - Teleports party to any location.

MAHAMAN - An intensified HAMAN that affects the whole party.

TILTOWAIT - Like an all-out nuclear war in a phone booth. Does 10–100 points of damage to all monster groups.

bringing a thief along. Besides, you need all the fighters you can get, just to survive."

Well, those are the arguments. It's up to you to decide who goes on the adventure.

EQUIPPING YOUR PARTY

Next comes the matter of equipping your characters. This is done at Boltac's Trading Post, where new characters with limited funds must try to make their pitiful purses stretch far enough to buy even the most minimal weapons and armor.

Priority number one is a *weapon*. Fighters can use almost any weapon you select. The list of weapons available to thieves and priests is much more restricted, and mages are practically unarmed. Still, no matter what class your character may be, it's wise to give him a weapon just in case the fighters are killed in the Maze. In that situation, thieves and magic-users may engage in physical combat.

Some of the popular low-cost weapons available to beginning adventurers include staffs, flails, daggers, maces, short swords, and long swords, in approximate order of destructiveness. Some of the fancy weapons available to advanced characters are long swords +1 and +2. Other advanced weapons, such as the Murisama Blade and the Blade Cuisinart, must be found in the Maze.

Every so often you'll find a dandy weapon lying on the ground after a combat with monsters. If the weapon is described with a ?, as in ?LONG SWORD, wait until Boltac (or a bishop, if you happen to have one in your party) can identify it before using it. If the weapon is "cursed," the result of using it will be for the character to inflict serious injuries on himself! With luck you'll find something perfectly useful like a mace +2 or a long sword +3 which you can use in good health.

Armor is whatever protects the character from the physical assaults of the Maze monsters. The extent to which the armor protects the wearer is measured (during the game, not when you're buying, unfortunately) by a scale from +10 (stark, raving nude) through 0 (a full suit of armor) to -10 (roughly equivalent to a walking concrete blockhouse coated with several inches of tungsten-steel alloy). It's very easy to have a +10 armor rating; you simply go into the Maze having forgotten to buy or wear any armor. It's a little harder to be a -10. I've never seen a -10 in two years of Wizardry, even with the help of "cheat" programs. ("Cheat" programs are software that allow you to improve attributes, increase gold, and resurrect characters, all without having to go into the Maze. I think they take the fun out of *Wizardry*.) Yet other players report they've been able to attain armor ratings as favorable as -11! They just aren't telling me how they do it. . . .

To attain a respectable protection number somewhere in between, you have to buy armor at Boltac's to begin with. The cheapest armors are leather armor, small shields, and chain mail (and robes for the mages). Plate armor, large shields, copper gloves, and the like are more expensive, but they should be bought at the earliest opportunity. Every so often, after you've killed a monster, you'll find armor with a much higher rating. Again, remember to check that the armor is uncursed before you wear it.

The last class of goods available from Boltac's is *magic items.* Many of them are scrolls or potions that duplicate the effect of mage or priest spells. If your mages and priests don't know these spells or if they don't have them in abundance, it's worth buying all you can. Using any of these items is the equivalent of casting the spell. A little investigation reveals that most of the magic items in the shops that beginning players can afford are spell scrolls or potions that can be used to heal wounds and to cure poisoned characters. As soon as you can, acquire Potions of Dios for healing and Potions of Latumofsis for unpoisoning.

Now that we've assembled characters and bought them weapons, spells, and armor at Boltac's Trading Post, it looks like we're ready to go adventuring!

INTO THE MAZE

The most important decision a first-time player has to make is how far into the Maze he will bring his party in the first few explorations. My advice, and the advice of just about everyone else with any *Wizardry*-playing experience, is to make the visits into the Maze as short as possible the first few times you bring in a party.

The logic of this strategy is really quite simple. Most beginning characters will have from 10–20 *hit points*. This is the measurement of how much damage the character can sustain before he/she is killed. Since even the mildest of monsters in the maze can inflict 3 or 4 hit points at a blow, you have to admit that any exploration at all is risky. That's why your initial forays must be as short and sweet as possible.

To get to the Maze you first select to go to the Edge of Town. There, just before you enter the Maze, you'll find yourself in *camp.* In camp you can inspect the status of any of the characters in your party and perform other functions, the most important of which, in the beginning, is to EQUIP your characters.

You have to understand that simply because he posesses a weapon or armor doesn't mean that the character is ready to use it. By selecting the EQUIP option in camp, you may make sure that the fighters are wearing the armor and holding the swords you've bought for them, and that the magic-users are also appropriately attired for battle.

Next on the list of things to do is to READ THE SPELL BOOKS of your priest and mages. This you can do as you inspect the individual magic-users. The spell books should be almost—but not quite—empty as you begin the game. Mages will usually have two Level-1 combat spells to begin with—HALITO and KATINO—and the ability to throw as many as three Level-1 spells per visit to the Maze (not three of each spell, but three *total*).

The First Level of the Maze contains what I like to think of as a "training maze." This is a maze with a U-shaped central corridor and three rooms. When you enter the Maze from the Edge of Town, you land at the bottom of some stairs. Here you're asked if you want to go up again. Unless you've already lost your nerve, the answer is NO. By the way, don't be too frightened about getting out again. All you have to do to find the stairs again is to return to this location.

Before you go anywhere, grab a pencil and some paper to make a map. If you want to do a fancy and accurate job of mapmaking, invest in a pad of grid-ruled paper. You'll notice that a succession of vertical squares marks the walls of the corridor. For each square you pass, mark off one on the graph paper. This helps you to judge distances accurately.

Just for fun, execute a right turn. You do that by pressing the R key. This turns your perspective to the right but does not move you forward. To move forward press F. That command will make the screen flicker and apparently move you one square ahead as it executes. Repeat until you come to the end of the corridor.

As the end of the corridor approaches, you'll see a square facing you and coming nearer. That's a blank wall at the end of the passageway. If you key in another F command at that point you'll only bounce off the wall with an OUCH! message thrown in for good measure.

This is the time to turn around and try that door I'm sure you noticed on the left wall of the corridor as you passed by. Turn left (L) and go forward until you reach it.

Good. Now you're facing the door. A tense, scary moment, isn't it? Who knows what deadly monsters, what blood-curdling undead demons are waiting for you behind that door? To get it open will require just one little kick (K). Ready? Kick!

Blam! The door opens and the screen blanks out, then displays the picture of a monster. In the upper text window of the screen you're told which kind of monster is attacking you and how many of them there are.

—And that, my friends, is decided by the program on a semi-random basis. The monsters you're likely to encounter are probably slimes (a slime is a real beginner's monster), kobolds (a creature rather like an ogre—this one's more of a challenge), living skeletons, or scruffy men. These bad guys aren't much to fear—old Wiz hands are probably yawning at this point—but they'll put your fighters through a real ordeal.

The combat is semi-automatic. You decide the strategy for each character and the program computes the results (much in the same way a wargame resolves combat). Your strategy?

First, your swordsmen. They have the options to FIGHT, SPELL, PARRY, RUN, and USE. The correct choice, since a begining fighter has no magic objects and no spells, is to FIGHT. Assuming you only have one group of three or four monsters attacking you, all three fighters may be able to take care of the threat. We won't count on that.

To adjust the odds in favor of survival, we will order the two mages to cast their weak HALITO combat spells. Those incantations should shave a few hit points off two of the monsters. The priest could also be used to cast his Level-1 combat spell, BADIOS, but that means he will be able to use his healing spell, DIOS, one less time in the current adventure. For that reason you should order him to PARRY.

Assuming a four-monster attack, we should be looking pretty good with this five-character offense, right?

Maybe.

It's pretty certain that the monsters will take some pretty big chunks out of you before you can kill them and that the sword thrusts of your fighters will not, I repeat *not*, polish off the three monsters they are pitted against. The extra boost offered by the HALITO spells may kill one or two monsters in concert with the sword wounds. That leaves at least two monsters—one almost surely injured and one almost surely unhurt. Given what monsters are capable of doing to Level-1 characters, you should have at least three, probably four players wounded to the extent of one-third of their total hit points or more.

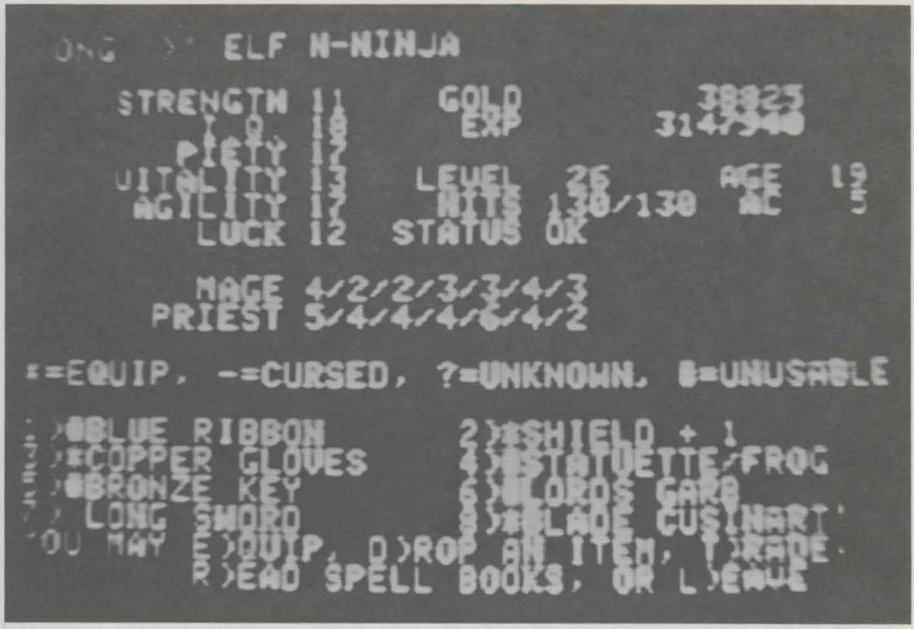
The combat therefore goes to a second round. Assuming no one was killed, the fighters all FIGHT again and the mages cast HALITO again. This time the priest gets into the act. He can cast one of his DIOS spells in mid-combat to heal one of the wounded characters.

When the program resolves this combat, the results should show that all monsters are dead and that each member of the party has been enriched from (approximately) 3–13 gold pieces. With a little luck there were no new woundings, enabling you to give the CAMP command. In camp, the priest can exhaust his DIOS spells. Again, with luck, this will suffice to restore the remaining hit points for all members of the party.

Now it's time to go. You have no more healing spells and probably no more combat spells. You will probably have clear sailing back to the staircase, so kick that door again, hang a sharp right, and hightail it for the stairs. When you see the TAKE THE STAIRS Y/N prompt, hit Y!

Whew! Made it!

Now that we're back upstairs, we'll want to shape up our characters so we can take them back into the Maze. (Did I just hear three imaginary fighters



Wizardry: Day in the Life of Kong. **Before a long day's adventuring, we check out the attributes of a key character in the party, Kong (photo A). We can see that he's got high ratings in all attributes and lots of weapons, gold, experience, and spells. This kid's ready for action! In photo B we get a Kong's-eye view (in the upper left-hand corner of the screen) of the Maze. The names of all the characters in the party are listed at the bottom. The characters are Kong, a neutral ninja; Wulf and Kerry, evil fighters; Healer, an evil priest; and Morgana and Blackstone, evil mages. Note their hit points. In photo C we've run into a specialty of the Maze's Fourth Level, a group of dragons and a group of flies. Kong has five options in this combat and chooses to cast a spell called TILTOWAIT. In photo D, having killed all the dragons, Kong's TILTOWAIT is killing all the flies. In photo E, Kerry is getting the news at the Adventurer's Inn that she's been promoted to a higher level.**

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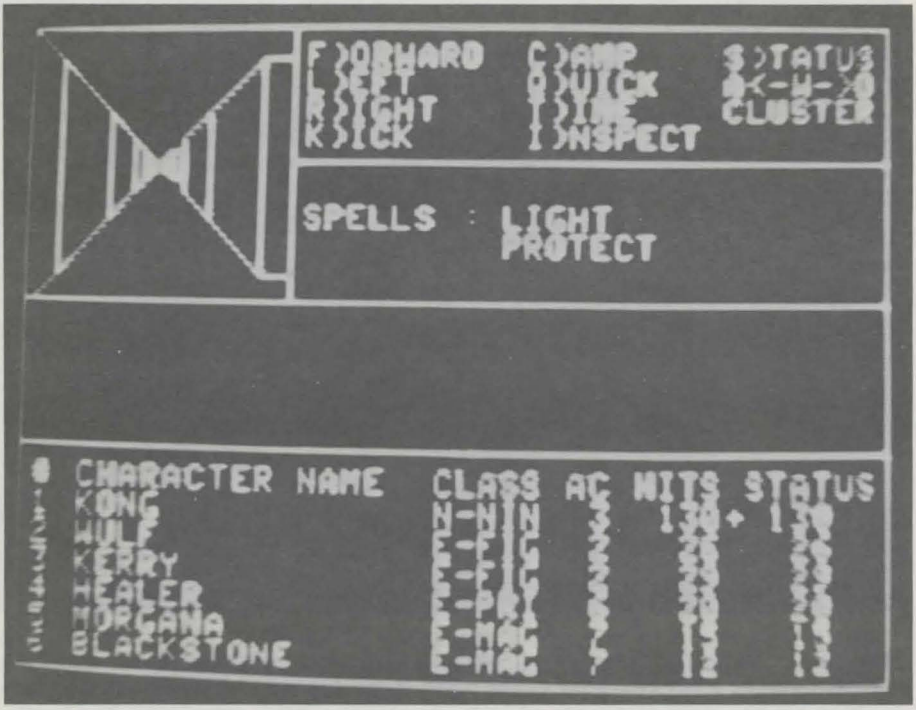
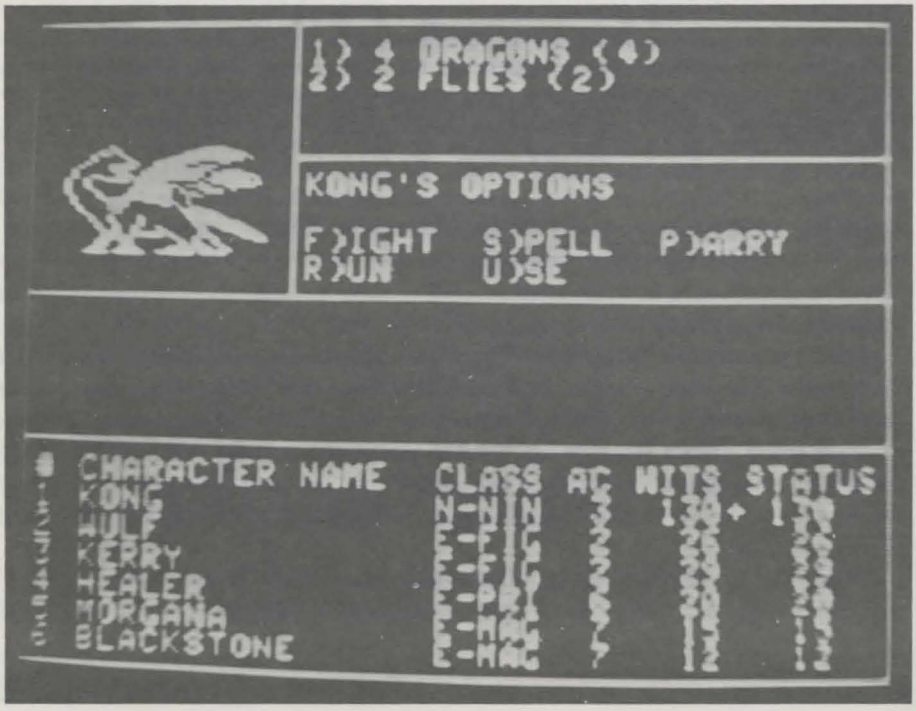
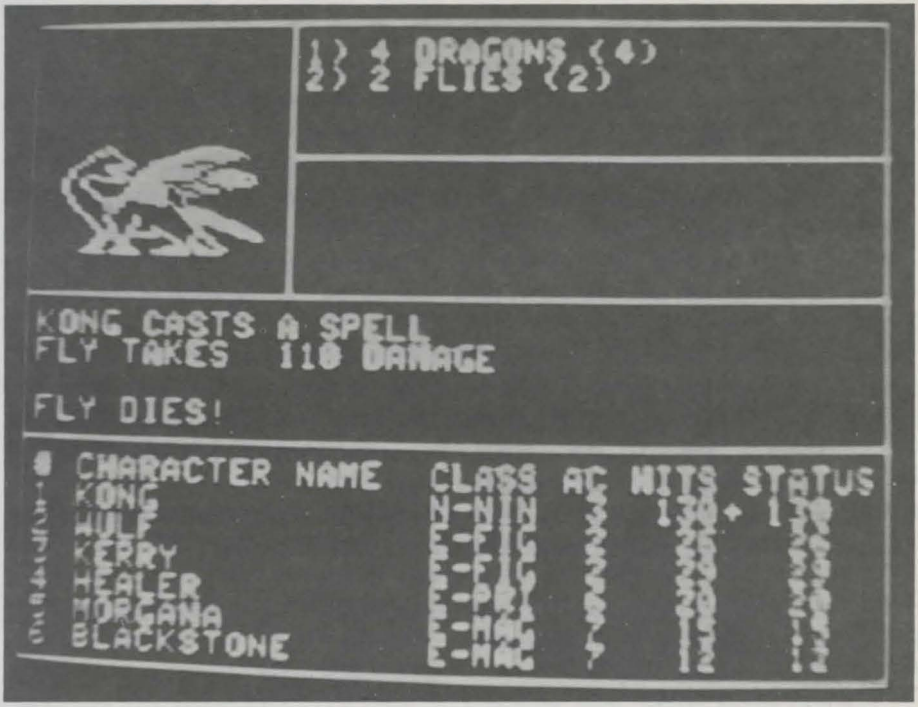
and three hypothetical wizards groan?)

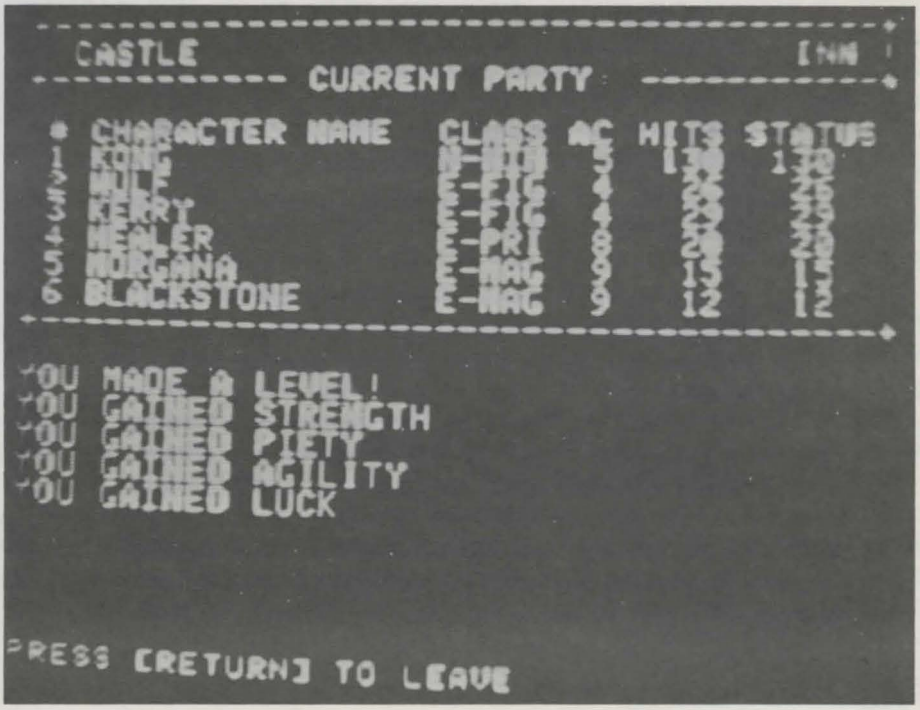
The first and most important step in the rehabilitation of this sorry lot is a visit to the Adventurer's Inn. Not a part of the Holiday Inn, Ramada Inn, or any other chain, the Adventurer's Inn offers fine accomodations ranging from a straw-filled stable (free to all stout-hearted adventurin' guys 'n' gals) to cots, economy rooms, and merchant suites (10, 50, and 200 gold pieces per week, respectively) to the luxuriously appointed Royal Suites at 500 gold pieces per week.

Now a tip for all you Proving-Ground-of-the-Mad-Overlord-on-35-gold-pieces-per-day travelers: Do not spend money on the stay-for-pay rooms if


F)ORWARD
L)EFT
R)IGHT
K)ICK
C)AMP
Q)UICK
I)NSPECT
S)TATUS
SPELLS : LIGHT
PROTECT
CHARACTER NAME CLASS AC HITS STATUS
KONG
WULF
KERRY
HEALER
MORGANA
BLACKSTONE


1) 4 DRAGONS (4)
2) 2 FLIES (2)
KONG'S OPTIONS
F)IGHT
R)UN
S)PELL
U)SE
P)ARRY
CHARACTER NAME CLASS AC HITS STATUS
KONG
WULF
KERRY
HEALER
MORGANA
BLACKSTONE


1) 4 DRAGONS (4)
2) 2 FLIES (2)
KONG CASTS A SPELL
FLY TAKES 110 DAMAGE
FLY DIES!
CHARACTER NAME CLASS AC HITS STATUS
1 KONG
2 WULF
3 KERRY
4 HEALER
5 MORGANA
6 BLACKSTONE


CASTLE
CURRENT PARTY
CHARACTER NAME CLASS AC HITS STATUS
1 KONG
2 WULF
3 KERRY
4 HEALER
5 MORGANA
6 BLACKSTONE
YOU MADE A LEVEL!
YOU GAINED STRENGTH
YOU GAINED PIETY
YOU GAINED AGILITY
YOU GAINED LUCK
PRESS [RETURN] TO LEAVE

your characters are not missing hit points. To recharge your mages' missing spells and to see how much more experience your characters need before they make the next level, a stay in the stables will suffice.

There are two ways to handle the wounded members of your party. One is to check them into the stay-for-pay rooms and let them heal up until their gold runs out. A problem with this is that as every week passes, they get older. After a certain age, just like baseball players, your characters will start to perform at something less than peak efficiency. If you expect them to get as far as as Werdna, the Mad Overlord on the Tenth Level and kill him, you're going to have to get into the habit now of wasting as little time in the Adventurer's Inn as possible.

Solution One: The De Luxe Plan. This solution involves staying in the expensive rooms. Enjoy the heated pool, the saunas, the championship golf course, and the casino. You'll heal faster in that way and age less. You also lose gold more quickly. Look at it this way: Here's the only instance you may ever find where money really can buy you youth.

Solution Two: The Jack Benny Plan. This five-step solution is so named because it costs nothing and keeps you 39 years old forever.

1. You bring your priest to the Adventurer's Inn and recharge his DIOS spells in the free stables.

2. You go to the Edge of Town and enter the Maze.

3. In camp, before you descend, the priest uses all his healing spells to restore as many hit points as he can.

4. After your party leaves camp, you'll arrive at the bottom of the stairs. This time you answer Y to the TAKE THE STAIRS? prompt. You have thus avoided any new fighting and new wounding.

5. Go back to step 1, and repeat until everyone's hit points are restored—for free.

Now that all your party is fit and refreshed, you have the options of quitting the *Wizardry* session (perish the thought!), going to Boltac's Trading Post to see if the gold you won will buy new goodies, or going back into the Maze for new adventures.

A FEW POINTERS

I won't take you through any further adventures, but I *will* make a few miscellaneous suggestions that may be of benefit to you as you progress in the game.

For starters, *don't get greedy*. When your characters are still cute li'l fighters and wizards with only a few hit points to their names, you don't want to inadvertently kill them all by going after another party of monsters just because you did so well with the first one. Remember the hit points you may have lost, remember your limited number of healing spells, and remember also that the monsters can (and frequently do) come after you several groups at a time. You may be able to take care of even two monster groups at once, but the fight will bring all your characters very close to death. Sensing this, the program will throw as many monsters as it takes to wipe out your party before it can get back to the stairs.

You can generally tell that your party is ready for the bigger things, like exploring the rest of the First Level (which lies on the other side of the doorway at the end of the long corridor), when the hit points for your fighters exceed 30 and the mages have more potent spells.

For me, the determining factor is the appearance of MAHALITO spells in one or both of my mages' spell books. This is the first of the really powerful combat spells and can get you out of almost any jam that you can find on the First Level. When I have a group with fighters sporting hit points of about 30, I get out of the Maze when I'm down to my last MAHALITO.

Know your spells. This includes learning what spells work with which creatures. Uttering a ZILWAN spell at a vampire lord or a Murphy's ghost (no relation) is a peachy idea, but trying it out on a dragon puppy is only gonna turn you into mincemeat. It's wise to remember how useful spells like SOPIC and MASOPIC can be when you're party is hurt and bleeding. Nothing makes you harder to hit than being invisible. The only reason players fail to cast 'em is because they don't get good, bloody results right away like the more robust LAHALITO or TILTOWAIT give you. If you happen to be a mage with a serious loss of hit points, consider becoming invisible . . .

I will now reveal a little secret: The Third Level of the Maze is so studded with traps that it is virtually impossible to survive. This is designed to break the hearts of players who have spent months of intense and meticulous work on character development. What better way to reward such a player than to take his little darlings and crush them unmercifully in a pit?

This isn't the only gruesome discovery to be made in the lower levels. On one level there is an extensive area where magic doesn't work. This renders your magic-users nearly useless—save for what skills they possess in killing dragon puppies and werebears with laughably puny daggers and frail sticks. The cure? Meticulous mapmaking. If you plot every step you take, you may possibly—*possibly*—find your way out of the no-magic zone.

A few places in the Maze feature curious devices which are designed to frustrate and confuse even the best mapmakers. There's one on the First Level and several others on the levels below. You don't have to worry too much about the First-Level device; it's possible—but not easy—to find a way out.

The devices on the lower floors, however, are specifically calculated to drive you nuts. By all means, keep your cool, learn to recognize landmarks (the arrangement of some passages and the placement of some doors can be suprisingly distinctive) and be patient; there's a way out. Usually.

15 THE *ULTIMA* (TE) EXPERIENCE

It was a world very much like our own. There were mountains and forests, oceans and seas, towns, castles, and even a few kings.

And there were sea serpents, ogres, and skeletons that leapt out from the shadows.

And there was the wizard, Mondain.

Adventurers roamed the land, and each one believed that he would be the one to vanquish Mondain and free the world from its unnatural suffering. They quested through the forests, skirted the mountains and the seas, investigated all the dark places. Their wanderings took them to the towns and castles. In the villages they bought food and ale and sought the comfort of women. You could find one, late in the evening hours, in the village inn nursing a tankard of mulled wine and absently stroking the thigh of the tavern wench. Staring into the flames of the hearth, such a wanderer would see again the nameless horrors of the forest and the below-ground.

The wanderers asked questions of everyone. What was it they were seeking to know? Not even the wanderers themselves knew precisely. All they could say was that they were searching for the clues that would reveal the way to overthrow the wizard.

Most adventurers never lived long enough to find the answer to their search. Yes, it was a world of deep green fields and forest, majestic grey granite mountains, and lovely blue seas, but it was also a twisted world. Sudden death came from the fields, forest, or seas. The very trees of the forest could rise from the ground to strike you down. Fantastic creatures, as if born from some demon's nightmares, lay in wait to fall upon any wanderer, mindlessly attacking with unimaginable savagery.

Was it any wonder that so many people of this world had lost their sanity? It was just as common to encounter a brigand knight, a necromancing wizard, or an archer mindlessly bent on murder as it was to sight a blue jay or a robin. Slowly and surely, this world was devouring itself, waiting for a hero to free it from its agony.

As beautiful as the surface of this world may have been, the ground beneath was honeycombed with horror and corruption. In mazelike caverns beneath the surface of the planet, roamed monsters of every shape and size. Keeping them company were the most debased of human beasts, thieves, and evil rangers, whose wickedness made them welcome in these hellish depths.

Strange as it may seem, a lucky few of the wanderers who explored this world actually seemed to thrive. Some, who had survived for an astonishingly long time (and a month, in these lands, was a very long time indeed), even seemed to exhibit a sense of high purpose and mission that contrasted sharply with the bewilderment of the newer wanderers. This was because they had found a few of the clues that they knew could lead them to Mondain and the final victory. Yet all but a few of these confident adventurers would finally meet a horrible death.

The young wanderer had little or no expectation of a long life in this mad place. Almost as soon as he would be called into being (yet another mystery, how these full-grown adventurers simply materialized into the middle of this world), the wanderer would find himself beset with creatures intent on murdering him. There was no personal hatred, no motive beyond an insane and unchanging lust for blood.

A few of these wanderers somehow acquired an advantage. Perhaps they learned from the mistakes of others, perhaps it was a survival trick they heard through talking to an innkeeper in the village. Whatever it may have been, these adventurers would reappear in the villages not as haggard victims, penniless and nearly exsanguinated from their wounds, but as victorious warriors or powerful magic-users, carrying sacks filled with loot taken from dead thieves and archers. These successful fighters and wizards were welcome in the villages where they spent their gold freely for weapons, spells, and armor. Sometimes they even purchased a horse or a fine sailing ship.

And, sometimes, they would ride from the village and never be seen again.

Every wanderer who visited this world envied these mighty adventurers and their skills in staying alive. It would be good to have gold to spend, food to eat, ale to drink. It would be good to stay alive, if only for a little while, as they did . . .

A UNIQUE FANTASY GAME

As a few of you may already have recognized, we've been spending the past few fictional paragraphs in the world of *Ultima I,* the very popular

fantasy/roleplaying game by Lord British, which, like *Wizardry,* first made its appearance in 1981. *Ultima I* was and is distinctively differentiated from the field of fantasy games by the combination of gaming skills that it requires of a player. It calls for strategic thought, but it also requires arcade skills. *Ultima I* was a real departure for its time and represented the state of the art in strategy gaming.

Ultima I embodies a wide range of the fantasy experience in one game. We're going to look at it a little more closely now to discover how the game is played, and what strategies will allow you to keep your character alive long enough to discover the hidden secrets of *Ultima I.* Then we'll examine two newer and even more challenging versions of *Ultima, Ultima II* and *III.*

CHARACTER CREATION

As we found in *Wizardry, Ultima I* offers you a range of character races and classes to choose from. The main difference is that only one character at a time may go adventuring in the *Ultima I* world. As we also learned with *Wizardry,* each race and class has its own advantages and disadvantages.

In *Ultima I,* your character can be a *human, elf, hobbit,* or *dwarf.*

Humans have the advantage of superior intelligence. This makes them better able to cast strong combat spells and to bargain effectively with the merchants in the towns.

Elves have superior agility, which makes them more certain of landing telling blows with their weapons in a close fight.

Hobbits are long on wisdom and short on strength. Their spells almost always work, but their strength isn't always enough to land effective blows in battle.

Dwarves are compact fighting machines. Their superior strength makes them very dangerous opponents in a fight where their weapons impact with heavy force.

Characters of all races qualify for any of the four classes. Staying alive is another thing. If the class does not suit the race, the character stands less of a chance of getting by in this hyper-tough environment.

Unlike *Wizardry,* in which there are four basic classes of characters, (fighter, priest, mage, thief) and elite characters that you can construct *from* the basic characters, in *Ultima* there are only four classes—*fighter, cleric, wizard,* and *thief.*

Fighters receive augmented strength and agility, and are essentially the same type of character as their *Wizardry* counterparts.

Clerics do not have a separate class of spells as do priests in *Wizardry*. What sets the cleric apart is his ability to cast a spell that *always* works, thanks to his augmented wisdom.

Wizards use the same spells as the cleric, but can cast twice as many of them. Their additional intelligence helps to make them work more powerfully in combat.

Thieves are very similar to their *Wizardry* counterparts. They are good at stealing the supplies they need and unlocking the treasure chests they find in dungeons.

Having seen what the capabilities and classes of the various races of *Ultima I* are, we've also had a glimpse of what their various attributes do to advance them through the game. Just to do the job properly, here is a list of the character attributes and how they help a character. You'll notice as you read them that they are not all that different from the attributes of *Wizardry* characters:

Strength is strictly a combat attribute. The more strength, the more enemy hit points you'll tally with every sword stroke.

Agility influences the likelihood of your sword stroke hitting an enemy.

Stamina controls the amount of hit points you lose in battle and also gives you the ability to hold your liquor, which is a handy characteristic to have.

Charisma is what your great-aunt Flora, who lived before the Kennedy administration, used to call "charm." It works well in bargaining down the price of essential supplies.

Wisdom is the quality you need to cast spells successfully. The more wisdom you have, the more frequently your spells will work.

Intelligence influences your ability to bargain for supplies, but the primary value of this attribute is in intensifying the effect of a combat spell.

Knowing what we do about races, classes, and attributes, what are the best combinations of race and class for creating characters who'll survive and succeed?

A human would be best suited to be a wizard. A human/wizard would receive extra intelligence points for being a human *and* for being a wizard. A hobbit is the natural choice for the job of cleric, given the additional wisdom points his race receives. Elves make the best thieves since they receive extra

agility points. They would also make good fighters, but not as good as dwarves who receive extra strength.

On the whole, I think that a dwarf/fighter with extra intelligence or wisdom stands the best chance of succeeding in the *Ultima* world. The extra strength means that even when the character is fighting bare-handed, as he would be in the beginning of the game, he stands at least a chance of success. The extra spell-casting attributes are also helpful in combat. A fighter can buy some very effective spells, by the way.

The second-best character, as I see it, would be a human/wizard. Wizards have twice the spells of the clerics, can use any spell they wish, and can use combat spells like KILL and MAGIC MISSILE with more effect than any other character.

A GUIDED TOUR OF *ULTIMA I*

Having created a character, let's take him around the world of *Ultima I* and see if we can discover any of its secrets.

The land is composed of six different terrains: *grassland* or *plain, forest, mountain, dungeon, town,* and *castle.* In the *plain* there is the least danger (which isn't saying very much). There isn't anything special to find there either. Your character may be able to get a few gold pieces if he manages to kill a monster there, but that's it. As far as *mountains* are concerned, no one can enter that terrain. Period. There's no point in worrying about the mountains unless your character is being chased by a group of monsters. In that event, you want to make sure you know the terrain well enough to avoid being caught in a cul-de-sac of mountains.

In the *forest* there's a little more action. You're more likely to meet up with a monster there, especially the varieties that can do you the most harm. Archers seem to have a special fondness for the forest, and even the trees can turn hostile. Beginning characters should be kept out of the forest until they have plenty of hit points, a good weapon, and adequate armor.

All the real excitement takes place in the towns, castles, and dungeons. In the towns your character can do a lot to help himself—or to harm himself if he isn't very careful. The most important function of the town is as a place to buy supplies. Your character can buy food, armor, weapons, spells, and transportation from the merchants if he has the gold. If you're smart, you'll first make sure that your beginning character has adequate food. Traveling the grassy plains on foot can really consume food supplies quickly. Once the chow's gone, your character is officially dead.

Your character's next stop in town should be the weapon emporium. A beginning character will have a very limited selection of weapons to choose from; in all likelihood, a mace, a dagger, and a sword will be the extent of the

ULTIMA I SPELLS

Here are the spells any wizard or cleric in *Ultima I* can cast:

BLINK—Teleportation spell that moves you to another spot on the same dungeon level.

CREATE—Places a force field directly in front of you.

DESTROY—Removes a dungeon force field that is blocking you.

KILL—Kills one enemy one square ahead of you.

LADDER UP—Useful in escaping the lower levels of a dungeon when you can't find the ladder provided. Bring lots of LADDER UP spells.

LADDER DOWN—Gives you access to the lower levels of the dungeon where the really good treasures are—and the really nasty monsters dwell.

MAGIC MISSILE—Combat spell that does miscellaneous damage to an attacking monster. (A magic item like an amulet or a wand works better, though.)

OPEN—Safely opens the coffins you find in the dungeon.

PRAYER—Try this when you're in deep trouble. Maybe it will help—maybe not.

STEAL—A thief can use this when he's trying to steal gold.

UNLOCK—Opens chests in the dungeon safely.

selection. As the game progresses, the sophistication of the available weapons increases, spanning the distance between a bow and arrow to a phazor. For now, a mace or a sword will probably do nicely—as soon as you can afford one.

Armors also vary in quality from leather skins to suits that can reflect beam weapons. The selection will probably be limited at first, but as the game goes forward you'll begin to see the merchants bringing out "the good stuff."

Your character may want to stop in at the town's magic store if he's got the time (and the attributes) to buy a few spells. For fighters, the spells are limited to MAGIC MISSILE, LADDER UP, LADDER DOWN, UNLOCK, and OPEN. These aren't the most exciting spells in the game, but as we'll see, they can be very useful in keeping a fighter alive. Clerics and wizards can buy any spells they please.

Finally, after having taken care of the urgent needs of an adventurer, you can adjourn yourself to the local pub where a pot of foaming ale awaits you (not to mention Ithilien, the Bar Wench).

You'll find that buying one or two drinks from the barkeep will loosen his tongue. He won't just talk sports with you, either. If you talk to enough bartenders, you might just find out what the object of the game is and how to win (which will give your character that sense of purpose I mentioned at the top of this section). Beware of taking too many drinks, however. Excess is never a good idea.

In the *castles*, a different set of adventures awaits you. There you'll meet the king (of whatever territory you happen to be in). His Majesty can bestow important gifts and favors upon you. Besides that, he can send you on a quest which will bring you materially closer to the winning of the game.

As you wander around the castle, you'll notice an armor room, a food-storage area, and a cell block. The prisoner or prisoners you may find in the cells could possibly help you in your quest, if it were not for the guards. The guards (who can be found in the towns as well as the castles) are large creatures with big, powerful muscles and tiny, atrophied brains. If you do something they don't like, like let a prisoner out, kill an offending merchant, or spit on the sidewalk, they're going to come after you and rough you up in a way no monster can even approach. So why don't we send the guards on the quest and keep our hero in the pub with the Bar Wench? Beats me . . .

I'm not going to reveal too much about this game—finding out its secrets is a large part of the fun—but I *will* tell you that it's possible to outrun the castle guards under certain conditions, and that you'll have to do so before the game is over.

Within sight of most castles and towns are *dungeons.* In fact, the dungeon openings are sprinkled all over the map. For a beginning player, the dungeons are a good place to avoid. They are full of monsters, as you could guess, and some of those monsters are more than a match for even a well-established character. They would eat a new character alive.

When you have a character developed enough for serious exploring (let's say 1,000 hit points as compared to the 300–400 the character begins with), then it would be safe to look around the first level of one of the dungeons a bit. There the character will encounter a giant rat or two, possibly a skeleton or an evil ranger. The resulting combat will pay off in experience points and in one other vital and indispensable benefit (which I won't disclose here), assuming you can get your character back to the surface in one piece. One thing to have handy in such an exploration is a few LADDER UP spells, just in case your character falls into a pit . . .

Advanced players will notice that after the third level down, the monsters look substantially more menacing. There's a good reason for that; they *are* substantially more menacing. There's one monster down there, the gelatinous cube, who knows how to melt the armor right off your skin. Believe me, that hurts.

PLAYING TIPS

Now that you're familiar with the topography of *Ultima I,* it's time for some playing tips.

Tip one is very simple. *Find a town and stick close* to *it while you build up your character.* Think of a character entering the *Ultima I* world for the first time as having the equivalent in strength, stamina, and sheer, brute killing force of an asthmatic 110-year-old lady. That's just about how tough a beginning character really is. The first few bad guys he meets stand a very good chance of blowing him away.

If you can find a "congenial town" when you first introduce your character into the game, and if you can find it before the character is killed, keep him close to it. For the purpose of building up a character, I define a "congenial town" as any village with a dungeon close by. That's right, *with a dungeon close by.*

If your hero is running out of hit points but has a good weapon like a mace or a sword and plenty of food, take him to that dungeon opening and *send him down.* No kidding! Once he reaches the bottom of the ladder, if he's not attacked, send him right up again. Having done that, if you look at the text window right below the game map, you'll notice that something has changed. If you like it, and want to see more of this particular change, send your hero down and up again. Repeat as often as necessary (and welcome to the world of *Ultima* cheating).

Tip two is very practical. *Get advanced weapons and transportation as soon as possible.* An example of an advanced weapon is a phazor. The best of the advanced transportation is an aircar. The phazor is the deadliest weapon in the game, and the aircar is the most logical means of transport because it can

operate over sea as well as land. The nice thing about the aircar is that it has weapons with which you can easily dispatch monsters.

Tip three: *Once you have your aircar, explore everywhere.* There's more to the *Ultima I* world than you might have expected to find. Here's a hint: If Ferdinand and Isabella had paid for your aircar, what would they have expected you to do? You can't win until you've explored the whole *Ultima I* world.

Tip the last: *Save the game frequently.* Any time you're about to undertake a hazardous mission of some sort, and especially before you use the rocket ship (rocket ship?!?), save the game so that if something dreadful happens, you'll at least be able to go back to a previous position and try again.

One final caution: *Block a lot of time to play.* First, because it takes so long to solve this game and second, because it's so much fun to play.

THE WORLD OF *ULTIMA II*

After the evil wizard Mondain was slain, the people of Ultima breathed a collective sigh of relief and went back to normal. They had little inkling of the special curse which Mondain had placed upon them, a curse named . . . Minax.

She was the apprentice of Mondain and in many ways the fulfillment of his evil. After Mondain was killed, the vengeful Minax labored to discover the secret of time travel. When she finally learned the secret, she wasted no time in implementing her horrifying plan of vengeance; she destroyed the future . . .

Since the success of *Ultima* in 1981, there have been two new *Ultima* games by programmer Lord British, each one making a bigger impact on the market than its predecessor—and with good reason.

Ultima II is a much harder game to win than the first *Ultima*. In *Ultima II* the basic principles of play remain more or less the same. The difference lies in the additional complexity of the game's solution and the depth of skill that the player must develop to win.

TIME AND SPACE

Compare space travel as it's handled in the two games, and the greater complexity of the second *Ultima* becomes clear. In *Ultima I* there is only one world to explore. Space travel is only used to introduce an arcade game shoot-'em-up segment (the weakest point in the game, to my mind), which you must win to progress toward the solution. In *Ultima II,* space travel is just that—travel from world to world across space. There are many more worlds to explore—a whole solar system in fact. Interestingly, not every world that you visit is needed to win the game. Which ones are they? That's for you to discover, adventurer!

Time travel adds yet another dimension of complexity. Time portals appear at irregular intervals (but at predictable locations). Moving your character into one of these portals will whisk him at random to any of five different eras of the *Ultima* world's history, ranging from the ancient age of legends to AD 2112. These eras dictate what towns and cities you'll find, the technologies you'll uncover, and the items you can buy.

Whatever time you may wander in, the process of gathering information from the inhabitants you meet is utterly crucial to winning the game. Unlike *Ultima I,* in which you got most of your information from tavern keepers, in *Ultima II* you have to talk to everyone you meet. Most of the time the exchanges will be disappointingly brief and uninformative. At other times you'll stumble across vital information that will move you closer to victory.

VILLAGES AND TOWNS

The villages and towns are very different from those of the first *Ultima.* In the first game you would view the entire village on screen, with the locations of the pub, armorer, spell shop, transportation shop, grocer, and weapons dealer easy to find. In *Ultima II* you see only a very small section of the settlement at a time, requiring you to explore it in earnest before you can locate the stores and persons you need. This is no great hardship, unless you're running exceptionally low on food and can't find a grocer. If you've allowed your food to dwindle to 03 or less before you finally make a break for the settlement, you're doomed.

The *towns* physically resemble the *Ultima I* versions in that they are enclosed by walls, but there the similarities end. The *Ultima II* towns are like real towns, each is full of people and activity, and has its own personality. This personality is created by the shops and institutions you find there; these may include churches, prisons, mess halls, weapons shops, grocers, and\or armorers. You may also find that the town your character is visiting doesn't have all these amenities. But that's the way of *Ultima II.* Some towns that you explore will be full of goods and services that you need. In others you will encounter persons who are carrying information and clues you need to win the game. In still other towns you'll find very little of *anything* to help your beginning character.

The villages are unwalled settlements (which makes it easy for you to inadvertently wander out and back into the main game display—a bad move if you haven't provisioned yet and there are monsters waiting for you outside). There are no neatly laid out streets leading you swiftly to the various shops and institutions of the settlement, only grass paths. If you manage to stay on the path, you'll frequently find shops selling useful things and one or two persons with useful information.

OTHER NEW FEATURES

As you travel the world, every so often you'll notice a frigate hugging the coast, creeping up on you. If this occurs, head as far inland as you can. Stay away from the frigates until you own the item required to board one. Until then, the chances are that if a frigate gets close enough to you it will cause, in the words of Rocky Balboa's manager "a variety of damage." Once you're on a frigate, you enjoy the same advantage that you did in *Ultima I* with a frigate or aircar. You have the frigate's weapons at your disposal, allowing you to fight as many monsters as you please for easy victories and plenty of gold.

Gold, more than experience, is what makes this game work. Much of what you need to win is obtainable for gold pieces. Everyone who plays the game agrees: Go for the gold! With it, you can buy weapons and armor, bribe characters for information, and even purchase special items you need to unlock the secret of Minax. Without it, you just can't win.

THE WORLD OF *ULTIMA III*

Ultima III outdoes the previous two games in almost every respect. The graphics are better, and the level of challenge is even higher as you struggle to learn the secret of Exodus, rumored to be the unspeakably evil spawn of Minax and Mondain, in an environment more hostile than in either of the previous games.

FORMING AN EXPEDITION

You're once again on a clue-gathering expedition here, but you're not alone. You may construct a party of four characters to carry on the quest. This multiple-character format is very similar to the setup in *Wizardry.* There are 5 races and 11 professions which may be combined any way you wish; you'll notice some changes from *Ultima I.* First the races:

Humans are equally gifted in strength, dexterity, intelligence, and wis dom, but not outstanding in any of those characteristics. Humans are suited for almost any profession.

Elves are highly dextrous and not very wise. They have adequate strength and intelligence. An elf would make a good thief.

Dwarves make up for their short stature with immense strength. They have good dexterity and good wisdom, but only adequate intelligence. They make good fighters, paladins, and rangers.

Bobbits, by virtue of their great wisdom, are excellent candidates for the clerical profession. They can also get by as illusionists. They have adequate intelligence and low dexterity.

Fuzzies, with their very high dexterity and intelligence, make good druids. They do poorly at fighting because of their very low strength. Their qualities of wisdom are adequate. My question: Is Lord British an H. Beam Piper fan?

Now the professions:

Fighters can use all weapons and armor but may not use spells.

Clerics are limited to the mace and chain armor. They can say clerical spells (prayers) and they have enhanced wisdom.

Wizards can arm themselves with a dagger and cloth armor only, but can cast any sorcerer's spell. Their intelligence is enhanced.

Thieves can carry swords and wear leather armor. They cannot cast spells. Thieves have the ability to steal and to disarm traps.

Paladins are a fighting class that can use any weapon and any armor up to plate. Because they have enhanced wisdom, they can use prayers.

Barbarians are a fighting class that uses any weapon but disdains all armors bulkier than leather. They are good at stealing and disarming but cannot cast spells.

Larks can use their enhanced intelligence to cast sorcerer's spells. They can use any weapon, but can wear cloth armor only.

Illusionists can carry a mace, protect themselves with leather armor, and use cleric's prayers. They have enhanced wisdom and the ability to steal and disarm.

Druids are among the most powerful magic-users. They can cast any spells and have enhanced wisdom or intelligence. After casting a spell, they regain spell points faster than the other magic-users. Their physi cal weapon is the mace, and their armor is cloth.

Alchemists are also powerful magicians; they have enhanced intelli gence for powerful sorcerer's spells. They are armed with daggers and wear cloth armor.

Rangers are formidable fighting men; they can use a +2 sword and +2 plate armor. They can also cast spells of any kind, with either

enhanced wisdom or intelligence. Rangers are also able to steal and disarm.

My selections for an ideal party of four adventurers are: dwarf\paladin, bobbit\druid, human\fighter and fuzzy\alchemist. Of course there are so many combinations available to you that it's likely you can come up with a better foursome yourself. I like my selection because it gives me two powerful fighters (the paladin and the fighter), a character with enhanced wisdom or intelligence that can use powerful cleric's or sorcerer's spells (the druid), and a strong magic-user with extra intelligence for combat spells (the alchemist).

You can store up to 20 characters on your *Ultima III* player diskette, giving you the advantage (à la *Wizardry*) of experimenting with many different combinations in your party.

COMBAT

Ultima III uses a different combat system than its predecessors. In the previous two versions, combat was conducted by keying A for attack or C for cast spell and then the RETURN, arrow, or SHIFT keys to indicate direction. A text line kept track of the hits or misses and the depeletion of your character's hit points.

In *Ultima III,* at the start of combat, the scene shifts to a special combat screen in which we see the party of monsters (they come in multiples too) arrayed against your four heroes. If you have very strong fighters and magic-users with plenty of hit points, tactics aren't important; chances are you'll win no matter what you do, unless you encounter strong enemy magic-users. If you are less than all-powerful, a good idea would be to take care not to let any of your characters be surrounded on two or more sides. As the program cycles from character to character, you can move, cast spells, or attack. It's smarter to move *away* from a situation in which you're outnumbered than it is to try to hang in there and lose hit points two or three times in the same cycle.

Magic-users are a big plus in a battle situation, if you use them properly. You should keep them *away* from the enemy, behind the fighters. This prevents them from losing hit points. It's a practical tactic for attack purposes too because their combat and healing spells can reach anyone on the screen. The important thing is to have your magic-users positioned to cast a spell horizontally or vertically at an enemy. An enemy located diagonally from a magic-user can't be hit. If the fighters are managing to kill off the enemy without the help of magic, hold off on casting spells. One of the problems frequently encountered in these combats is the loss of spell points when a magic-user has been tapped too often. In a situation like this, if your fighters need help, you

may discover that the well has gone dry. *Use the spells only when you really need them to protect your fighters.*

Keep a close eye on hit points during combat. When a character's hit points equal zero, the character disappears from the scene. To avoid this, use your clerical character whenever a fighter's hit points dwindle dangerously. When your cleric casts the SANCTU spell, it will restore an unspecified number of hit points to the endangered fighter.

If you prevail in combat, you will be brought back to the main map display where your party will encounter a treasure chest. The safest way to open a chest is to use your cleric to cast an APPAR UNEM spell. This opens the chest without springing any traps.

TRANSPORTATION

Later in the game you may be able to commandeer a ship. This is the fastest and safest way of exploring the *Ultima* world. The problem is that the ship will be dependent on the direction of the wind. Another problem is that a ship does not have the offensive capabilities of the frigates in *Ultima I* and *II.* If your characters are attacked by monsters on the shore, the program dumps you into a ship-to-shore combat scene that differs very little from the combat scene we examined a moment ago.

By far the most important means of transportation are the Moon Gates. To win, it is absolutely necessary that you cross these gates, but you must be warned that they are unusable unless there is an alignment of the phases of Ultima's twin moons, Trammel and Felucca (numbers indicating the moon phases are shown at the top of the screen). The correct alignment (I won't say here what it is) comes infrequently, requiring you to time your actions with the greatest precision, in order to be at the right place at just the right moment to use the gates.

A last thought on *Ultima III.* Unlike *Ultima II* in which you could visit dungeons and even whole worlds where nothing was to be found to materially advance your quest, *every* location and *every* clue in *Ultima III* is of vital importance in solving the riddle of Exodus. You had better visit *everywhere* you can and talk to *everyone* you meet in *Ultima III* if you expect to defeat the evil progeny of Mondain and Minax.

16 *EXCALIBUR:* THE ART OF KINGSHIP

All of his knights and men-at-arms were dead. Even if he were to raise a new corps of fighting men, there would be no knights to lead them. With Camelot's defenses so vulnerable, it was certain that Arthur's fragile federation of kingdoms would shatter, and that his vassals would swear allegiance to other kings—who would then fall upon Camelot.

Arthur knew that he could defend against the inevitable attacks. Even fighting alone with only his men-at-arms to support him, Arthur would triumph—for a time. But in the end, he knew, the onslaught would overwhelm him, and the dream of Camelot would be no more. This was defeat, utter, final, and irrevocable. It was the end.

Darkness had gathered over the battlefield and the still forms of the Knights of the Round Table. Kissing the sacred relic in the hilt of Excalibur, Arthur vowed that he would not escape the fate of his men, that he too would die on the field of battle fighting the invader . . .

Don't let this happen to you.

THE CHALLENGE OF KINGSHIP

Being a king, being a leader of any group of men, is a difficult assignment. As we've already seen, surviving as a sword-swinging hero in a completely fabricated never-never land is pretty tough; unfortunately, surviving as a king is just as difficult. It's a different kind of challenge, though, requiring skills above and beyond competence in fighting.

Being a king means that you have to excel in politics as well as in war. You must master the arts of negotiation and persuasion. You must manage crises

at home as well as threats from without. If you have magic at your disposal, you must know how and when to use it. If battle is unavoidable, then you must know how to win.

There are relatively few kingship fantasy games available at this writing. I think that situation will change as game players learn the attractions of this kind of simulation. Ruling a kingdom and spreading your influence across your borders are unique challenges that combine elements of wargaming and fantasy gaming in an unusually entertaining way. Victory is all the more satisfying because it takes so many different skills to achieve it.

In this chapter we'll be looking at an excellent kingship game. In *Excalibur*, an Atari fantasy game by master gamesmith Chris Crawford with Larry Summers and Valerie Atkinson, you will take the role of King Arthur in an attempt to unite all of Britain's contentious 16 kingdoms. Bloody warfare between the various kings will rage out of control if you fail. Luckily you have Merlin the Magician on your side, which will help. You also have the Knights of the Round Table to rely on—assuming you've been working to keep their loyalty and enthusiasm at a high pitch.

Let's visit with a king who lived 1,400 years ago, in a land called Britain. The Romans were long gone, the Saxons threatened from without, and the warlords of the land were locked in a cycle of hatred and violence. There seemed to be no hope until, one day, a brave boy pulled a magic sword from a stone . . .

RIVALS FOR THE THRONE

As *Excalibur* begins, you are the young King Arthur, taking posession of the castle and kingdom of Camelot for the first time (in this version of the Arthurian legend, Arthur dosen't build Camelot; it's already there when he becomes king). You're inheriting an interesting situation. Even though your wrenching Excalibur from the stone has proved that you're the rightful King of Britain, there are 15 other petty kings on the island prepared to dispute your claim to overlordship.

Perhaps the most violent and dangerous of these potential adversaries holds sway to the east of your domain—the predatory ruler of Lundenwic, King Hengist. Lundenwic is the countryside around London. It's rich country, but at the rate the king taxes that wealth, it would be picked clean if it were not for Hengist's frequent plundering expeditions into neighboring kingdoms.

Among the least dangerous of your rivals is the king of Dumnonia (modern Cornwall), a gentle ruler named Hoel. Hoel is your natural ally, since your domains are geographically so close and, more importantly, since he is Guenevere's father. In this game he is by nature a weak force on the battlefield. It's likely that if you do not attack him first, Hoel will become your vas-

sal (we'll go further into the vassal-lord relationship presently). The point is, don't make war on Dumnonia.

Horsa, Hengist's brother and the king of Cantware (modern Kent) is not a serious rival, unless you become militarily weak. Then he will be among the first to invade and attempt to pillage Camelot. You can easily keep him at bay by keeping your military forces strong.

An important threat *is* posed by the presence of King Penda of Mercia (modern Midlands), directly to the north of Camelot. For the first half of the game, you'll have little to fear from Penda as long as you are strong. However, if you are even marginally weak in the later stages of the game, Penda, who always seems to be strong, will be almost irresistibly tempted to march south and pillage your territory to the point of destitution. If you are strong, you can expect him to be fighting enemies to the north, west, and east.

The other kings? They are not a uniformly dangerous group, to be sure. Most of the rest are indifferent to your claims to overlordship, and a few might even be considered secretly sympathetic. Among the latter group is, of course, King Hoel, as well as King Idres of Reget (southwestern Scotland).

As far as these kings' relations with their other neighbors are concerned, they all have their petty jealousies and hatreds. Wars of plunder will be followed by wars of revenge, wars of retaliation, and so on, endlessly.

HANDLING FINANCES

At home you have a few interesting problems to face in running the kingdom. One is the economic development of the realm. It's hard to maintain an adequate army and still have enough left over for the development of the kingdom's economic potential. You must decide how many men-at-arms you can afford to maintain, how many gold pieces you can collect per week as taxes, and what proportion of that will be dedicated to the military.

In this game, as you use your joystick to move from screen to screen, you'll discover a room called the *Treasury*. In this room you'll see two columns of entries for each of four categories: WEALTH, TAXES, ARMY and TITHES. There is also a catergory called EXPERIENCE with only one entry. On screen, the information—taken from the start of an actual game—is arranged like this:

WEALTH	30	3
TAXES	9	9
ARMY	6	2
TITHES	0	0
EXPERIENCE		2

What does this information mean? Let's look at WEALTH first. The number in the left column is the taxable wealth of the kingdom—30 gold pieces. The number in the right column is the amount of taxes, tribute from other kings, and tithes from vassals already collected and safely in the Treasury—3 gold pieces. This second number represents a cash reserve which you can draw upon in bad times to pay for extra troops or to buy the affection of disgruntled knights. As this game begins, your cash reserves are badly depleted.

As you slide the cursor (a crown) between the two sets of numbers, you'll discover that two of the categories—TAXES and ARMY—can be modified by you. Let's look at TAXES first. The figure in the left column is the amount ot taxes your government is currently authorized to collect from the peasantry. The figure in the right column is the amount of tax received in the most recent weekly collection. Because the assessment of 9 pieces is well below the actual taxable wealth of the kingdom (30), the full amount was collected.

The maximum tax you can collect right now is 30. Were you to collect 30 gold pieces, the chances are that the taxable wealth in the following week would be substantially less. This is because wealth that is left in the hands of the people is used for private enterprise and economic expansion. If you leave the people nothing, then they cannot farm additional acreage or expand herds.

Before we decide how much to tax the people, let's skip down to ARMY.

As you can see, the authorized number of men-at-arms—the left number—is 6, with only 2 men actually enlisted. You'll need many more than 2 men before the game is over, just to survive, so the first order of business is to enlist and train more men-at-arms. (The level of training—the EXPERIENCE column—increases every turn. The infusion of new recruits can actually lower the overall experience level.) A reasonable number of soldiers to start to build an army around is 9 men. To raise the authorization to 9, you position the cursor on the ARMY line, tug at the joystick until 9 appears in the left column, and then press the joystick fire button.

Soon you'll have 9 men drilling and training—at the cost of 9 gold pieces per week. That is exactly the amount you're collecting in taxes per week. This means that there will be no extra money to put aside in the treasury per week in case of emergency. My advice? Move the cursor up to TAXES and, using the same method as you did to adjust the ARMY, increase taxation to twelve.

Now the screen looks like this:

WEALTH	30	3
TAXES	12	9
ARMY	9	2
TITHES	0	0
EXPERIENCE		2

And shortly it will look something like this:

WEALTH	23	24
TAXES	12	12
ARMY	9	9
TITHES	0	0
EXPERIENCE		10

This is the Treasury after a few weeks of game time have passed by. The WEALTH of the kingdom is down to 23, but that's a stable figure. In fact, you can expect that number to rise gradually. The news from the right column is good too. The Treasury now has a contingency fund of 24 gold pieces, which can be spent in an emergency—such as an invasion—for 8 additional soldiers serving 3 weeks.

Additional good news is the state of the army. The army's EXPERIENCE rating has gone from almost nil to 10. This is important because the EXPERIENCE rating influences the outcome of combat. Finally, the manpower of the ARMY has gone up from 1 to 9. It's a good first step.

Now it's time to move onward. You must continue to raise the enrollment of the army (the other kings will). Raise the ARMY level by 1, and TAXES by 1. The taxable WEALTH figure will fluctuate for a week or two, but then it will stabilize. By the time taxable WEALTH hits 24, it will be time to raise the tax again by 1 and the ARMY by 1. In this way you allow for economic growth, maintain a smooth and even flow of cash reserves into the treasury, and steadly increase the ranks of experienced soldiers.

The simple rule for handling the economy and building up the military is to avoid heavy taxation that inhibits growth, aiming instead for slow, steady, and orderly growth.

It would be nice if that's all there was to running the kingdom. It isn't. You also have the problem of keeping a half dozen or so knights in the mood for combat and out of the mood for fooling around with the queen . . .

THE ROUND TABLE

If you've ever read any of the famous Arthurian chronicles, you'll remember that one of Arthur's main problem was keeping the fellowship of the Round Table intact. Petty jealousies and rivalries aside, the serious problems caused by a few of the knights, most notably Lancelot, Gawaine, and Mordred, were sufficient to bring down both Camelot and Arthur's vision of a Britain united under the great ideal of justice.

The trouble began, if you'll recall, with Guenevere, Arthur's wife and queen, and Sir Lancelot, Arthur's most powerful warrior. Lancelot and the queen had what late twentieth-century Californians would call "a relationship" of long standing. It was a sort of open secret to which Arthur turned a blind eye in the interest of public and private tranquility. Mordred, who hated Arthur and saw an opportunity for mischief, brought the matter out into the open. Guenevere was tried for adultery (which is what sixth-century Britons called "a relationship") and was sentenced to be burned. At the last moment Lancelot rescued her. All well and good, except that in the process he inadvertently slaughtered half of Sir Gawain's family and started a horrible civil war that ultimately led to the ruin of all that Arthur had built.

If you neglect the knights of your own Round Table, you're asking for just such a fate. Disaffected knights will rebel, if you give them the means and the opportunity. Here's how to avoid it.

The first step is to learn how to read the screen for the Round Table Room. On the left of the screen are four action options, GIFT, HONOR, BANISH, and SELECT. On the right of the screen is your royal crown, the round table, the shields of the various knights, and Guenevere's crown.

The positions of the shields are very important in determining the degree of each knight's loyalty. The closer the shield is to the crown, the more devoted the knight is to you. A shield which overlaps the edge of the table represents a very trustworthy knight. A shield located far away from the table, at the edge of the screen, indicates a knight who is secretly disloyal or who, for some other reason, feels neglected or slighted.

A shield positioned directly over Guenevere's crown indicates an even more serious situation—a "relationship" between that knight and the queen.

Let's handle the simple problem first—keeping Guenevere under control. For this purpose I have found that the GIFT option seems to work (it may just be luck, but if so it's a very consistent run of luck). By selecting the queen or a knight and then selecting the GIFT option, you turn over a present of 5 gold pieces over to that person. This usually will have some small effect in keeping that person on your side or preventing him from drifting any further away in loyalty. In playing the game I discovered that a GIFT of this nature to Guenevere has the added benefit of keeping her chaste. The trick is to keep the GIFTs coming as much as you can.

If Guenevere takes a lover, you've got a real problem. Doing nothing about it will cause you to lose the respect of your knights and will set off a general migration away from the Round Table. Even if you can afford them, money gifts won't be very effective either. The only cure is the BANISH option. Selecting this option ships out the selected knight or the queen permanently. It is best to banish both lovers, and to do it quickly.

We've seen that money gifts are one way of keeping estranged knights from drifting into outright disloyalty, but there is another option that will

work well with some of the warriors, and that is HONORS. HONORS reapportions the number of men-at-arms assigned to each knight in favor of the knight most recently honored.

In selecting knights for HONORS you have to have a knowledge of their personalities. I won't divulge all that the manual says, or all of my experiences in playing the game, but I can give you a general idea of what I mean. Sir Galahad is a bad candidate for honors. He will generally be loyal, if sometimes estranged from the Round Table, but he resists being impressed by honors. Sir Mordred is an even worse candidate for honors. Mordred is disloyal, and he is also a cowardly warrior. Give him honors, and he'll take the better part of your men-at-arms with him when he deserts you in battle. Sir Lancelot, on the other hand, is an excellent choice for honors. He is a brave and able fighter and will not run away with his portion of the army. Moreover, giving him titles and honors will impress him favorably and help to cement his loyalty. Knowing these principles, you should be able to keep your leading fighters under control.

The last action option in the Round Table is SELECT. This is essentially an option used prior to offensive combat, so we will return to it later.

Now let's go to the Throne Room, where Arthur plans his foreign policy

FOREIGN THREATS, OPPORTUNITIES

The greatest challenge to Arthur's authority and to his dream of unifying Britain will come from that collection of petty kings we looked at previously. Starting with Hengist, they will raid Camelot periodically to pillage your crops and thus your means of maintaining the economy and waging war.

A map of Britain displayed on the Throne Room sceen will give you a quick update on the status of events in the kingdom. By pushing the joystick you can light up various parts of the map, which are color-coded to indicate hostile states (blue), neutral states (green), states that are paying tribute to you (purple), and vassal states (gray).

You'll also notice two action options to the left of the screen, TRIBUTE and ATTACK, and two information categories, NEWS and PRESTIGE.

The NEWS is one of the most important options in the game. The NEWS tells you who is attacking whom, what the results of foreign wars have been, who is paying tribute to you, which kings are on the verge of collapse, which kings are attacking you, and which leaders have chosen to become your vassals. Every week there is a NEWS update which provides you with a running commentary on the island's events. If you intend to rule wisely, you'll learn to recognize opportunity and to spot danger in these reports.

For example, suppose that the NEWS reveals that King Hengist, who has been up to his old tricks attacking you and his other neighbors, is attacking

King Lot, some several weeks' march away. This may well be a good time for you to lead an experienced army into Lundenwic and pillage Hengist's economic base while he's away. You'll probably meet little or no resistance because Hengist will have taken most of his soldiers with him to invade Lot's kingdom. You'll secure plenty of booty to inflate Camelot's treasury, ensure that Hengist won't be picking on anyone for several weeks, and earn the warm gratitude of Hengist's other victims.

On the other hand, imagine that the NEWS reveals that King Hengist is on the march against Camelot (the cursor will start flashing once any enemy attacks you, a signal to read the NEWS!). This gives you the information you need to raise the manpower of the army and to use any of Merlin's magic which may be at your disposal to meet the threat.

The NEWS may directly or indirectly reveal evidence of an adversary's weakness or strength. For example, if King Cheldric invades King Hengist's territory and returns with plunder, that's a very strong signal that Hengist is weak and vulnerable. If Cheldric returns without plunder, that's a sign that Hengist is still strong and capable of defending his kingdom. If you learn that Hengist is starting to pay tribute to you, then you may safely assume that he has a reason to be afraid of an invasion. Other messages, such as KING HENGIST IS WEAKENING, KING HENGIST IS DESPERATE, and KING HENGIST IS READY TO ABDICATE, need no explanation. Whether or not these messages are a signal for you to attack depends on your strength and current strategy.

The TRIBUTE action option is an important factor in the defense of the kingdom. This option allows you to forestall attacks by hostile neighbors through cash payments from your treasury. The principle is simple: People are unlikely to kill the goose that lays golden eggs. Similarly, kings are unlikely to take booty by force when wealth can be gained with no risk at all. If you have just fended off an invasion at great cost to knights and men-at-arms, and if you need a breather, the time is ripe to start bribing all likely enemies while you gather up strength to defend the realm again.

The final action option available to you is the ATTACK option. Before we examine it (we're saving warfare for last because it is the last alternative you should choose in managing your foreign affairs) let us, with trembling hand and hushed breath, pull aside the curtain and enter the lair of the Wizard.

THE USES OF MAGIC

If you had three wishes, what would you do with them? Despite what you may answer, the truth is that most people would somehow squander them. Magic is like very good luck. It comes in limited supply and is very easy to waste. The trick in using magic is to use it wisely and also sparingly, in order to leave some intact for when you absolutely can't survive without it.

In *Excalibur* a good King Arthur will not need to rely on magic to win; his skills in managing the economy, the Round Table, foreign affairs, and the army should be enough for him to eventually unite the island under Camelot. Even good kings run into serious trouble. When the odds seem hopeless, that's the time to summon Merlin.

Merlin's Room is a black screen with four action options. SEE allows you to look at the Throne, Round Table, and Treasury rooms of another king. CHANGE gives another king a change of heart towards Arthur, so he will temporarily favor Arthur. PESTILENCE causes the crops of the opposing king to go bad, thus reducing his ability to pay for warfare. PLAGUE is a magic form of germ warfare that greatly reduces the number of men-at-arms of an enemy king.

Unlike the action options on the other screens, the magic actions you may take are limited to just one or two uses at a time (if Merlin's magic is still strong enough for you to use, an image of Merlin's face—which bears a coincidental resemblance to Chris Crawford, the game's principal author—appears). After you have exhausted Merlin's spells, it may take weeks and weeks of time for his power to return in sufficient enough force to be usable again.

So the trick to magic is not *how* to use it (that's obvious enough) but *when* to use it. Again, the best rule of thumb is to use magic only when your back is to the wall.

Of the four spells, I think the most useful is PLAGUE, simply because it can even up the odds when an invader has an overwhelming numerical advantage. The next most useful is SEE. If you haven't been able to figure out who's strong and who's weak from the NEWS, SEE will take you into the enemy castle where you can see how many troops, gold coins, and knights the other side has, as well as determine whether or not the other king considers you an enemy.

PESTILENCE is not a very useful spell, unless you want to preempt an attack by destroying the crops of the enemy. Since crops equal plunder in this game, it's best not to use PESTILENCE on an enemy until *after* you've thoroughly pillaged his kingdom. PESTILENCE, after you've taken your fill, makes retaliation against you all the more difficult and is a nice finishing touch.

ATTACK AND DEFENSE

Despite everything you do to strengthen your kingdom's defenses, an enemy attack is inevitable. When it comes, it may even be *welcome* if the enemy foolishly attacks you when your force is superior in numbers and experience. In this case, the outcome is almost certainly going to be victory.

More often, the enemy will attack you in numbers that are equal or even superior to your own. How do you redress the balance so it favors you? The best answer is to use restraint on the battlefield.

When you are invaded, the cursor is placed in what's called the Trap Room. There you are given a choice of either confronting or waiting out the enemy. You can always wait out the enemy if your forces are very, very small, but the other king will pillage you severely, followed by practically every other king on the island.

If you choose to fight, then Arthur and all his knights (each commanding a portion of your men-at-arms) will be lined up on the bottom of the battlefield screen. Arthur and his each knights are each represented by heraldic shields. The shield also represents a portion of the men-at-arms under command of that knight or king. Along the top of the screen is a row of the shields of the enemy knights.

By using the joystick to move a box cursor over any unit, enemy or friendly, you can see the manpower of the unit and its current strength (strength is important in determining the outcome of combat). By pressing the joystick fire button, you can make an X appear. The spot where you move the X to is the spot to which the shield will march when you press the START button. You can set the destinations of the shields before you press the START button or wait until the battle begins. The computer determines where the enemy units will go.

If you kept the box cursor over a unit as it marched and kept the fire button depressed, you'd notice a curious phenomenon. The strength of the unit (as opposed to its manpower) would steadily decrease as the unit moves. This is a simulation of the fatigue that the heavily armored troops felt as they marched. What it means is that an enemy knight with 15 manpower and 15 strength would still have 15 manpower by the time he marched from the top of the screen to the bottom, but perhaps only as little as 3 or 5 strength!

If you move your forces very little or not at all, and if you wait for the enemy to cross the entire battlefield to get to you, two things are likely to happen. First, the enemy strength will be depleted by knights that turn around and flee (a fate that will happen to your knights only if they advance or if they are successfully attacked). This means that as much as half of the force facing you will never get as far as your front line. Second, those knights who do reach you will generally be severely depleted in strength. If the enemy king is in the vanguard, chances are a simultaneous attck by two of your knights will kill him, end the battle, end the war, and perhaps even deliver the enemy country to your side as a vassal state.

The main caution: Protect your own king. If he is killed in battle, the game delivers Excalibur back to the Lady of the Lake and the game ends. What I do is to move the knights on either side of the king up about one shield-length and then assemble the rest of the line of knights in a shallow V-formation pointing away from the enemy,with Arthur at the apex. If you do this right,

the forces at either end of the V will not be too depleted, and when the enemy king enters the V you can snap it shut on him. Just keep Arthur out of harm's way as long as you can.

If for some reason the battle goes sour, you can end it quickly by retreating Arthur off the bottom of the screen. You will be asked shortly if you want to fight again. You may want to do so. It's possible that the peasantry of the kingdom, which always lends a hand in defense of the realm, may have killed enough enemy men-at-arms to even up the odds.

Attacking is another thing altogether. Before you do it, *think!* You should attack only if you know you have the numbers to beat the enemy on his own home ground. The forces you bring must also be experienced enough not to be chopped to pieces by the peasantry when you invade. An experience level of 40 is pretty good insurance, but not a sure thing even then!

You must also be sure that by attacking your chosen enemy, you will not damage your prestige in the kingdom. That could prevent tottering kingdoms from becoming your vassals. The king you attack must *deserve it* (like Hengist), and the attack must serve an important purpose for Camelot, such as replenishment of the treasury or—in the case of a tottering enemy king—creation of a vassal for Arthur. Lastly, Camelot itself must not be in danger of attack. If another king invades Camelot while Arthur is pillaging next door, the result will be a heavy loss in crops and thus in the ability to carry out a defense later in the game.

If you meet these conditions, you must first select an enemy and the ATTACK option in the Throne Room, then head for the Round Table to SELECT knights. This is a ticklish business. You will have some knights that are very loyal and some who are estranged from you (as indicated by their positions on the screen). The trick is to take enough knights with you to do a job on the other king while at the same time leaving enough knights to defend the kingdom from counterinvasions. You must also leave a group of knights balanced between loyal and disloyal knights. If you take all your loyal knights with you, you'll wind up with a rebellion on your hands when you arrive home.

My feeling is that it's OK to take *all* the knights on expedition. There's no danger of rebellion and less danger of a defeat in the other kingdom. If Arthur's kingdom is pillaged while he's away, there's every likelihood that the booty you bring home will more than make up for it.

Once you have the knights SELECTed, you move your cursor off the bottom of the Round Table screen. This lands you in Britain, where you must find your way to the enemy's kingdom.

IN BRITAIN

As you leave the castle of Camelot the most impressive full-color map display of any computer wargame or fantasy game fills the screen. Because these

are Atari graphics with true scrolling, the map can be—and is—enormous, with only a small portion of the whole showing on the screen at any time.

For this reason, some game players may have a little trouble navigating. If you haven't depleted your store of magic, a press of the joystick button will summon Merlin's Raven, which will tell you the name of the master of any castle and the number of soldiers under his command.

Assuming that you don't have any serious trouble finding the kingdom you're attacking (there's a map in the manual that should make the process much easier), the first job that you'll undertake in the enemy's territory is *pillaging*. This is accomplished by centering the crown cursor over one of the green dots on the map representing farmland. The cursor will be taken out of your control for a week of game time (around 15 seconds of real time). This lapse of time simulates the thorough plundering of helpless civilians.

The less-helpless civilians and soldiers will fight back. Every time your army begins to pillage, you'll see a message on screen that the peasants have killed one or more of your soldiers during the pillaging. If you are not attacked by the garrison army, you may want to pull out of the country after a week or two of pillaging if peasant attacks seriously weaken your army. If the garrison army *does* attack, you will be immediately sent to the battlefield screen. Your best bet would be to fight your battle exactly as described previously in the section on defensive warfare.

If you lose your battle, *get out of the country*. Peasant attacks will continue to deplete your ranks, while the enemy will grow no weaker between battles.

If you win there's still the possibility that the garrison may attack you again. Continue plundering only if you feel you can defeat the garrison once more. If you defeat the garrison (and if the enemy king is killed) the reward may be the capture of the kingdom as a vasal state. If you defeat the garrison in battle and then head for home, your reward will be to keep substantial amounts of plunder.

TREATMENT OF VASSALS

The wisest course is to treat with generosity those kingdoms that deliver themselves up to you as vasssals. You have the right to move your crown cursor into any vassal's castle and to set taxes, the size of the army, and the monthly tithe the kingdom must pay to your treasury. Use restraint.

Keep a standing army large enough to offer real assistance when you come to the defense of an attacked vassal. This army need not be as large as your own, however. As you did with your own treasury, judge what burden the country can bear and tax it accordingly. Remember too that a country with a small standing army can afford to tithe more to Camelot, which in turn can field a larger standing army for the purpose of defending vassals.

When a vassal king is attacked, you have the obligation as liege lord to come to his defense. A failure to do so will result in the vassal king aligning himself with one of the other kings. Since the idea of the game is to make every king your vassal and unite the island under your rule, the failure to defend a vassal is extremely counterproductive.

Good luck. Rule wisely, fight only to redress injustice, and bring Britain the peace and unity she deserves.

17 ELEMENTARY ADVENTURING

Outside the imaginary town of Coarsegold, California (not the real town, mind you, but the imaginary town) there is a rambling old mansion that belonged to the late Old Man Cranston. The house, for all intents and purposes, is dead now. So is the town of Coarsegold itself. Cranston's spirit has cast an evil pall over the town, which is not utterly deserted.

All anyone knows for sure about the mansion is that there are treasures almost beyond believing hidden in the old house and that Cranston, whose avarice extends even beyond the grave, placed lethal traps, barriers, and a few very deadly creatures inside the house to prevent anyone from filching his treasure trove.

You think that you can beat Cranston's defenses. That's why you've journeyed all the way to Coarsegold to try to break into the mansion and find the treasures. Now you're standing in a street on the edge of the town. All you have to do is find a way into the mansion, search it without getting killed in the process, and find all of Cranston's loot.

This is the start of the classic, illustrated computer adventure, Sierra/On-Line's *Cranston Manor*. For quite a few months after the game appeared on the market, it even rivaled the sales of VisiCalc—which is a remarkable achievement when you consider that most of those expensive Apple II-Plus systems were purchased for business use. There must have been a lot of accountants adventuring on their Apples during lunch hour . . .

THE CHALLENGE OF ADVENTURING

What is a computer adventure game? Very simply stated, a computer adventure is an enormously complex puzzle built around a story, such as a ghost

story (*Cranston Manor*), a fairy tale (*The Wizard and the Princess*), a science-fiction yarn (*Suspended*), a fantasy (*Blade of Blackpool*), or some other fictional vehicle that a player must solve using logic, intuition and, most important of all, imagination. These adventures come either as *illustrated games* with high-resolution color graphics for every location you explore or as *text-only games* in which your imagination supplies the colors *(Zork* is a perfect example).

The idea of the puzzle is to require you to use your imagination to solve it; to this end, you are given as little as possible of the information needed to do so. There is usually a goal stated at the beginning of the game, which will tell you what conditions you must satisfy to win (find all the treasure, rescue the princess, etc.). In addition, the documentation may give you a few (but almost never all) of the commands you'll need to move around and operate in the artificial world of the adventure.

The fun is in analyzing the observations you make about the environment you're in and drawing conclusions from this information that will lead you in the right direction to solve the puzzle.

If this sounds relatively easy, think again. Two friends of mine who solved a very popular adventure, Infocom's *Zork III*, claim that they had to solve no less than 60 secondary puzzles—and in a precise order—to be able to "crack" the game. That's 60 actions out of hundreds possible in the game.

As you can see, adventuring is not for the impatient game player. It takes a lot of patience and perseverance to solve even the most elementary adventures.

Having said that, I will now break with the format I've been following for the start of chapters. I will now tell you what I will *not* discuss in this short section.

I will *not* give clues to solving any adventure. I'm assuming that you're really serious about playing adventure games (why else would you be reading this?). If so, you won't want clues that give away the solutions before you play the games. That's like turning to the last page of the puzzle book and carefully filling in the crossword puzzles using the solutions.

You can see my problem. I'd love to write a long section about adventure games, but it's hard to write about them when you can't reveal the solutions. What I *can* do in this short chapter is talk about the sort of thinking you must be ready to employ to solve these games and describe a few games that you might want to try for starters.

COMMANDS

Your first concern is *movement*. In most adventure games, the commands for all actions are simple verb-noun combinations. For movement, the commands are GO EAST, GO NORTH, GO UP, GO DOWN, etc. Some games

allow you to simply type the first letter of the direction you want to travel—N, S, W, E, U, D. In illustrated adventure games, the convention is that the direction you are facing is north (unless the text window below the view informs you otherwise).

In some games, you'll find that where you want to go isn't an easily defined direction, but a place. Let's imagine a room with three walls showing in the view, and a hole large enough to crawl through in the northeast corner. The game will not accept a GO N E command. Use your imagination. Try GO WALL. Still getting a YOU CAN'T DO THAT HERE! message? Try GO HOLE. that would probably do the trick. The point is that there are many ways to skin a cat, an adage adventurers should keep in mind.

Let's do some more cat skinning. Same hole, same problem. The difference is that there is also a hole in the floor—and you can't go into that hole with a GO DOWN or D command.

If a problem like this occurs, chances are that you are in an adventure that permits more sophisticated commands than the basic verb-noun combination. To get into that hole in the corner, the probable commands would be GO INTO THE HOLE IN THE WALL or GO INTO THE HOLE IN THE CORNER. To go down, you would command, GO INTO THE HOLE IN THE FLOOR.

I like these commands because they give you the illusion that the computer is an intelligent companion. A number of games (especially Infocom adventures) support this kind of command. In *Zork II*, an all-text adventure (and a monster hit), the manual shows some interesting sample commands, such as THROW THE NEWSPAPER, THE RED BOOK AND THE MAGAZINE IN THE CHASM. For all you grammar fans, the parts of speech in this command are verb—article—noun—article—adjective—noun—conjunction—article—noun—preposition—article—noun, and the structure is verb-direct object with the unwritten *you* (the computer program) the subject.

Phew! I bet you never thought I'd slip an English lesson into this book. I wouldn't have, either, if I didn't want to point out just how sophisticated the structure of commands in some of these games is.

Now think for a minute. Why would the commands be this complex? Answer: In order for you to solve the puzzles, they have to be. That'll give you an idea of how tough the solutions in champion-class games like *Zork* are.

That takes care of movement and the grammar lesson. Next comes the lexicon of verbs that get the game program to do things for you. Again we are working in the basic verb-object format, with some of the typical verbs being: GET, TAKE, GRAB, CLIMB, DROP, LOOK, EXAMINE, MOVE, PUSH, DRAG, LIFT, SHOOT, OPEN, CLOSE, UNLOCK, TALK, DRINK, EAT, RUB, BREAK, ENTER, EXIT, TYPE, WEAR, JUMP, SWIM, REMOVE, and CROSS. As you can see, this list covers a pretty wide range of activities. A large proportion of these verbs will be the commands in almost any adventure

game you can select, allowing you to GET THE WALLET, TAKE THE MONEY, EXAMINE THE ROOM, SHOOT THE BANDIT, BREAK THE WINDOW, CROSS THE BRIDGE, or any other thing you have to do to solve the game.

"ENIGMAS"

Now let's go on to the real fun stuff—enigmas. *Enigma* is a term I'm using here (I confess it's not a common adventure-gaming term) to describe a problem that has no apparent solution. Enigmas are characterized by a sudden and seemingly permanent halt in your progress though the game.

Enigmas have two possible causes: 1. There really is no solution, and you've arrived at a blind alley, having picked incorrect solutions to problems earlier in the game. 2. There is a solution, but your imagination has failed you.

If the enigma is traced back to cause number 1, then there's nothing you can do but start the game over and try to figure out where you've gone wrong. Sometimes the figuring isn't too hard. Suppose you find a dollar and you TAKE DOLLAR. Great. Later, you GIVE DOLLAR to a ticket clerk at an amusement park. So far, so good. Soon, having explored the whole park and found nothing, you run across a hot-dog vendor standing under a sign that says "Hot Dogs—$1." Great! You know that to continue on, all you have to do is give him the dollar, right? Wrong! You already gave your dollar to the ticket taker. Was there some other way past the hot-dog man that you neglected to think of? If there was, then you are at an official dead end, and you'll have to backtrack.

Now let's look at the situation from the point of view of a real game, *G.F.S. Sorceress*. At one point in the game, you are confronted with a HALF BOULDER WITH A MAN-SIZED HOLE. That's what an anguished and stumped game player told me when he called all the way from Maryland to see if I had a hint to give him. Even though I had reviewed the game for *Creative Computing*, I was not able to finish it, so I didn't know the correct solution to the puzzle either. I did offer one cogent suggestion, which I will pass along to you.

I said to this adventurer, "Did you try *everything?* Did you GET, TAKE, GRAB, CLIMB, DROP, LOOK, EXAMINE, MOVE, PUSH, DRAG, LIFT, SHOOT, OPEN, CLOSE, UNLOCK, TALK, DRINK, EAT, RUB, BREAK, ENTER, EXIT, TYPE, WEAR, JUMP, SWIM, REMOVE, and CROSS the boulder? Did you GET, TAKE, GRAB, CLIMB, DROP, LOOK, EXAMINE, MOVE, PUSH, DRAG, LIFT, SHOOT, OPEN, CLOSE, UNLOCK, TALK, DRINK, EAT, RUB, BREAK, ENTER, EXIT, TYPE, WEAR, JUMP, SWIM, REMOVE, and CROSS the man-sized hole?" No wonder he was sore at me, but it was good advice all the same.

What I'm saying is, *try everything, however improbable, to break the deadlock.* Who knows, maybe the man in Maryland found he had the ability to EAT THE BOULDER or to SWIM THE MAN—SIZED HOLE. He would never know without trying.

When you solve a problem correctly, you are usually rewarded in one of four ways. An obstacle to movement will be removed, showing a new exit from the scene; a useful object will appear, like a candle or a crowbar (take every object that isn't nailed down, always!); a dangerous enemy will disappear; or a clue will be revealed (frequenty a note—you TAKE THE NOTE and then READ THE NOTE). You see? It *does* pay to try everything.

In additon to trying every action, you should USE every object you've find. If USEing fails, you could try GIVEing or PLACEing objects. Sometimes the failure of an object to work will result in a message from the game program that will give you a clue as to the object that *will* work. Like I said, it pays to try everything!

Trying everything applies to movement, as well as action. It pays to exit a location from every direction possible. If you've just come from the south and are now in a location with EXITS N, S, E, W, D, you must make every effort to explore north, east, west, and down. Sometimes the wonderful clues and objects you're looking for are in plain sight—you just don't find them because you don't explore in every direction.

A FEW PRACTICAL TIPS

Every so often you will meet with catastrophe. You'll inadvertently climb the electrified fence, be eaten by the piranhas in the fountain, or fall to your death in the chasm. After the obligatory message of condolence (i.e., YOU HAVE BEEN EATEN BY THE PIRANHAS. YOU ARE DEAD. THANK YOU FOR PLAYING.), what do you do?

If you are smart, you put the game-saver disk you've been using into the disk drive and pick up the game from where you saved it last. Most adventure games allow some sort of system that lets you save your position onto a spare disk. When disaster strikes, you can start the game again and then, using a RESTORE command, pick it up at the point you saved it. Experienced game players save frequently. There's no penalty for doing so, and most games let you continue right after a save. If you're about to try some dubious undertaking (i.e., JUMP THE CHASM), a save is almost mandatory to protect your progress so far.

One final tip: *Draw a map.* This is the first suggestion that the *Zork* manual makes for improved play, and is it ever on target! In illustrated games as much as text games, a good map helps you to keep track of where you've been and also keeps you aware of any passages you may have failed to explore.

When I make a map, I represent each location as a circle. From that circle, I draw a short line representing each exit (plus a U or D for the vertical exits).

When an exit leads to another location, I end the line with another circle and start the process over. Later, if I'm stuck on some problem, I can backtrack to any passageways I've failed to explore.

TRY THESE ON FOR SIZE

Now that I've shared the extent of my wisdom, allow me to recommend some interesting games.

A good introduction to adventuring would be Sierra/On-Line's *Cranston Manor*. It's moderately difficult to solve, and the puzzle is very entertaining. The graphics, while not state of the art for high-res, create an interesting atmosphere. The game is sheer fun.

Another Sierra/On-Line classic for beginners is *The Wizard and the Princess*. Rescue the princess from the evil wizard, and you'll receive half the kingdom. Only answer me this: How do you kill the snake, and how do you cross the chasm? The color graphics are good, by the way.

Transylvania is a classy, colorful adventure of vampires, werewolves, and other children of the night from Penguin Software. You must rescue a damsel in distress, *if* you can first rescue yourself from the werewolf. The color graphics are outstanding!

G.F.S. Sorceress from Avalon Hill is a text-only, science-fiction game that takes place on several planets. At first it seems easy, but once you start landing on planets, the challenge rises sharply.

Zorks I, II, and *III* need no introduction to thousands of frustrated-but-satisfied game players. They offer a very intense challenge to even the most experienced adventurers. There are no illustrations, but the vivid text descriptions of each location paint a lush mental image (they also contain important clues).

That's a baker's half-dozen good games (the *Zorks* count as three) to get started on. Have fun, and don't call me for clues. If you get stuck, take the advice of the the *Zork* manual, and call in a friend to play the game with. Who knows? Maybe a fresh perspective is the key to the solution!

APPENDIX I: CHOOSING A SYSTEM

This section is designed for readers who do not already own a computer system on which to play the games described in *Sorcerers & Soldiers*.

Let's start by defining two very basic terms. *Hardware* refers to the mechanical and electronic devices which physically constitute your computer. It includes the computer itself, the keyboard, the disk drive, the video monitor, and any other devices you connect to it. *Software* is any program that you can load into the computer's memory to make the system perform a given function. All the computer system's we're about to look at in this section are hardware. All the games discussed throughout this book are software.

GAMING SYSTEMS

There is a wide range of home computer systems suitable for wargaming and fantasy gaming. Your basic choices include the Apple II family of systems, including the II, II Plus, IIe, and IIc; the IBM PC; the Atari 800XL; and the Radio Shack TRS-80 series. There are also games available for the Commodore 64 and the Texas Instruments TI/99, though not in as great an abundance as for the other systems.

The number of games available for the Commodore 64 *is* steadily on the rise. The 64 is an outstanding system and is priced right—*very* right. Knowing that this system has an enviable future in the marketplace (and to be "enviable" means to have any future at all, given current conditions in the industry), software producers are now writing original software and encoding existing games for the 64.

The outlook for new TI games, on the other hand, is very bleak. Texas Instruments got out of the home-computer market in 1983. This means that game producers will show little or no interest in producing new games for the TI from now on.

It would be a mistake for you to judge any computer system on gaming ability alone. You're likely to find many other home, business, educational, and computer-hobby applications for your new system. For the purposes of this book, however, we'll evaluate systems strictly on the basis of suitability for gaming.

All of the systems we'll look at are exceptional examples of modern computer technology, capable of many more applications than game playing. Consider your other interests, enterprises, and goals before you settle on one system. After all, you'll probably be investing $700 or more for your new system. You'll want to make sure that you're getting the most of your money.

Let's look at the basic parts of a home computer system. First comes the computer itself. The Apple and Atari units are all-in-one units. The chassis of these units house the keyboard, CPU (central processing unit), the computer's memory, and the slots or ports for attaching auxiliary devices and the electrial power supply. The IBM PC and PCjr are similar in that they house most of the computer's components in the chassis. The difference is that both PCs have detachable keyboards.

MEMORY

The capacity of your computer to store programs is called its *memory*. There are two kinds of memory. One is called *ROM*, which stands for *Read Only Memory*. This is memory permanently stored on chips. ROM chips are used to operate the computer. They are also used in video-game cartridges.

The type of memory that most concerns us is *Random Access Memory* or *RAM*. This is the memory in which the computer temporarily stores the program you're currently using. RAM memory is measured in *bytes*. In advertisements and in product literature, you'll see references to "48K" and "64K." These terms stand for, respectively, approximately 48,000 and 64,000 bytes of memory. Stated more simply, these quantities are 48 kilobytes and 64 kilobytes. The minimum you'll need for wargames and fantasy/adventuring is 32K for games stored on tape cassettes and 48K for games stored on disks.

Now that you know what RAM memory is, here's some good news: You don't have to worry about it if you're planning on using your computer for wargames, fantasy, and adventure only. The Atari 800XL and the Apple II and II Plus are all sold with at least 48K; the Apple IIe and IIc, and IBM PC and PCjr all come equipped with at least 64K. It's possible that if you were to buy an older, used Apple II you could wind up with only 16K or 32K. Fortu-

nately, the RAM chips to upgrade Apple memory to 48K are available at any authorized Apple dealership. It should only take a half day for a serviceperson to install them.

PROGRAMMING LANGUAGES

Every personal computer is programmed to operate using what's called a *programming language*. One such language is called *machine language*. A machine language is the code which the computer's CPU chips understand. Quite a few wargames and fantasy games are programmed in machine language.

A computer language called *BASIC* is used in all the previously mentioned computer systems. A good many wargames and fantasy games are written in versions of BASIC adapted for specific home computer systems. Games for the IBM and Atari systems "speak" the relevant versions of BASIC for those computers—meaning you shouldn't worry about it. Most games for the Apple II family are programmed in Applesoft Basic (to be more accurate, they are programmed in combinations of Applesoft and machine language). Some very few games (including a few arcade games) are in another Apple Basic, called Integer Basic. If you have an Apple II (not a II Plus or a IIe) the "native" language of your unit is Integer and you will need to install an Applesoft language card. The II Plus and the IIe already have Applesoft Basic.

If you own a II Plus you may want to make a similar investment in an Integer Basic card or a language card, in order to play those very few games, from way back when, that require Integer Basic. The Apple IIe already has the language card built in. Frankly, if you don't have Integer Basic capability, I don't think you'll ever miss it.

DISKS AND CASSETTES

Nearly all of the fantasy games and wargames played on the major home computers are sold in floppy-disk format. *Floppy disks* are little circles of acetate coated with an easily magnetized substance and housed in a protective envelope. To load the program into the computer, the disk is placed in a device called a *disk drive*. The disk drives uses record and playback heads, similar in function to the heads of a tape recorder, to read information from the disk into the computer's RAM memory and to write data generated by the computer from RAM onto the disk. The best part about this process is that the time spent in loading or saving information is minimal.

The disks come in various sizes, but the size commonly used for the three systems we recommend is the $5\frac{1}{4}$-inch variety. Apple and Atari make separate $5\frac{1}{4}$-inch drives for their computers. The IBM PC drive is built into the

main chassis of the computer.

If you are buying an Apple IIe fresh from the dealer, you'll have to pay extra for a Disk II drive and a disk-drive interface called the Disk II Controller Card. (An *interface* is a device that allows you to use a peripheral device like a disk drive, cassette recorder, or a printer with your computer.) The Disk II card allows you to use two drives with your Apple. The Apple IIc drive is built-in; a cable allows you to add a second drive. A drive for an Atari 800XL also costs extra. It can be plugged right into the chassis of the computer without an interface device.

A low-cost alternative to a disk drive is a cassette drive. A few of the current fantasy games and wargames come in the tape-cassette format. This is especially true of games made for the Ataris, the Commodore 64, and the TRS-80 series computers (there are very few Apple games on tape format). As with the floppy disks, the data is magnetically recorded and played back, using a cassette deck and standard audio cassette tapes.

The advantages of tape include a low cost for the cassette drive, usually well under $200. In addition, taped games usually require less RAM memory space, because you don't have to fill that memory with disk-operating instructions. A game that needs 48K RAM on disk will frequently require only 32K RAM on cassette.

One of the main disadvantages of the cassette format is in loading time. A game that loads in scant seconds from a floppy disk can take many minutes to load from a cassette. Another telling argument against the cassette format is in software availability. Most of the important wargames, adventures, and fantasy games for the Apple IIs are released solely in disk format, and the selection of cassettes for other systems is limited compared to the number of games on disk.

What's the best way to go? I think that the disk format holds the advantage. A disk drive is the most valuable item in putting together a system capable of serious gaming. The widest selection of titles for the Apple and for most other systems as well is on disk. In addition, the disk format is much more convenient to use, thanks to the great speed of the disk drive in loading and saving program data.

MONITORS

We've covered all the topics you need to know in order to start gaming, save one: *video monitors*. If you already have a regular color TV set with a screen diagonally measuring 13, 15, or 19 inches, you don't need a specially designed computer monitor. The specially designed monitors offer better picture resolution, but this isn't critical for game playing. When you consider that prices for color computer monitors start at around $300 for a 13-inch

set, the home-TV alternative looks better and better.

If it's in good condition, your home color TV can be adjusted by using the fine tune, contrast, and bright controls to give you a very nice graphics image. When the computer is off, you'll be getting the extra benefit of an extra television set. This is the way you should go, even if you have to buy a new set to go with your computer. Just get a high-quality set with a sharp, bright image.

THE RECOMMENDED SYSTEMS

In my opinion, the Apple IIe is the best system for game playing. It has 64K, which suits business and educational applications as well as gaming, and a built-in language card so you don't need an Integer Basic card. The IIe supports excellent color graphics, and third-party manufacturers make all sorts of handy peripherals and gadgets you can add onto it at your leisure.

More importantly, the overwhelming majority of wargames, adventures, and fantasy games are designed for use with the Apple II family of computers. In addition to those games there are, quite literally, thousands of programs covering every type of application imaginable for the Apple II. It has been said that computers are like player pianos; just as a player piano isn't worth much without piano rolls, so a computer isn't much good without software. If the Apple II were a player piano, it would have thousands more piano rolls than any other model.

Your second-best bet is a used Apple II Plus (or an unsold II Plus if you can find one). A new Apple II Plus used to cost over $1300, not including a disk drive, disk controller card, or Integer Basic language card. Now you might be able to find a used system (or new but unsold one) for half that price. With some business users switching to IBM PCs and with a few Apple owners upgrading from the II Plus to the IIe or even to the Macintosh, you have a fair chance of finding a good used II Plus for sale.

NOTES ON A RUNNER-UP

I wouldn't rate the IBM PC as a "best bet" because of its high price, but an IBM PC with a Quadlink card to emulate Apple II operation is a combination worth looking into. The Quadlink card, which costs around $600, virtually turns the IBM PC into an Apple II. The advantages of owning a system like this are obvious. You'll have all the benefits of owning IBM's powerful computer, while being able to choose many games from the enormous library of Apple software.

A check with the largest wargame producer, Strategic Simulations, Inc., revealed that of the forty titles available for Apple in January 1984 only three—*Fighter Command, Napoleon's Campaigns,* and *Road to Gettysburg*—will

not run on the IBM PC with Quadlink. This is because of a copy-protection scheme which cannot operate on the IBM disk drive.

Avalon Hill, the second-largest producer, reports that all but a few of its Apple II games on disk will run on the IBM-Quadlink system. The games that will not work fail for the same reason as the SSI titles. The Avalon Hill war and fantasy games that won't work are TAC, *Legionnaire, Dreadnoughts, Parthian Kings*, and *Fortress of the Witch King.*

Avalon Hill says that backup copies of the game made with programs used to "crack" the protection code should work fine—just about the only ethical use I've ever heard of for a "pirate" copy program, assuming you buy the game you intend to crack. The method of copy protection used by Avalon Hill is expected to change in 1984, and a technician there has told me that the Quadlink-IBM connection will be considered when the new copy-protection code is written. The fact remains that although you'll probably be able to run *most* Apple software on this system, you won't be able to run *all* Apple programs on it.

The IBM PC is the biggest thing to happen in the field of tabletop computers since the Apple II first hit the market. I think it bids fair to be supported in the future by just as many software producers as Apple has been in the past.

MORE RUNNERS-UP

Please accept my apologies if you are a fan of the Atari, Commodore 64, or TRS-80. The single most important reason why I didn't rate these systems as highly as the others is that the number of games available for the Apple II family far outstrips that of any other system. (The potential for Apple compatibility is the only reason why I included the IBM PC in this discussion).

It's worthwhile to point out that the Ataris, the TRS-80 Color Computer, and the Commodore 64 are all wonderful home computers and are capable, in their individual ways, of doing as much (and sometimes more) as the Apple IIs. That's why many (but far, far from all) of the games available for the Apple are also available for Commodore, Atari, and the TRS-80

Of these three computers, I personally prefer the Atari 800XL. It's very easy to use, generates great sound, and displays astounding color graphics with true scrolling. It's also important to point out that quite a few of the very best wargames and fantasy games, such as *Eastern Front, Squad Leaders, Paris in Danger*, and *Excalibur*, are available for Atari only. In the field of game conversions from Apple to another system, Atari generally leads the pack, with Commodore, IBM, and TRS-80 (in just about that order) trailing.

I own an Atari system (an Atari 400 upgraded to 48K with an Atari 1050 disk drive), which I use for wargaming. I love it, and I sometimes wish that the library of available game software for it were as extensive as it is for the

Apple II. It isn't.

The fact remains that the software library for the Apple II series, not only in games but in every category of software, is much larger than any other system's. This indisputable fact, coupled with the quality of the hardware and the endless variety of peripherals and system upgrades available from hundreds of third party manufacturers, points decisively to the Apple II series computers as your best choice for a system.

APPENDIX II: GAME LISTINGS

This section contains two sets of alphabetical game listings—one for wargames and one for fantasy/roleplaying and adventure games. (Note that science-fiction titles are included in the latter section.) Each listing includes the title, publisher, system on which the software runs, and a brief description of the game's subject matter. Games that are extensively covered in the text of this book are so indicated by a note. I have included additional comments on quality, where I thought they were appropriate. The lack of such a comment in any listing, however, should *not* be construed as a negative evaluation. Some fine games are listed with no comment at all.

In the hardware references, *Apple IIs* refers not to the Apple II itself, but to the entire Apple II family (II, II Plus, IIe, IIc).

At the very end of this section, you will find the addresses of the manufacturers whose products are listed here.

WARGAMES

Here is a representative listing of computer wargames currently on the market. This list is not meant to be a comprehensive guide, but it comes close.

Each listing indicates whether the game is two-player, solitaire, or both. Note that *SSI* stands for Strategic Simulations, Inc., and *AH* stands for the Avalon Hill Game Company.

B-1 NUCLEAR BOMBER (AH) Cassette: Commodore 64, Ataris (32K), TI/99 4 & 4A, Timex/Sinclair 1000 (16K), TRS-80 I and III.

Disk: Apple IIs, Ataris, IBM PCs, TRS-80. Solitaire. A text-only game in which you command a B-1 bomber penetration of the Soviet Union to "nuke" a city target.

BATTLE FOR NORMANDY (SSI) Cassette: Ataris, Commodore 64. Disk: Apple IIs, Ataris, Commodore 64, TRS-80, IBM PC. Two-player or solitaire. Excellent recreation of the Invasion of Europe, June 1944. Units on the battalion through the division level. See text for details.

THE BATTLE OF SHILOH (SSI) Disk only: TRS-80, Ataris, Apple IIs, Apple III. Two-player or solitaire. An introductory wargame simulating the 1862 battle of Grant vs. Beauregard. One of the first games with a "fog of war" feature (see Appendix III, "Glossary of Gaming Terms").

BOMB ALLEY (SSI) Disk only: Apple IIs. Two-player or solitaire. Gary Grigsby's popular recreation of the Malta air/sea campaign. Has an Invasion of Crete scenario.

BROADSIDES (SSI) Disk only: Apple IIs. Two-player or solitaire. A recreation of single-ship combat in the age of sail. Includes hand-to-hand combat in a boarding phase. See text for details.

CARRIER FORCE (SSI) Disk only: Apple IIs and Ataris. Two-player or solitaire. A Pacific War carrier ops game by Grigsby, including the Battle of the Coral Sea, Midway, the Battle of the Eastern Solomons, and the Battle of Santa Cruz.

CLOSE ASSAULT (AH) Cassette: Ataris. Disk: Apple IIs, Ataris. Two-player or solitaire. A very fine hybrid-game simulation of combat on the company/platoon level. World War II European-theater terrain and weapons. Very entertaining, easy to learn. Includes map-board and unit counters. Computer display is all-text. See text for details.

COMBAT LEADER (SSI) Cassette: Ataris, Commodore 64. Disk: Ataris. A sophisticated simulation of single-tank combat.

COMPUTER AIR COMBAT (SSI) Disk only: Apple IIs. Two-player or solitaire. A detailed and realistic simulation of single-plane combat using World War II and Korean War planes (with version 1.1 and optional data disk for an extra fee). See text for details.

COMPUTER AMBUSH (SSI) Disk only: Apple IIs. Two-player or solitaire. This very popular game puts you in command of individual soldiers fighting in a French village in World War II. High excitement, entertainment. See text for details.

COMPUTER BISMARCK (SSI) Disk only: Apple IIs (TRS-80 version out of print). Two-player or solitaire. This is the original SSI wargame, simulating the British hunt for the Bismarck in 1941. Entertaining and realistic. For experienced players. See text for details.

DNIEPER RIVER LINE (AH) Cassette: Apple IIs, Ataris, CBM PET-64, TRS-80. Disk: Apple IIs, Ataris, IBM PC, TRS-80. Solitaire. Germans face overwhelming assaults by Soviets in a simulation of eastern-front combat in 1943. Hybrid game, comes with map-board and counters.

EAGLES (SSI) Disk only: Apple IIs, Ataris, Commodore 64. Two-player or solitaire. Single-plane combat in World War I.

EASTERN FRONT (Atari Program Exchange) Cassette: Ataris. Disk: Ataris. Solitaire. The German invasion of Russia simulated by Chris Crawford. The great use of graphics, play value, and realism may make this *the* classic computer wargame of its era.

FIGHTER COMMAND (SSI) Disk only: Apple IIs. Two-player or solitaire. Splendid recreation of the Battle of Britain. Very good video maps. High entertainment value for experienced wargamers and newcomers alike. See text for details.

FREDERICKSBURG (AH) Disk only: TRS-80. Two-player. Vivid recreation of the 1862 Civil War battle. Hybrid game with map-board and unit counters supplied.

GERMANY 1985 (SSI) Disk only: Apple IIs. Two-player or solitaire. Extremely sophisticated simulation of present-day combat in a NATO vs. Warsaw Pact war. Incredibly bad rule book; still, a great game. See text for detail.

GUADALCANAL CAMPAIGN (SSI) Disk only: Apple IIs. Two-player or solitaire. A detailed "monster game" with every ship in the real World War II campaign! Great fun for an advanced player with lots of time.

KNIGHTS OF THE DESERT (SSI) Cassettes: Ataris, TRS-80. Disk: Apple IIs, Ataris, Commodore 64. Two-player or solitaire. The sweep of German panzers in the 1941 North Africa campaign.

LEGIONNAIRE (AH) Cassette: Ataris, Commodore 64. Disk: Apple IIs, Ataris, Commodore 64. Chris Crawford's real-time game of Roman warfare. Borders on the arcade, but realistic use of terrain qualifies it as a genuine (and hearty) wargame.

NAPOLEON'S CAMPAIGNS 1813 & 1815 (SSI) Disk only: Ap-

ple IIs. Two-player or solitaire. Scenarios simulate the Battle of Waterloo (1815) and of Leipzig (1813). Replaces the earlier *Computer Napoleonics* to which the new game bears scant resemblance.

NORTH ATLANTIC '86 (SSI) Disk only: Apple IIs. Two-player or solitaire. Scenarios simulate naval war after the Russians have conquered Europe. Gary Grigsby's best to date. See text for details.

NORTH ATLANTIC CONVOY RAIDER (AH) Disk only: Apple IIs, Ataris, TRS-80. Solitaire. You control the Bismarck while the British go hunting after you.

OLD IRONSIDES (Xerox/Weekly Reader) Disk only: Apple IIs. More of an arcade game, this wooden-ships battle does require valid sailing strategies. It's also one of the most entertaining games for any computer system.

OPERATION APOCALYPSE (SSI) Disk only: Apple IIs. Two-player or solitaire. Four battles on the western front, 1944.

OPERATION WHIRLWIND (Broderbund) Disk only: Ataris, Commodore 64. Solitaire. You command a battalion of infantry and tanks ordered to capture a city. Realistic terrain effects and combat. Good graphics. Interesting approach.

PARIS IN DANGER (AH) Disk only: Ataris. Two-player or solitaire. This game recreates the invasion of France in 1814.

PURSUIT OF THE GRAF SPEE (SSI) Disk only: Apple IIs. Two-player or solitaire. This game is very similar to *Computer Bismarck*. See text for details.

RDF 1985 (SSI) Disk only: Apple IIs. Two-player or solitaire. This game uses the *Germany 1985* game system to simulate a rapid deployment force battling Soviets in Saudi Arabia's oil fields.

THE ROAD TO GETTYSBURG (SSI) Disk only: Apple IIs. Two-player or solitaire. This hybrid game recreates the movements of the Union and Confederate Armies in the Pennsylvania countryside around Gettysburg as the two forces seek out one another. Game comes with map and unit counters.

SOUTHERN COMMAND (SSI) Disk only: Apple IIs. Two-player or solitaire. A simulation of the Yom Kippur War in the Sinai Desert; similar to *Germany 1985.*

TACTICAL ARMOR COMMAND or TAC (AH) Disk only: Apple IIs, Ataris, Commodore 64, IBM PC. Two-player or solitaire. A su-

perbly realistic recreation of single-tank combat. A wide selection of tanks to choose from. See text for details.

TANKTICS (AH) Cassette: Apple IIs, Ataris, CBM PET-64, TRS-80. Disk: Apple IIs, Ataris, TRS-80. Solitaire. A hybrid single-tank combat game by Chris Crawford in which line of sight and terrain are crucial. A great solitaire game. Map-board and unit counters supplied. See text for details.

TIGERS IN THE SNOW (SSI) Cassette: Ataris, Commodore 64, TRS-80. Disk: Apple IIs, Ataris, IBM PC. Two-player or solitaire. A recreation of the Battle of the Bulge. Excellent for beginning computer wargamers. See text for details.

VC (AH) Cassette: Ataris, TRS-80, TRS-80 Color. Disk: Apple IIs, Ataris, IBM PC, TRS-80. Solitaire. The only Vietnam scenario in computer wargames, you have to watch the hearts and minds of the civilians while you're blowing away the Cong.

FANTASY/ROLEPLAYING AND ADVENTURE

This list is not intended to be comprehensive. These games represent a selection—not all—of the titles available. All fantasies and adventures are designed for solitaire play unless otherwise noted.

System availability: If a particular game in which you're interested is not listed as available for your home computer, check with your software dealer or the manufacturer. Between the time this is written and the time you read the book, chances are that the manufacturer has published a version for your micro.

ADVENTURE #3 (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color, Texas Instruments 99/4A. Disk: Apple IIs, Ataris. Scott Adams Adventure #3. Race the clock to stop a nuclear-reactor explosion. For advanced adventurers.

ADVENTURELAND (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color, Texas Instruments 99/4A. Disk: Apple IIs, Ataris. Scott Adams Adventure #1. Find the 13 lost treasures of the magic realm.

BALROG (Adventure International) Fantasy/Roleplaying. Disk only (two drives required): TRS-80. An enormous data base makes this one of the biggest dungeon games you'll encounter. A roleplaying game in the classic form. Beware the Chromatic Dragon! Part of the "Maces & Magic" series.

BENEATH APPLE MANOR Special Edition (Quality Software) Fantasy/Roleplaying. Disk: Apple IIs, Ataris. One of the best intros to computer fantasy/roleplaying. Good graphics and sound effects. High excitement as you explore dungeon rooms that only gradually reveal themselves. The dungeons change with each play. Engrossing and fun; you'll come back to it again and again.

BLADE OF BLACKPOOL (Sirius) Adventure. Disk only: Apple IIs, Ataris, Commodore 64. A quest for the sword Myraglym in high-res color. Uses sophisticated command grammar. Very entertaining.

CASTLE WOLFENSTEIN (Muse) Fantasy/roleplaying. Disk only: Apple IIs. In this all-time bestselling game, you're an Allied POW held in a Nazi fortress. You must steal the secret German war plans and escape to freedom. Not your usual roleplaying fantasy, it blends strategy with arcade skill in real-time action. One great game!

THE CAVERNS OF FREITAG (Muse) Fantasy/roleplaying. Disk only: Apple IIs. Slay the dragon Freitag, who lurks in a labyrinthine cave wherein dwell monsters and mages. Similar to *Temple of Apshai* in graphics.

THE COUNT (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color, Texas Instruments. Disk: Apple IIs, Ataris. Scott Adams Adventure #5. Spooky adventuring in Transylvania.

THE COVETED MIRROR (Penguin) Adventure. Disk only: Apple IIs. Evil King Voar possesses a magic mirror that can spy on anyone—and destroy whomever he pleases. Can you stop him? A medieval setting with great, great graphics.

CRANSTON MANOR (Sierra/On-Line) Adventure. Disk only: Apple IIs. This is one of the first of On-Line's full-color illustrated games and still a big favorite. How do you scare away those robots? How do you get past the big pink bull?

CREATURE VENTURE (Highlands Computer Services) Adventure. Disk only: Apple IIs. Uncle Stashbuck is dead, and he left you the mansion—monsters and all. Lotsa luck!

CRITICAL MASS (Sirius) Adventure. Disk only: Apple IIs, Ataris, Commodore 64. You're in a race to prevent the mysterious Count Stuportino from "nuking" the world's five largest cities. Some arcade sequences, great graphics, high level of challenge.

THE CURSE OF CROWLEY MANOR (Adventure International) Adventure. Cassette: Ataris, TRS-80, TRS-80 Color. Disk: Apple IIs,

Ataris. Solve a murder mystery with occult overtones, set in Edwardian London.

CURSE OF RA (Epyx) Fantasy/Roleplaying game. Cassette: TRS-80, Ataris. Disk: Apple IIs, Ataris, IBM PC. Part of the "Dunjonquest" series. An expansion module for *Temple of Apshai* (see listing below). This adventure is set in the ruins of an Egyptian temple complex.

CYBORG (Sentient Software) Adventure. Disk only: Apple IIs. You're a half-man half-robot lost in the forest. You have to find food for your human half and energy for your robot half. The game is very highly regarded among adventurers. Offbeat. For advanced adventurers.

DANGER IN DRINDISTI (Epyx) Fantasy/Roleplaying. Cassette: TRS-80, Ataris. Disk: Apple IIs, Ataris. Part of the "Dunjonquest" series. Expansion of *Hellfire Warrior* (see below), which you must own to play this game. Use your Hellfire character to examine 100 new locations filled with treasures and monsters as you vanquish four potent villains for the king.

DARK FOREST (Sirius) Fantasy/Roleplaying. Disk only: Apple IIs. Up to six players searching for the kingdom's most valued treasures. Beware the Gruds, conquer territories, and search castles! Elements of wargaming and fantasy/roleplaying mix in this game. Interesting challenge.

THE DATESTONES OF RYN (Epyx) Fantasy/Roleplaying. Cassette: TRS-80, Ataris. Disk: Apple IIs, Ataris. Part of the "Dunjonquest" series. You must catch Rex the Reaver, who has stolen the datestones from the calendar of Ryn—and you have 20 minutes of real time to do it!

DEADLINE (Infocom) Adventure. Disk: Apple IIs, Ataris, IBM PC, TRS-80, Commodore 64, NEC, CP/M machines, Texas Instruments, DEC. An offbeat adventure in which you have, besides the information on disk, a physical dossier of evidence and correspondence relating to the mysterious death of Marshall Robner, industrialist and philanthropist. It's up to you to solve the case. You have 12 hours of game time to do so.

DRAGON QUEST (Midwest Computing) Fantasy/Roleplaying. Disk only: Ataris. Rescue Princess Anarea from Cheima, the Black Dragon.

DRAGON'S EYE (Epyx) Fantasy/Roleplaying. Cassette: CBM-PET. Disk: Apple IIs, Ataris. A beginner's roleplaying game. An "overland"

fantasy through a world of dragons and golems in quest of the Dragon's Eye.

EARTHQUAKE—SAN FRANCISCO 1906 (Adventure International) Adventure. Tape: Ataris, TRS-80, TRS-80 Color. Disk: Apple IIs, Ataris. Can you escape from the burning ruins of the city? "Painstakingly researched with close attention to detail" says the maker.

ENCHANTER (Infocom) Adventure. Disk: Apple IIs, Ataris, IBM PC, TRS-80, Commodore 64, NEC, CP/M machines, Texas Instruments, DEC. It's remarkable how Infocom games create such a powerful sense of atmosphere without pictures! In this adventure you're a young enchanter who must try to free the land from the necromancy of the dreaded Warlock. The documentation for this very challenging game adds powerfully to the mystic mood of the experience.

ESCAPE FROM RUNGISTAN (Sirius) Adventure. Disk only: Apple IIs. You're a tourist who wakes up hung-over in a Rungistanian jail. You learn you're to be shot at sunrise. You must escape to Nuggyland—presumably so you'll live to kill your travel agent. Good graphics, laughs.

ESCAPE FROM TRAAM (Adventure International) Adventure. Cassette: Ataris, TRS-80 Color. Disk: Apple IIs, Ataris. Adventuring on an alien world.

EXCALIBUR (Atari Program Exchange) Fantasy. Disk only: Ataris. Experience the challenge of kingship as you struggle to control Avalon and all of Britain. See text for details.

GHOST TOWN (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color, Texas Instruments. Scott Adams Adventure #9. Treasure hunt in a deserted mining town. For expert adventurers.

GOLDEN VOYAGE (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color, Texas Instruments. Scott Adams Adventure #12. Find the elixir to save the dying king! A tough puzzle for experts.

GRUDS IN SPACE (Sirius) Adventure. Disk only: Apple IIs, Ataris, Commodore 64. To deliver fuel to a warship stranded near Pluto you must wander all over the solar system dealing with the loathsome Gruds. A game of clever puzzles.

HELLFIRE WARRIOR (Epyx) Fantasy/Roleplaying. Cassette: TRS-80, Ataris. Disk: Apple IIs, Ataris, IBM PC. Part of the "Dunjonquest" series. A sequel to *Temple of Apshai* (see below) with four new levels of monsters and treasure.

KABUL SPY (Sirius) Adventure. Disk only: Apple IIs. Penetrate Afghanistan and rescue Prof. Eisenstadt from Kabul. Hi-res graphics, involved puzzle.

KEYS OF ACHERON (Epyx) Fantasy/Roleplaying. Cassette: TRS-80, Ataris. Disk: Apple IIs, Ataris. Part of the "Dunjonquest" series. Another expansion module of *Hellfire Warrior* (see above), which you must own to play this game. Your character must recover four enchanted jewels from four powerful opponents.

KNIGHT OF DIAMONDS (Sir-tech) Fantasy/Roleplaying. Disk only: Apple IIs. A sequel to *Wizardy* (see below and in text), which you must own to play this game. This scenario requires 13th-level characters to play and has many more quests. Just about as good as *Wizardry*, and that's great!

LABYRINTH OF CRETE (Adventure International) Adventure. Disk only: Apple IIs, Ataris, Commodore 64. Control two characters adventuring in the Crete of mythology. Advanced.

LEGACY OF LYLLGAMYN (Sir-tech) Fantasy/Roleplaying. Disk only: Apple IIs. A sequel to *Wizardry* (see below and in text), which you must have to play this game. Your characters are reincarnated—at Level 1—to defeat a new and terrifying threat. Greatly enhanced Lisa-like graphics.

MORLOC'S TOWER (Epyx) Fantasy/Roleplaying. Cassette: TRS-80, Ataris. Disk: Apple IIs, Ataris. Part of the "Dunjonquest" series. Your *Datestones of Ryn* character returns to defeat the evil wizard Morloc.

MORTON'S FORK (Adventure International) Fantasy/Roleplaying. Disk only: Apple IIs, TRS-80. A rollicking roleplaying game set in the decayed fortress of an evil wizard (is there any other kind?). Part of the "Maces & Magic" series.

MYSTERY FUN HOUSE (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color, Texas Instruments. Disk: Apple IIs, Ataris. Scott Adams Adventure #7. You can get into the mystery fun house—but can you get out?

NAUGUS (Spectral Associates) Fantasy/Roleplaying. Cassette and disk: TRS-80 Color. The magic scepter is hidden deep in the forest of the evil Naugus. You, Byron Axehead, must defeat zombies and lyx to retrieve it.

NIGHTWALKER (Adventure International) Adventure. Disk only:

IBM PC, TRS-80. Hard-boiled detective adventure in New Orleans.

PIRATE ADVENTURE (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color. Disk: Apple IIs, Ataris. Scott Adams Adventure #2. This one's about exploring a mysterious island in search of a legendary pirate's hoard of doubloons. A good introductory game.

PYRAMID OF DOOM (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color, Texas Instruments. Scott Adams Adventure #8. A "dangerous land of crumbling ruins and trackless desert wastes" with plenty of plunder for skilled adventurers to find.

THE QUEST (Penguin) Adventure. Disk only: Apple IIs. Yet another dragon hunt, but an interesting one. Good challenge and the most lushly executed color graphics of any computer game. Period. Priced right, too.

RESCUE AT RIGEL (Epyx) Fantasy/Roleplaying. Cassette: Vic 20, TRS-80, Ataris. Disk: Apple IIs, Ataris. Part of the 'Starquest" series. You play the role of hero "Sudden Smith" as you rescue ten humans kidnapped by High Tollahs from the Ultima Thule colony in Orion. You've got 60 minutes!

SAIGON: THE FINAL DAYS (Adventure International) Adventure. Cassette: Ataris, TRS-80, TRS-80 Color. Disk: Apple IIs, Ataris. Adventure set at the end of the Vietnam War. Can you escape the country in its chaotic final days? Maybe you'll find a friend to help you . . .

SAVAGE ISLAND, PARTS 1 & 2. (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color, Texas Instruments. Scott Adams Adventures #9 and #10. Very challenging two-part search for the secret of the lost island. For expert adventurers.

SORCERER OF SIVA (Epyx) Fantasy/Roleplaying. Cassette: TRS-80, Ataris. Disk: Apple IIs, Ataris. The rare "Dunjonquest" game that isn't a sequel to anything.

SPOOK HOUSE & TOXIC DUMPSITE (Adventure International) Adventure. Disk only: TRS-80. In *Spook House* you're locked inside a carnival house of horrors knowing you have only 30 real-time minutes to escape. In *Toxic Dumpsite* you have 30 minutes to avert an explosion.

STAR WARRIOR (Epyx) Fantasy/Roleplaying. Cassette: TRS-80, Ataris. Disk: Apple IIs, Ataris. Part of the "Starquest" series. You play

a star knight who battles an entire planetary occupation force. Even more sophisticated sound effects and graphics than *Temple of Apshai*.

STRANGE ODYSSEY (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color, Texas Instruments. Disk: Apple IIs, Ataris. Scott Adams Adventure #6. Adventuring in an alien environment. Moderately challenging treasure hunt.

SUSPENDED (Infocom) Adventure. Disk: Apple IIs, Ataris, IBM PC, TRS-80, Commodore 64, NEC, CP/M machines, Texas Instruments, DEC. A very offbeat science-fiction adventure. You are the brain of a complex controlling the world's climate. You attempt to fix the mechanism using robots, each representing one of your "senses," or intellectual and physical capabilities. The problem is, not all of the robots are in working order. Incredibly difficult.

THE TARTURIAN (Highlands Computer Services) Adventure. Disk only: Apple IIs. A 160-room maze chock full of monsters. You must gather treasure and weapons for the final battle . . .

TELENGARD (AH) Fantasy/Roleplaying. Cassette: Commodore 64, Ataris, TRS-80, CBM PET. Disk: Apple IIs, Ataris, Commodore 64, TRS-80. The goal is to keep your character alive in a real-time nightmare of dungeon monsters. Forget the graphics. Great game system. Building up a character to the point at which he'll survive for any extended period is tougher than in any other game I've seen. These monsters are *tough*!

TEMPLE OF APSHAI (Epyx) Fantasy/Roleplaying game. Cassette: TRS-80, Ataris. Disk: Apple IIs, Ataris, IBM PC. First game in the "Dunjonquest" series. Multi-award-winning roleplaying game with hi-res color graphics. Challenging and entertaining.

TRANSYLVANIA (Penguin) Adventure. Disk only: Apple IIs. Penguin's first foray into adventure games is set in Transylvania, where you must rescue "a damsel in distress." The fine color graphics create an eerie atmosphere.

ULTIMA I (Sierra/On-Line) Fantasy/Roleplaying. Disk only: Apple IIs. Lord British's classic adventure. See text for full description.

ULTIMA II (Sierra/On-Line) Fantasy/Roleplaying. Disk only: Apple IIs. This version adds time travel and a universe of planets to the game, which takes place on a world looking suspiciously like earth. See text for full description.

ULTIMA III (Origin Systems, Inc.) Fantasy/Roleplaying game. Disk

only: Apple iis. Thiss is the most fascinating *Ultima* yet, with multiple adventurers, many interesting spells, and the hardest solution in fantasy gaming. See text for full descriptions.

UPPER REACHES OF APSHAI (Epyx) Fantasy/Roleplaying. Cassette: TRS-80, Ataris. Disk: Apple IIs, Ataris, IBM PC. Part of the "Dunjonquest" series. An expansion of the *Temple of Apshai* dungeons. Requires *Temple of Apshai* in order to play.

VOODOO CASTLE (Adventure International) Adventure. Cassette: TRS-80, TRS-80 Color, Texas Instruments. Disk: Apple IIs, Ataris. Scott Adams Adventure #4. "The Count has fallen victim to a fiendish curse . . . . Will you pull off a rescue?"

WITNESS (Infocom) Adventure. Disk only: Apple IIs, Ataris, IBM PC, TRS-80, Commodore 64, NEC, CP/M machines, Texas Instruments, DEC. A sequel to *Deadline* (see above), in which a classy society dame is murdered and you, the hard-boiled private eye, have to stop the killer(s) before another victim is claimed. The 1938 setting adds atmosphere. The evidence package alone is worth the price of admission.

THE WIZARD AND THE PRINCESS (Sierra/On-Line) Adventure. Disk only: Apple IIs. Getting past the snake is the easiest part of this full-color adventure; getting across the chasm will take real ingenuity. When you get to the tower, kill anything that could be the wizard!

WIZARDRY (Sir-tech) Fantasy/Roleplaying. Disk only: Apple IIs. For my money, the best fantasy game available. See description in text.

ZORK I (Infocom) Adventure. Disk only: Apple IIs, Ataris, IBM PC, TRS-80, Commodore 64, NEC, CP/M machines, Texas Instruments, DEC. This is the all-time-classic adventure game. Finding the 20 treasures of Zork is the challenge de luxe! All text.

ZORK II (Infocom) Adventure. Disk only: Apple IIs, Ataris, IBM PC, TRS-80, Commodore 64, NEC, CP/M machines, Texas Instruments, DEC. Worthy sequel to *Zork I*. In a new subterranean world you confront the power of the Wizard of Frobozz. Text only.

ZORK III (Infocom) Adventure. Disk only: Apple IIs, Ataris, IBM PC, TRS-80, Commodore 64, NEC, CP/M machines, Texas Instruments, DEC. This is the toughest game in the series. The solution is incredibly complex, a challenge for very experienced adventure-game players.

Addresses of Game-Software Manufacturers

Adventure International
Box 3435
Longwood, FL 32750

Atari Program Exchange
P.O. Box 3705
Santa Clara, CA 95055

Automated Simulations (Epyx)
1043 Kiel Court
Sunnyvale, CA 94086

Avalon Hill Game Company
4517 Harford Road
Baltimore, MD 21214

Broderbund Software
17 Paul Dr.
San Rafael, CA 94903

Highlands Computer Services
14422 S.E. 132nd
Renton, WA 98055

Infocom
55 Wheeler St.
Cambridge, MA 02138

Midwest Computing
4975 Brookdale
Bloomfield Hills, MI 48013

Muse Software
347 No. Charles St.
Baltimore, MD 21201

Origin Systems, Inc.
1545 Osgood St.
No. Andover, MA 01845

Penguin Software
830 4th Ave.
Geneva, IL 60134

Phoenix Software, Inc.
64 Lake Zurich Drive
Lake Zurich, IL 60047

Quality Software
6660 Reseda Blvd., Suite 105
Reseda, CA 91335

Sentient Software
P.O. Box 4929
Aspen, CO 81612

Sierra/On-Line, Inc.
Sierra/On-Line Bldg.
Coarsegold, CA 93614

Sirius Software, Inc.
2011 Arden Way
Sacramento, CA 95825

Spectral Associates
3418 South 90th St.
Tacoma, WA 98409

Strategic Simulations, Inc.
883 Stierlin Road, Building A-200
Mountain View, CA 94043-1983

Xerox Educational Publications
Computer Software Division
245 Long Hill Road
Middletown, CT 06457

APPENDIX III: GLOSSARY OF GAMING TERMS

In playing computer wargames and fantasy games, you'll encounter a number of terms you may not be familiar with. Here are some definitions that should help you decode this jargon.

AA—Anti-aircraft weapon.

AAM—Air-to-air missile.

aiming—In *Tactical Armor Command* especially, the fixing of a gun on a particular target for one or more turns. Aiming then becomes a variable which, with each passing turn, increases the odds of a hit with heavy damage to the target.

air cavalry—Helicopter-borne infantry.

air strike—A bombing mission against a naval or land target.

alignment—The good, evil, or neutral orientation of a *Wizardy* character.

APC—Armored personnel carrier.

ASM—Air-to-surface missile.

ASW—Anti-submarine weapon.

attributes—A fantasy-game character's personal qualities, such as courage, strength, charisma, wisdom, etc.

BB— Battleship.

BMP—A Soviet mechanized-infantry battalion.

cadre—A nucleus of soldiers comprising a small unit around which a larger unit may later be built. In some games, after a unit is eliminated, a cadre may be formed, allowing that unit, in greatly reduced state, to stay on the field. The higher the morale, the more likely that a cadre can be formed.

campaign game—In a computer wargame with several scenarios (see *scenarios*), a campaign game is the scenario which covers a period of several days or weeks, encompassing an entire battle and not just a limited portion of it.

CAP—Combat air patrol. The fighter planes that protect an aircraft carrier.

combat—The actual fighting between ground units, or between naval and air units in navy and air force games. Artillery fire is not usually considered a combat in itself, but a part of a combat. Artillery fire can take place in some games without combat.

combat points (CP)—A measure of fighting strength used in computer wargames for computing the results of combat. The higher the number of points, the better. Unlike movements points, which you use up by moving, fighting does not necessarily use up combat points—losing a fight *does*.

combat resolution—The automatic process by which the program decides the outcome of fighting. The program will use a formula which may include variables representing chance, weight of numbers, weather, terrain, morale, effect of artillery, and air strikes. The results may involve loss of combat points, forced retreats, disruption of units, or elimination.

CV—Aircraft carrier.

CVN—Nuclear-powered aircraft carrier.

damage points—In some navy games, damage points are the measure of ship damage a given weapon can inflict.

depot—A base or supply. In games where supply rules are more complex, the player has to site depots near the front-line troops. In such games, the depots are usually mobile.

difficulty level—See *LEVEL OF DIFFICULTY?*

dispel—In *Wizardry* games, a spell to make an undead monster dissolve.

disruption—Usually a combat result, this is a penalty for losing. A disrupted unit usually cannot attack and is reduced to a minimal defensive capability. In order for it to survive, it must be withdrawn from the front line, if at all possible.

ECM—Electronic countermeasures. These are devices that create false rader images or otherwise fool sensing, detection, and weapons-guidance systems.

elimination—Usually a combat result, this means the unit has "ceased to exist" after being beaten in battle, simulating surrender, slaughter, or rout.

endurance—The maximum time that a plane or ship can operate before having to return to base.

EW—Electronic warfare.

field of fire—In infantry games, anywhere your fire is not blocked by obstacles.

fire base—A well-protected location with good fields of fire from which you can control large parts of the battlefield.

flank—The side of a military unit.

fog of war—A unique feature of computer wargaming, this is when a unit disobeys your orders and "acts on its own initiative," simulating the tendancy of subordinate commanders to misinterpret or disobey orders, and of communications to fail.

game turn—See *turn sequence*.

hex—Conventional short form of *hexagon*. See *hexagon*.

hexagon—A six-sided geometrical figure, the hexagon *(hex* for short) is used to divide up a wargaming map into sections. These sections are then used to measure movement and range of fire and to determine where a unit's zone of control extends. Some wargames use squares instead of hexagons, but the purpose is the same.

hit points—A measurement of the amount of damage a character in a roleplaying game can sustain before he dies.

hybrid game—A game which mixes computer bookkeeping with the use of a physical map-board and cardboard unit counters. Examples include *Tanktics, Close Assault,* and *Road to Gettysburg*.

infiltration—When zone-of-control movement restrictions are

waived to allow a unit to move more freely through an enemy ZOC.

intelligence—Inside information about enemy forces' strength, intentions, and location. This is largely the byproduct of cheating, i.e., looking at the video display when you shouldn't be. In some games you'll receive an automatic "intelligence report" at the beginning of a turn.

interdiction—Cutting off supplies and reinforcements between their point of origin and destination. Interdiction is the way some games simulate the effects of air power. The extent and effectiveness of it behind enemy lines is usually calculated automatically by the computer at the beginning of a game turn.

katushka—A mobile rocket launcher with multiple launching tubes. A Soviet weapon.

LEVEL OF DIFFICULTY?—A screen prompt at the setup phase of a computer wargame in which you're asked how difficult a game you want to play. A range of numbers from easiest to hardest is displayed. You are prompted to select a number from that range.

line of sight—This is simply what a unit can see from where it is located. If a unit is behind a hill, it has an LOS as far as that hill. It's LOS will not extend as far as the enemy unit hiding behind the hill. LOS is one variable in a formula used in several army games to determine if a unit has sighted specific enemy units and if it can fire on an enemy. This formula is usually computed automatically during play.

logistics—The process of getting supplies to the troops.

LST—Landing ship, tank. A ship that disembarks tanks.

mapedge—Literally, the edge of the video map.

mine—Buried explosive device set to detonate when a soldier steps on it or a vehicle drives over it. In games like *Tactical Armor Command*, the computer determines whether or not a mine is detonated and damage is done.

modes—The state of a unit with reference to the task it is prepared to complete. In some games, units can be in river-crossing, attack, reorganization, rapid movement, or transport modes. Changing modes usually means a cost in movement points.

morale—In computer wargames, this is a variable in combat resolution simulating the fighting spirit of a unit. Low morale means a unit has little motivation to fight effectively.

movement cost—The amount of movement points needed to enter

hexes of a given terrain type or an enemy zone of control.

movement penalty—Same as *movement cost* (see above).

movement points (MP)—The way in which the computer keeps track of how far a unit can move. Moving into different types of terrain (or in navy games, just moving from square to square) costs movement points. When the supply of movement points is no longer enough to move into any adjacent hex, the computer will not allow further movement.

off-line resolution—In some naval games, such as *Pursuit of the Graf Spee*, you may resolve individual combat off-line, i.e., without the aid of the computer. You may do this by playing another computer wargame or by using miniatures.

operational—Ready to function in combat.

out of range—Farther away than your fired rounds will reach.

parry—To ward off a blow by using your own weapon to absorb the shock of an enemy's sword thrust.

player-turn—That portion of a game turn dedicated to movement and combat by one side.

prep fires—What used to be called an artillery barrage, this is the shelling of a targeted unit preliminary to the actual attack.

prompt—A computer term meaning a line of text on the screen that asks you a question or gives you instructions. Prompts are usually answered by typing a response on the computer keyboard or by manipulating a joystick or paddle.

range—The maximum distance, computed in hexes or squares, that a fired round or missile will travel. In air combat, it refers to the maximum distance an aircraft can fly from its base and still be able to return home.

recon—Short for *reconnaissance*. This is the searching of a given area for enemy units.

reinforcements—In computer games, these are units added automatically at given time points during the game.

reorganization—When a unit is taken out of battle to regain morale and combat strength.

SAM—Surface-to-air missile, an anti-aircraft weapon.

save game—See *saving a game.*

saving a game—Using a utility portion of the wargame program that saves the data collected on your game to a scratch disk. Later, when you have more time to play, the Save Game utility restarts the game with both sides in exactly the same position as you left them.

scenario—One of several games a computer wargame may offer. A scenario can cover a small portion of a battle or an entire campaign. In most computer wargames, each scenario has its own order of battle, victory conditions, and other special rules. Some games offer scenarios graded by difficulty or by the amount of time simulated.

screen prompt—*see prompt.*

search—In naval games, this is the search for the location of enemy units. The computer uses a formula, similar to that of combat resolution, to determine the outcome of the search. Variables influencing success include weather, the number of planes and ships searching, radar, and time of day.

second-impulse attack—When an attack succeeds and the attacking units are allowed to attack again in the same turn.

sighting—This is a determination made by the computer, based primarily on line of sight (LOS) considerations but also taking into account chance and actions of an enemy unit to conceal itself by smoke, sneaking, and so forth. Sighted units can usually be fired upon and in turn are frequently able to sight the unit that sighted them. In naval games, sighting is the successful outcome of a search; when this is accomplished, the computer lists the sighted enemy ships and their current locations.

solitaire game—A game which can be played on a human vs. computer basis.

SPG—Self-propelled gun. An artillery piece mounted on a tank chassis.

square—A division of a wargame map. (See *hexagon.*)

SSM—Surface-to-surface missile. A weapon fired from a ground or ship launcher at an earthbound target.

stacking—Placing more than one unit in a hex. Some games prohibit it; some allow it on a limited basis.

strategies—Options for attack and defense. In some games they are listed on a menu that describes the various choices of attack and de-

fense intensity and purpose available to you. Your choice is then inserted into the combat-resolution formula. Typical attack strategies are heavy attack, medium attack, and recon attack. Typical defense strategies include counterattack, hold positions, and withdrawal. In *Battle for Normandy*, there are nine levels of intensity for attack and defense.

STRATEGY ALTERED message—See *fog of war*.

supply points—A measure used in computer wargames to determine if the individual unit has the "bullets 'n' beans 'n' gasoline" needed to move or fight.

terrain effects—The way in which the land a unit occupies influences movement, sighting, and combat results. (See Chapter 4, "Using Terrain.")

TF—Task force.

turn sequence—Turns are usually defined as set time periods (one hour, one day, one week, etc.). The order of events during that time is the turn sequence. Such events may include movement, artillery fire, return fire, combat, combat resolution, and calculation of victory points. It's not nearly as complicated as it seems . . .

undead—In fantasy games, the undead are supernatural or spirit monsters.

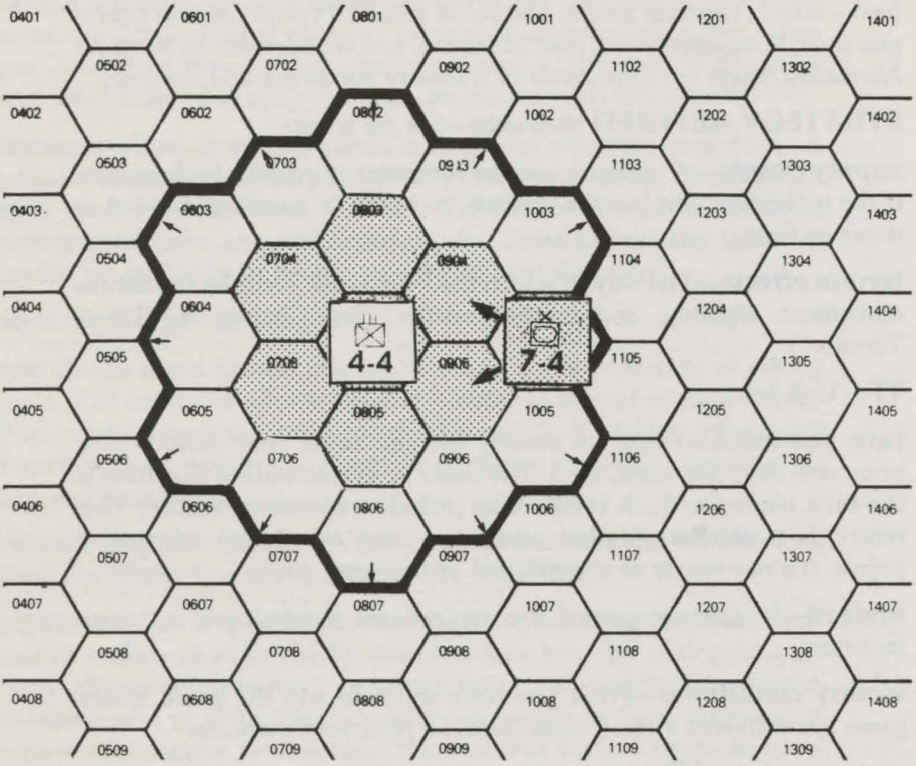
victory conditions—What you have to do to win the game. Every game has different victory conditions, so read your manuals!

victory points (VP)—A measure used by the computer to determine your level of success as the game goes along. Usually the computer compares the VP of each side with the margin between the two totals to determine the level of victory. (See Chapter 12, "Victory.")

weather–The current state of the climate. In computer wargames, the state of the weather is determined automatically by the computer. The weather will influence supply, sighting of land units by aircraft, movement and, of course, combat results.

zone of control (ZOC)—In army games, this is the area of a map that the game defines as being under the influence or partial control of the unit that occupies it. Enemy units that wander into the ZOC may suffer movement or supply penalties, may be subject to attack, or may themselves start an attack. In most games the ZOC is limited to the hexes immediately adjoining the hex occupied by the piece. Don't confuse the ZOC with the firing range of artillery. *Range* is a different concept, with its own entry in this glossary.

zone of influence—Same as *zone of control* (see above).



Zone of Control/Influence. **The shaded area around the infantry unit at hex 0804 is its *zone of control.* The heavy line surrounding it is the unit's range. The unit may fire on any enemy within the heavy line, and engage in combat with any unit in the shaded area.**

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It's pretty much standard practice for an author to point out that he couldn't have written his book "without the help of . . . " followed by a long list of helping hands.

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Sorcerers & Soldiers was written on a 64K Apple II Plus computer using ScreenWriter II word-processing software.

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Brian Murphy, who has played wargames for more than twenty-five years, is a nationally syndicated columnist and a regular contributor to *Creative Computing*, *InCider*, and other computer publications. He lives with his wife, daughter, and the world's largest standing imaginary army in Fairfield, Connecticut.

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