

The Twice Monthly Publication
for the Coin Operated Entertainment Industry

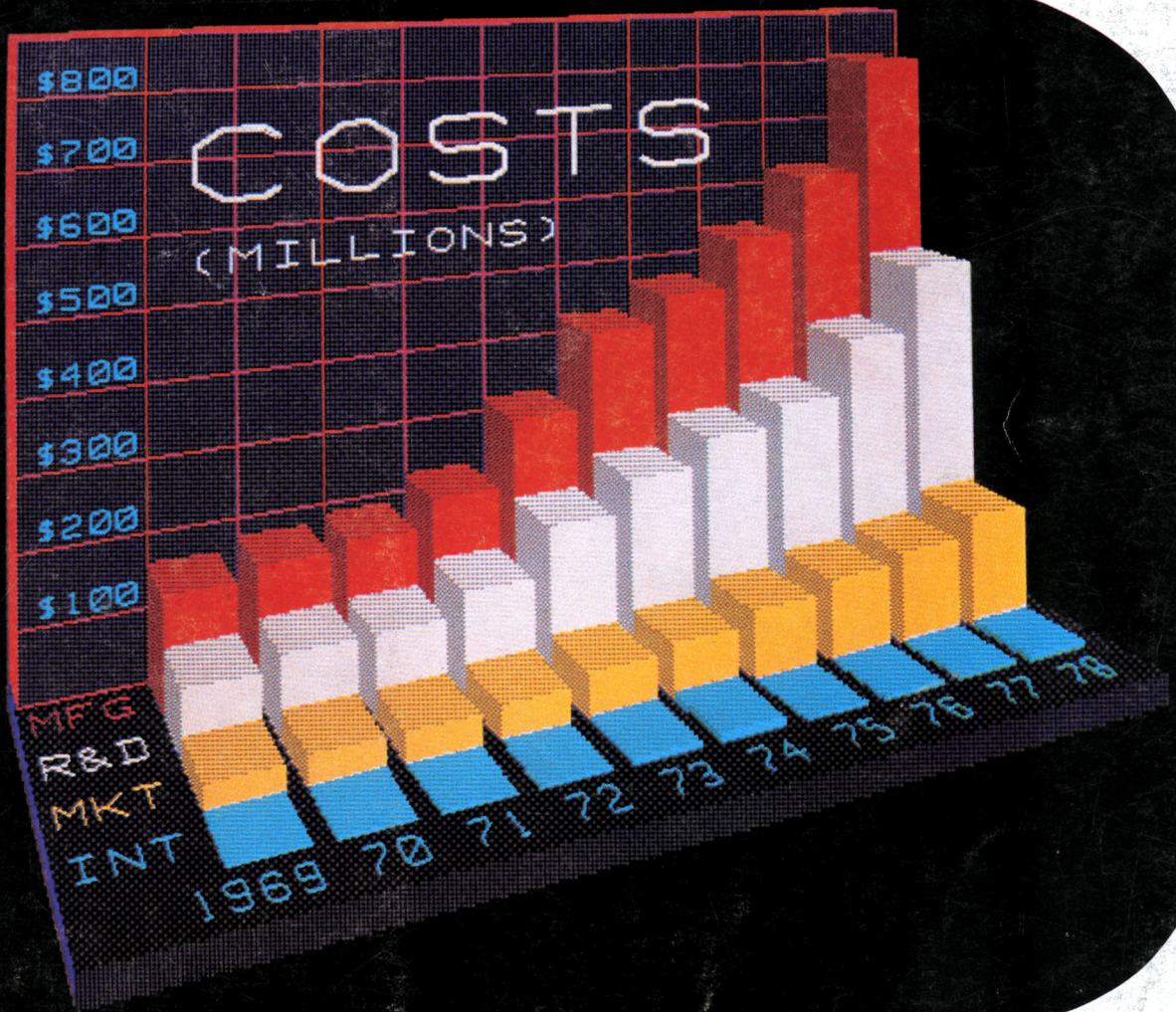
PLAY METER

Volume 7, Number 21

November 15, 1981

INDUSTRY GROWTH ANALYSIS
PRODUCING POSITIVE PUBLIC IMAGE

A CALL FOR UNITY IN
FACING LEGISLATION



State of the Industry Issue
1981 Operators Survey Results

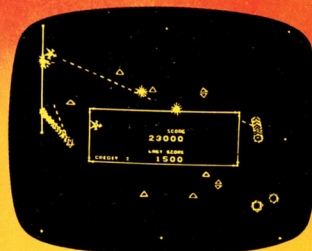
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PLAY METER

The Twice Monthly Publication for the Coin Operated Entertainment Industry

BPA Circulation Audit applied for

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PLAY METER, November 15, 1981. Volume 7, No. 21. Copyright 1981 by Skybird Publishing Company. *Play Meter* (ISSN 0162-1343) is published twice monthly on the 1st and 15th of the month. Publishing offices: 508 Live Oak St., Metairie, La. 70005; **Mailing address:** P.O. Box 24170, New Orleans 70184, U.S.A.; tel.: 504/838-8025. Subscription rates: U.S. and Canada—\$25; foreign: \$100, *air mail only*. Multiple-subscription orders: 2-9, \$20 each; 10-24, \$17 each; 25 or more, \$15 each. Advertising rates are available on request. No part of this magazine may be reproduced without expressed permission. The editors are not responsible for unsolicited manuscripts. Second-class postage paid at Metairie, La. 70002 and additional mailing offices. **Postmaster:** Send Form 3579 to PLAY METER, P.O. Box 24170, New Orleans, La. 70184.

European Office: PLAY METER Promotions, "Harescombe" Watford Road, Northwood Middx. England, Northwood 29244.

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Annual Operator Survey Results: King Video and his Court

The TV-type mode is still No.1 with profit-making operators, but other forms of coin-operated amusement show healthy signs of life. These and many other areas of the State of the Industry are made clear by the annual survey results detailed here.

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Overview of Operating: 1981

The growth of the operating sector, its stamina and business methods today are analyzed by Editorial Director David Pierson. Games sales and game revenue, as well as the operating population—all hit record levels this year, as the results of the annual *Play Meter* poll show.

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Most Needed: A Watchful and Cautious Eye

Operator Michael Mendelsohn lays out a reasoned defense plan for operators facing the "star chamber" of local governing bodies which attempt to foist unfair restrictions on coin-op. His call for unity in the ranks bears reading and emulating.

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Copyright: The Status in Great Britain

U.S. games manufacturers have been engaged in a worldwide battle to protect their rights in original games. London correspondent Roger Pearson explains how the fight for proprietary rights must necessarily be waged in the United Kingdom at the present.

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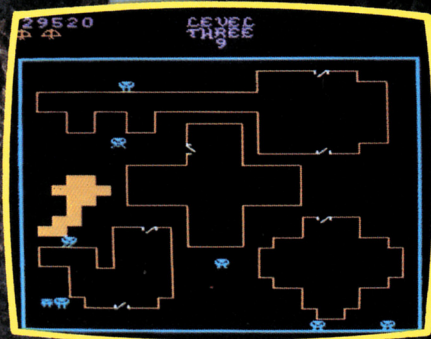
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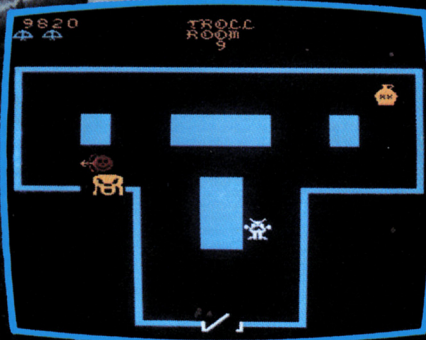


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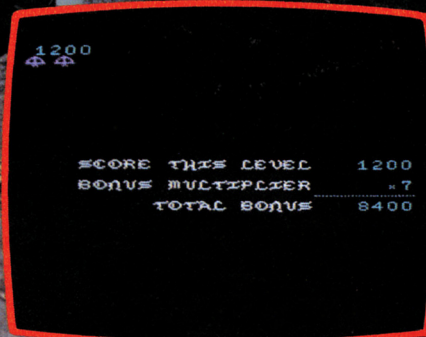
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UP FRONT

It seems like only yesterday that this industry burst into a new decade in its own inimitable fashion. Yet here we are rapidly approaching 1982 already. As this industry churns along at its rapid pace, we need to pause every now and then to check the gauges of our success. Like a finely tuned engine, this industry has its own set of components that can be measured and analyzed for performance. As another coin-op year draws to a close, we are pleased to present our annual "State of the Industry" issue of *Play Meter*.

First of all, we would like to thank the hundreds of subscriber/operators who participated in *Play Meter's* annual industry survey. Without your help and cooperation, this issue would not have been possible. Considering the fact that this year's survey contained 144 different questions in addition to several subjective questions, the number of operators responding again this year surpassed the old mark. This fact alone is truly astonishing when you consider the fact that most statistical studies are delighted with a 3% response rate. As you will see inside this issue, your efforts were very worthwhile, and in a number of cases, quite surprising in the resulting tabulations.

One of the most startling aspects of this year's survey is the various findings on the growth of the industry. For the first time ever, we were actually able to obtain a reliable estimate of the total number of operators there are in the U.S.A. This is a figure that has eluded us, as well as the entire industry, for quite some time now. We were also able to determine how many new operators came into the business over the past year. We strongly suspected that there were a lot of new operators this year by the huge number of new subscribers we have been getting to *Play Meter*. In the past six months alone, we have picked up over a thousand new subscribers. We knew something was going on, and the survey proved what it meant: This industry is getting pretty big—really big! How big? Read on.

The operator population wasn't the only thing that increased so dramatically this past year. So, too, did operator revenue, number of locations, arcades, production of new video games, and—most important of all—new video profits; 1981 was indeed another record-setting year for the industry.

The coin-op amusement industry is indeed alive and well but not without its problems. As the industry gets bigger, its problems get bigger. And this brings up one extremely important point.

We have all heard the phrase "a house divided against itself cannot stand." In regards to the present state of the industry, no truer words have ever been spoken. Over the past year we have seen the further fragmentation of the industry. Due to a failing national operators association, we have seen the formation of a manufacturers association as well as a distributor association. There has been no significant increase in the number of new state associations. All this points to a severe lack of unity within the industry. The time has come for the industry to unite.

Laws are being enacted that will prevent young people from playing our games. Arcades are being banned. Pure amusement devices are being outlawed. Age restrictions are being imposed. Operators are being forced to pay sales taxes and lopsided license fees. Games of chance are being passed off as amusement devices endangering the entire industry. Pinball is still illegal in many places. There's a war going on and the only ones doing anything about it are those who are being affected individually. Where is our strength? What chance does an operator have against the onslaught of a misguided community? The answers lie in a unified effort. Working together, we can win this war and work toward a much brighter future.

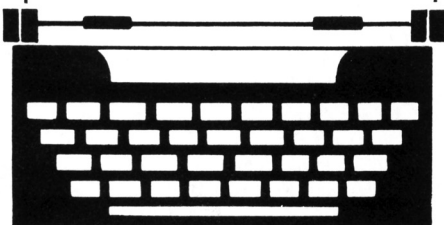
I strongly urge the AMOA and its membership to make the most out of their upcoming convention. There are serious problems ahead and they will have to be reckoned with one way or another. AMOA needs to reassess its role in the industry. Working in unison with the state associations as well as with the manufacturers and distributors associations, the AMOA can contribute a great deal to winning the war. All that is needed is the will and determination to do so.

The 1981 AMOA show (October 29-31) can end up being just another get-together with old friends—or a new beginning for this industry. Let us hope that it will not be just another convention but the start of a new era—an era of victory through unity!



Ralph C. Lally II
Editor and Publisher

Letters to the editor . . .



Thoughtful queries

We're rather new in the business and would like some enlightenment—

1. Why is the industry always on the defensive?

2. Why does a business that in many game rooms does not permit drinking even a Coke or smoking a cigarette pay so many license fees and is so controlled?

3. What qualities does it take to be an outstanding game player?

4. Does playing video games develop abilities toward success in any other endeavor? Is it educational?

5. How long would it take an eight-year-old who plays a game for 2 hours for a quarter to become an air traffic controller? Two weeks or less?

C.K. Vincent
Vincent Enterprises
Houston, Texas

[Ed. Note: To questions 1 and 2 above, we would reply that it is the instinctual posture of the operator to be on the defensive. (Better to be cautious; see the Guest Editorial, this issue.) In many cases, the media have forced this stance; but the operator can be on the offensive in this area: see "The Idea Bank," this issue. To questions 3 and 4, we really don't know, to question 5, it takes 22 days, give or take, fifteen minutes, for a video game player to develop the skills necessary to be air traffic controller.]

Far-south operator

We receive your excellent magazine through the good office of George Campbell in Brisbane—I think he has a batch air-freighted to his company, and then he distributes them here locally.

Over the years, I have (I think on 3 occasions) sat down in front of the typewriter, as now, and penned

articles for you—none of which I ever eventually posted because I felt that they were not good enough. All of them were to do with lack of serviceability, unreliability, and modifications which we've made to our many machines over 14 years. Thankfully you now have Frank Seninsky to cover that gap, and I hope that you continue with this section. One aspect which I would like to see you continue is the short notes which you used to have in the past, detailing common faults on games; e.g. screech on *Super Bug Drag Race*. I keep a file of all these jottings and you can imagine how useful that file has been over the years.

Maybe I will one day blossom into print finally, with an article for you, possibly detailing some of the hassles with being an operator in this little island, south of the main world; everything we buy comes in by air-freight (the freight companies love us, when we pay our bills!) because

the waterborne services are too susceptible to the Australian penchant for going on strike.

In the mean time, keep up the good work on an excellent magazine.

Erwin H. Boot
Automatic Music Co.
Hobart, Tasmania

'Timely editorial'

On behalf of our company, Aladdin's Castle, Inc. and myself, we would like to thank you for your timely editorial, *Up Front, Play Meter*, September 15, 1981.

Myrel A. Gordon
Vice President/Leasing
Aladdin's Castle, Inc.
Chicago, Illinois

[Ed. Note: The editorial referred to the case pending before the U.S. Supreme court, in which Aladdin's Castle contests a Texas municipality's ordinance banning children under 18 from playing games in an arcade.]

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Play Meter survey results: Video still #1, other types register gains

King Video, as expected, strengthened its hold on the coin-operated amusement industry in 1981 with a 37 percent increase in weekly gross collections. But the other major forms of coin-operated amusement—pinballs, pool tables, and phonographs—registered modes—increases themselves, to record levels in 1981.

Those modest increases, after last year's declines for pinballs and phonographs, may signal the end of the cannibalism effect of 1980 when video's gain came at the expense of losses from other forms of coin-op amusement. It may also signal a more pronounced upward trend in coming years for these competing forms of entertainment.

Still, 1981, like 1980, belonged for the most part to video as the playing public continued its love affair with the coin-op TV games. Average weekly gross collections for upright videos in 1981 climbed to \$140. That more than doubles video's average weekly take of just two year's ago. It also marks the second straight year video has registered a \$38 increase in weekly gross collections.

To further signal the dominance of the video game in the marketplace today, cocktail videos—once looked upon as not even belonging in the same class with upright videos, pinballs, pool tables, and phonographs—surged past pinballs, pool tables, and phonographs to claim the second spot in weekly gross collections, behind only their upright counterparts.

Partly because of the willingness of operators to buy hit videos in whatever configuration they're available, and partly because of the lure the cocktail configuration has for locations which never had coin-op games before—the average operator now has eight cocktail videos—as opposed to 88 uprights. Still, the marked difference indicates

<p>Pinball: Market shares of <i>Play Meter's</i> estimate of 54,000 pinballs sold</p> <p>Williams 43% Bally 30% Gottlieb 12% Stern 11% Others 4%</p>	
<p>Video: Market shares of <i>Play Meter's</i> estimate of 470,000 videos sold (including upright and cocktail; estimate of uprights: 414,000)</p> <p>Atari 30% Midway 26% Williams 12% Stern 8% Centuri 6% Cinematronics 5% Gremlin 4% Exidy 2% Taito 2% Others (including Data East, Nichibutsu, Nintendo, Universal) 5%</p>	
<p>Pool: Market shares of <i>Play Meter's</i> estimate of 18,000 tables sold</p> <p>Valley 60% Irving Kaye 14% Dynamo 12% U.S. Billiards 5% Others 9%</p>	

that uprights continue to be preferred by the average operator, when they're available.

These were among the major findings of *Play Meter* magazine's annual "State of the Industry" operator survey. The *Play Meter* survey, which draws upon the largest independent sampling of operators nationwide, tracks

industry trends and buying habits. This year the magazine's survey registered a six-plus percent response rate with a representative sampling of U.S. operators—with respondents' business ranging in size from as small as one piece of equipment to national operations with several thousand pieces of amusement equipment.

To further analyze industry trends, the survey responses were sub-divided into three categories: (1) those operations of 75 amusement machines or less; (2) those operations with between 76-299 machines; and (3) those operations with 300 or more amusement machines.

This year's survey also sampled operator opinion on current industry issues and controversies, such as video game and jukebox copyrights, convertible games, gray area operations, and governmental restrictions. Some of those findings were:

—A solid majority of operators favor convertible game systems.

—Only one operator in ten operates video gambling games, otherwise known as "gray area" games.

—Roughly fifteen percent of the operators polled admit they had bought or operated unauthorized copies of popular video games in 1981.

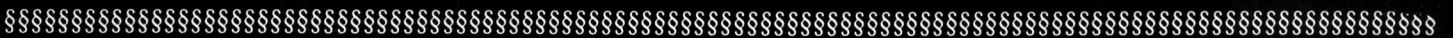
—More than 60 percent of the members of the operators' national association, AMOA, and 80 percent of the non-members feel that if the industry is to continue the jukebox copyright battle, it should move immediately for a repeal of the per-jukebox assessment, instead of working within the framework of the compromise agreement the AMOA settled for.

—And nearly two out of every five operators in the country are now reporting that they are hampered by



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undue governmental interference and restrictions.

Equipment purchases

The *Play Meter* survey also analyzed operator buying habits and found that, of every four pieces of coin-op amusement equipment bought in 1981 in the United States, three of them were upright videos. And, if cocktail video games sales are included, the ratio of video to non-video purchases increases even more, to four out of every five equipment sales.

In actual numbers, the average operator purchased 46 upright videos and six cocktail videos in 1981. That more than doubles the number of video game purchases made in 1980. And 1980 more than doubled the number of video game purchases from the year before that!

As further evidence of this snowballing video game buying trend, 93 percent of those responding said they purchased more videos in 1981 than they did in 1980.

Of course, video game manufacturers were the immediate beneficiaries from this continuing trend in operators' buying habits. And Atari, Midway, and Williams were the biggest winners of all in the video game sweepstakes.

According to the survey's findings, Atari and Midway accounted for better than one out of every two

video games sales in 1981. Thirty percent of all the video games sold in 1981 were from Atari. Midway accounted for a 26 percent share.

Third place went to Williams Electronics, a 1980 newcomer to the video game field. Notably, Williams was able to capture a 12 percent share of all video game sales this year on the strength of a single game—*Defender*.

Stern Electronics, also a relative newcomer to the video game field, gained a solid eight percent share of the market and finished in fourth place. Stern was followed, in order, by Centuri (6%), Cinematronics (5%), Gremlin (4%), Taito (2%), and Exidy (2%). All other factories combined for a five percent share of the video game sales in 1981, though none individually accounted for as much as two percent.

Now, although there's evidence that video game collections are not cannibalizing pinball collections, at least not as much as they did last year, video game sales are indeed cannibalizing the available operator capital which would be used to buy not only more pinballs, but also more pool tables and phonographs.

Fifty-five percent of those responding to this year's survey said they purchased fewer phonographs in 1981 than they did in 1980. And 79 percent said they purchased fewer pinballs in 1981 than the year before. (Only two percent of the operators

reported they had purchased fewer videos in 1981.)

Pinball purchases hit their peak in 1978 with the complete changeover to solid state technology. With the average operator reporting that he only purchased six pinballs in 1981, pinball has continued its downturn from that peak of three years ago. This is the third straight decline in reported pinball purchases.

Phonographs, long regarded as a replacement market, appear now to be a shrinking market. The jukebox also continued its downward trend in 1981. According to the *Play Meter* survey, the average operator bought just two jukeboxes in 1981.

Still, it was pinball and not the phonograph that suffered the cruelest cut of all from operators in 1981.

Thirteen percent of the operators responding to the survey reported that they dropped pinballs from their operations. Only foosball, which generated a mere \$28 per week average, was dropped by a larger percentage of operators. Note-worthy on this trend was that it was the smaller operations which were more inclined to drop pinballs. Larger operations merely reported less activity with pinballs but maintained their pinball operations.

Market shares

With the monumental shift of buying emphasis to video games,

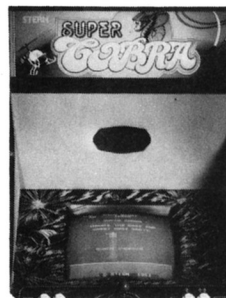
Equipment Earnings—National Averages

Weekly Gross	% Increase	1981	'80	'79	'78	'77
Upright Videos	+37	\$140	\$102	\$64	\$50	\$44
Cocktail Videos	*	\$115	*	*	*	*
Pool Tables	+ 2	\$67	\$66	\$57	\$53	\$41
Pinballs	+ 5	\$66	\$63	\$65	\$62	\$44
Phonographs	+10	\$55	\$50	\$54	\$52	\$46
Air Cushion	+18	\$40	\$34	\$27	*	*
Counter Games	*	\$37	*	*	*	*
Non-Video Arcade	+ 9	\$36	\$33	*	*	*
Shuffles	+11	\$31	\$28	\$41	\$32	\$29
Foosballs	+40	\$28	\$20	\$31	\$41	\$39
Wall Games	+ 4	\$26	\$25	\$29	\$34	\$33
* —Unable to be computed						

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market share penetration may appear to be somewhat pyrrhic as far as it concerns other equipment types, but *Play Meter's* survey monitored market shares in pinballs, and pool tables as well. Here are those results:

—In pinball, Williams, the first to come off a two-level pingame, *Black Knight*, shot up to claim the top spot in pinball sales, garnering about 43 percent of domestic flipper pinball sales. Bally was second with a 30 percent share. And Gottlieb, rallying with such pinball offerings as *Mars* and *Volcano*, nudged past Stern Electronics into third place with 12 percent of the pinballs sold domestically in 1981. Stern claimed 11 percent of the pinball sales. All other flipper game purchases accounted for four percent of the market.

—In pool tables, Valley continued its dominance of the market by registering a 60 percent share. According to the survey's findings, Irving Kaye was second with 14 percent of the pool table sales, and Dynamo was a close third place with 12 percent penetration. U.S. Billiards was fourth, accounting for five percent of the pool table sales in the survey. All other pool table

manufacturers divided the remaining 9 percent of the market.

—In phonographs, Rowe stayed on top with percent of all phonographs sold. Rock-Ola was a close second, followed by, in order, Seeburg, NSM, and Wurlitzer.

New equipment purchasing is the reason for the apparent discrepancy between annual per-piece averages reported twice monthly in *Play Meter's* regular equipment poll and the averages reported in the annual "State of the Industry" survey. Both pinball and video game averages in the annual poll are about \$50 lower than the averages reported twice monthly for videos and pinballs in the regular equipment survey.

The reason for the \$50 difference is that the twice-monthly equipment poll is based only on current video and pinball offerings, and the annual "State of the Industry" survey is based on all the operator's inventory of games of that type. Older videos and pinballs are purposely excluded from the twice-monthly survey for the purpose of giving operators a more accurate reading of the true earning ability of new games as they compare to their peers—the other new games.

However, the annual operator

survey, which serves to monitor the health of the operator's whole business, asks for an overall average for all games of that type. Such an average will necessarily be significantly lower because it takes into account the older games, which generate lower earnings.

This may also point to the reason why video's increase in the annual survey was more than ten times greater than pinball's in 1981 (\$38 to \$3). Although the current pinball product is averaging near the \$120 mark, operators are simply not buying very much in the way of new pinballs. Thus, the older, lower earning pinballs are coming to represent a larger and larger percentage of the average operator's entire pinball take.

Location relations

As far as commission splits with locations, the coin-op amusement industry is showing signs of finally moving off Square One. Fifteen percent of the operators responding to the survey said they now command a sixty percent take on their games. Still, the overwhelming majority of operators (79%) said they are still on a 50/50 "partnership" basis with their locations. Six percent of the operators reported

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Purchasing activity			
	Phonos	Pins	Videos
More	19%	10%	93%
Same	26%	11%	5%
Less	55%	79%	2%

Operators with location contracts			
	None	Some	All
75-under	59%	28%	13%
76-299	45%	41%	14%
300-over	8%	69%	23%
Nat'l avg.	45%	40%	15%

other amounts of commission splits, the most common of these being a 55 percent share for the operator.

Also on the subject of location relations, 19 percent of the operators said they deal with location loans. But the tendency of tying up capital in this manner is clearly the way of the older, larger operators. Forty percent of the operators in the largest classification operating more than 300 games made loans to locations in 1981. Twenty-three percent of the operators in the 76-299 machine category and only nine percent of the smallest group of operators said they made location loans.

With all the capital that operators have tied up in purchasing new equipment, *Play Meter* polled the operators to see what kinds of assurances they had that their locations would remain intact. Nationally, 45 percent of the operators said they do not work with location contracts, and another 40 percent said they work with contracts with only some of their locations. Fifteen percent said they have contracts with all of their locations.

However, there may be some sort of counterbalance, some sort of give-and-take between location loans and location contracts. This is shown in that larger operators, who showed a greater tendency to make location loans, also revealed that for the most part they had binding contracts with their locations. In fact, only eight percent of the operators in the largest machine classification said they did not work with any location contracts.

Potpourri

In a potpourri of other responses received from operators nationwide, the survey found that 77 percent of all operators reported they had experienced an increase in profits in 1981. Ten percent said their profits had remained the same, and 13 percent reported a decline in their

profits in 1981.

Sixteen percent of the responding operators said they use a computer to keep track of their operations.

Fifty-seven percent of those who operate phonographs said they operate more than one brand of phonograph, and they said they change an average of 3.36 records per week per phonograph.

Thirteen percent said they have some of their videos on fifty-cent play, and 11 percent said they have some of their pinballs on four-bit play.

Industry issues

Convertible games, which recently came into prominence in the industry, got a solid approval rating from responding operators—with 56 percent saying they favored convertible games, 32 percent expressing no opinion, and 12 saying they disapproved. High games prices and a growing feeling among operators that factories are “gouging” them on new equipment prices were cited as the major reasons for favoring the convertible games concept.

Those who disapproved or who expressed no opinion stated some doubts about the earning potential of convertible games. Many who disapproved said they felt the games would be mediocre, that the systems would limit the adaptability of the games, and they also expressed a broad-based fear that the factories would then be in a position to sell their games direct to the locations, bypassing even the operators.

Video gambling games, which have acquired the moniker of “gray area” games, also came into prominence earlier this year when several operator associations and game factories took stands against the operation of the machines on the grounds that they would create an adverse governmental climate for legitimate pure amusement games. Of those responding to the *Play Meter* survey, only nine percent said they

operated such equipment. The remaining 91 percent said they did not operate gray area games.

Video games have brought about new copyright problems for operators to contend with. In 1981, factories stepped up their copyright infringement cases by seeking to impound video copies operators had bought. Of those responding to the *Play Meter* survey, 15 percent of the operators said they had knowingly bought unauthorized copies of video games. Six percent said they did not know if they had, and 79 percent claimed they did not.

On the other copyright front, operators' opinion of the compulsory jukebox copyright law took a decidedly negative turn in early 1981 when it was learned that operators will be required to pay \$25 in royalties per jukebox and that that will increase to \$50 per jukebox in 1984.

The furor operators had held toward the concessions made by their national association, AMOA, in agreeing to the per-jukebox fee in the first place, was also reflected in the survey findings. When asked if at this point they favor a move to repeal the per-jukebox copyright assessment, 63 percent of the AMOA members responding said they now favor an all-out assault on the law in Congress. The most cited reason was that operators believe they are now being doubly assessed with copyright royalties since they also pay music copyrights when they purchase the records. Among non-AMOA members, there was an 80 percent opinion in favor of trying to get the law repealed.

Those who favor efforts to hold the line with regard to future per-jukebox assessments rather than a fight to repeal the adverse legislation were clearly in the minority. For the most part, those in the minority stated they opposed any efforts for a repeal because they now saw the jukebox copyright battle as lost. “We should move on to other things,” one

said, summing up the reason given by many who were opposed to any repeal battle. "I don't operate jukeboxes anymore," was another

reason given by the respondents.

Joiners and fighters

On other matters, the survey

found that only 28 percent of the operators responding to the survey belong to a state local association. The largest percentage of joiners was among the large operators—62 percent of whom belonged to state local associations.

Thirty-nine percent of those operators who responded said they were hampered by excessive governmental intrusion or undue restrictions place on their businesses. Restrictions on the number of machines was the major source of governmental restriction (27%). But zoning problems also logged almost a like number of complaints from operators (27%). Twenty-one percent of the complaints focused in on bans of certain game types.

Age restrictions, which are presently being challenged in the U.S. Supreme Court, accounted for .5 percent of the complaints. Other complaints of undue governmental harrassment accounted for ten percent. The most frequent complaint in this category was excessively high licensing fees.

Of note, 39 percent of the operators said they had fought governmental restrictions, and of that total 58 percent claimed they had been successful in winning their cases.

Distribution by Size of Operation

	75-under	76-299	300-over	Average
Upright videos	19	80	348	88
Cocktail videos	2	7	47	8
Pool tables	1	9	64	13
Pinballs	4	27	137	31
Phonos	1	15	87	19
Other	2	9	41	12
Total	29	147	724	171

New Equipment Purchases

	75-under	76-299	300-over	Average
Upright videos	13	43	161	46
Cocktail videos	2	4	25	6
Pool tables	0	3	7	2
Pinballs	2	5	23	6
Phonos	0	2	7	2
Other	0	0	1	1
Total	17	57	224	63



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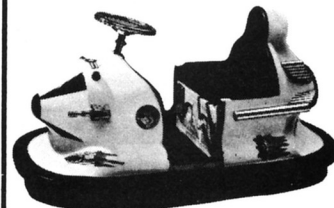
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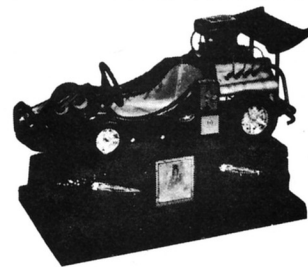
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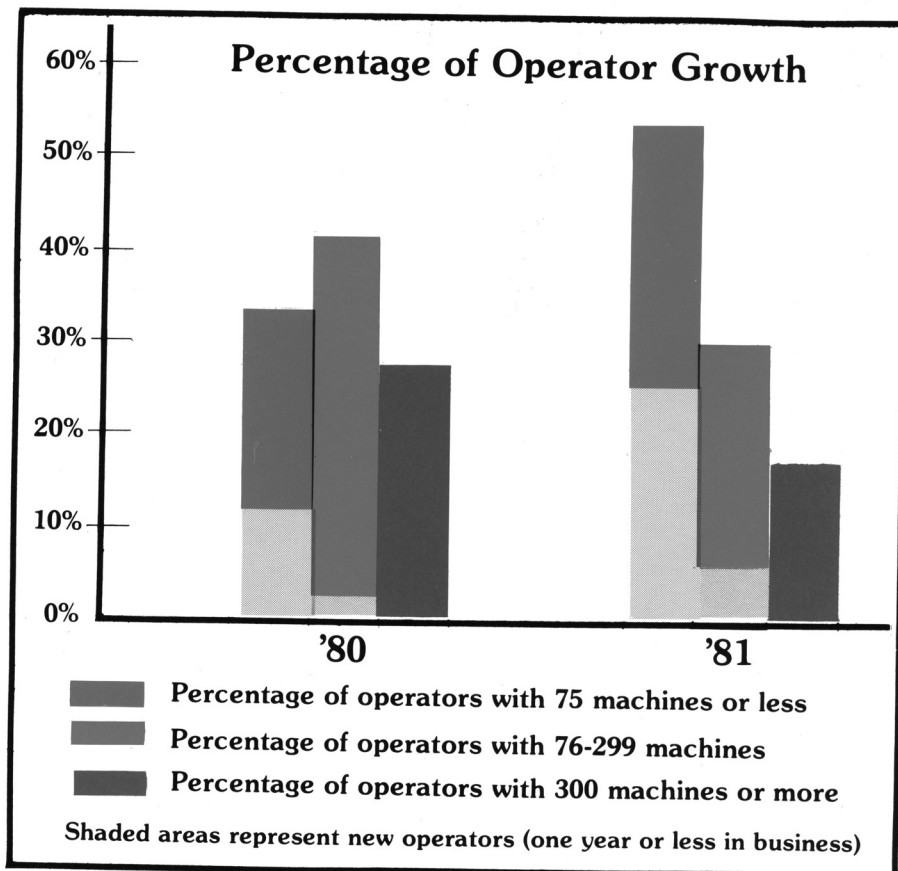
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The State of the Industry: Operating population, game sales, and revenues—all hit record levels

By David Pierson



An industry that only recently moved up from counting nickels and dimes in its cashboxes to counting quarters instead is experiencing an almost unparalleled growth pattern as it draws into the business large numbers of people who have been counting the industry's earnings in somewhat larger denominations—by the billions of dollars.

The coin-op amusement industry has indeed moved into the mainstream of American business and high finance.

Not too long ago, it was an almost invisible industry with little or no socially redeeming value, as least to the public's mind. Today, however, it's as visible and ubiquitous as television itself. And now behavioral scientists are beginning to look deeper into the nation's sudden, strange fascination with the games.

And for those who can remember the nickel and dime days of electro-mechanical pinballs, when phonographs were "the backbone of this industry," when video wasn't even a game type—it's all got to be mind-boggling.

"The coin-operated amusement industry generated \$8.2 billion in 1981?" a veteran operator responds in disbelief to an inquiring reporter's question about the size of the industry. "Why are you looking at me like that? My games only make a

little over \$100 a week, and I have to split half of that with my locations."

But, as contradictory as it all may sound, the industry will generate \$8.2 billion in 1981, and operators nationwide will average just slightly over \$100 a week per game—\$102.84, to be precise.

The \$102.84 figure, as a matter of fact, represents a 49 percent increase from last year's average take per machine. In 1980, the average machine earned \$68.96.

Enigma

How can it be?

For the answer, we must look to the video game enigma, which has on its own made the state of the industry an enigma itself. In the past twelve months, *Play Meter* magazine estimates that over 400,000 new coin-op video games were sold. With about another 380,000 still in operation from last year, that means there are approximately 780,000 coin-op video games on location in the United States today.

When one also considers that today 56 percent of the average operator's entire route is video, and over one-half of all those videos are less than a year old, we can see why industry experts describe the market as dangerously volatile.

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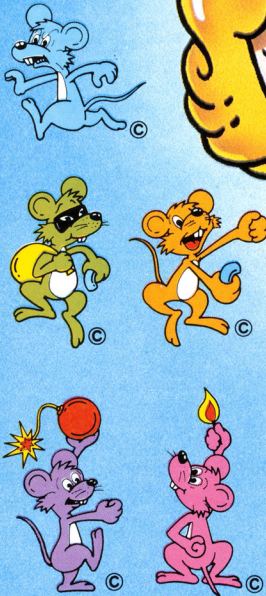
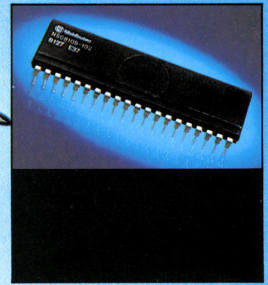
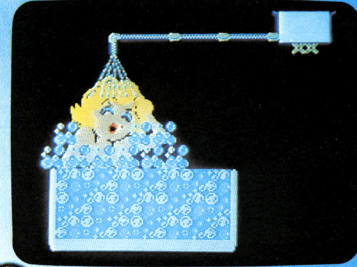
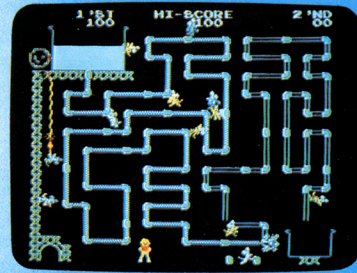
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C.R.T.	14INCH	20INCH	20INCH	14INCH
Width	850mm	870mm	600mm	466mm
Depth	545mm	560mm	690mm	560mm
Height	625~765 (Can be adjusted in five stages)	685~825 (Can be adjusted in five stages)	1625mm	1375mm
Power Source	100V~240V/ 100W	100V~240V/ 110W	100V~240V/ 110W	100V~240V/ 100W

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instance, is so low. That's why there's no used game market today. There's so much new equipment on location today that yesterday's games pale by comparison. So, for the operator to survive, he's got to make his money up front because he can't count on the trade-in.

And why can't he just keep operating last year's videos this year and not invest in more new videos? The answer is, quite simply, he can't

And everyone was buying games at a faster pace in 1981 than in 1980.

In 1980, the average operator bought 42 pieces of equipment. With a buying market of only about 7,500 operators, that means the total number of amusement pieces sold in 1980 was slightly over 300,000.

But, in 1981 (and, again, this is according to *Play Meter* magazine's annual operator survey), the average operator bought more new pieces of

size of the average operation. In 1980, the average operation consisted of 268 pieces of equipment. For years, that average fluctuated between the 260-290 range.

Then in 1981 it plummeted to 171 pieces of amusement equipment. The reason for the alarming change is that, as opposed to previous years where the operator population was fairly spread out between three size of operation classifications,* we now see that more than half of all the operators in the country (53 percent) operate less than 75 pieces of amusement equipment. For the most part, these are the new operators.

Obviously, as the number of new operators increased, the average size of an operation necessarily dropped to reflect the influx of these new fledging companies.

In the past, the 76-299 machine category represented the bulk of the nation's operators. In 1980, for instance, 41 percent of all in 1980, for instance, 41 percent of all the operators were in this category, with 27 percent having larger operations and 32 percent having smaller operations. And most of these middle classification operators have been in the business for more than five years.

Then comes 1981, and the number of new operators getting into the business changes the face of the industry entirely.

In 1980, 11 percent of the operator population were rookies, in their first year of business in the coin-op amusement trade.

In 1981, an even greater number of new operators joined the industry's ranks, so many, in fact, that 24

Game Types: Percentage of operators handling each type

	0-75 machines	76-299 machines	300+ machines
Upright videos	95%	96%	100%
Cocktail videos	49%	64%	89%
Pool tables	28%	66%	86%
Pinballs	65%	89%	100%
Phonographs	29%	60%	91%

afford to pass up the hot games. This year's crop of videos is currently averaging around the \$190 mark (see this issue's "Equipment Poll"). But when taken as a whole, with the older videos included, the lower earning videos are so far outclassed that they pull down the video game type average to \$140.

There's no future in yesterday's games.

Still, the \$140 per week average translates into an annual gross revenue of more than \$5.7 billion for coin-op videos alone in 1981. All other forms of coin-operated entertainment—pool tables, pinballs, jukeboxes, shuffle alleys, foosballs, even cocktail video games—all together, they generated only an additional \$2.5 billion in gross collections.

No wonder, therefore, why pinball companies, pool table factories, and jukebox manufacturers have gotten into the video game business. Their revenue is derived from selling coin-op equipment, and the video game phenomenon offers that rare opportunity to sell lots of games fast. It's a seller's market.

But it's also no wonder why 1,500 new operators got into the business within the past year. Because of the seemingly unlimited earning potential of coin-op videos, everyone wants in. As a result, the operator population increased from about 7,500 to 9,000 during the past year.

equipment, in fact, 63 new pieces of equipment, on the average. And there were an additional 1,500 operators in 1981—with little or no brand loyalty. Total sales? That means that over 550,000 pieces of coin-op equipment were sold. And almost 83 percent of that total was video games—upright and cocktails.

Rookie operators

But can the industry really support that kind of fever buying? Probably not, at least not without drawing in a whole lot more people who can contribute with a whole lot more capital.

And, from the percentage of new operators with less than two years

One out of every three operators has gotten into the business since Asteroids.

experience in the business, it appears the industry may indeed be drawing in more new blood to the industry.

The average operator has come into the business since *Space Invaders*, a large percentage of them since *Asteroids*, and one out of every five since *Defender* and *Pac-Man* were unveiled to the industry last fall.

The most glaring statistic that indicated the influx of new operators in the business is the downturn in the

percent of the operator population today wasn't even in the business a year ago. And those operators who have been in the business less than two years represent slightly over 33 percent of the entire population.

*The three classifications are (1) those operating 75 machines and less; (2) those with between 76-299 machines; and (3) those operating 300 or more amusement devices.

That means one out of every three operators in the business today has gotten into the business after *Asteroids*.

New capital, new blood

So new capital is here to keep the industry's lifeblood flowing. What is not so clear is if the industry will keep its peculiar appeal to the playing public. There are some hopeful signs.

Last year the knock on video games was that they appeared to have settled into a rut, albeit a high-earning rut. Space themed games, many with Japanese lettering on them, were filling the arcades.

Within the past year the product has taken on a more American touch. Even factories which have been relying totally on licensed video games from Japan to keep their production lines running have shown a tendency to handle the research and development end themselves. And the games, sparked by this variety, have gotten away somewhat from the space theme.

Granted, the space theme is still the major video game theme today. But it's not nearly as dominant as it was a year ago. Conventional warfare, dungeons and dragons,

cutesy games—these and other themes are proving themselves successful alongside the space war games.

But a fear still persists that the video game market will soften. Even though the games continue to innovate, there is a vague feeling among many in the industry that this good thing cannot last forever.

However, with one out of every three operators being a newcomer to this business, it opens the possibility that the industry may finally shake off the mortal coin which has for too long hampered its natural growth. The industry's tendency to shirk the limelight, as though it had something to hide, is an anathema to the newcomers to the business. These newcomers, coming from other walks of life, see here a potential for tremendous growth.

Now, although the industry has fragmented somewhat—with distributors, operators, and manufacturers all going their separate ways—everyone in the business now realizes the need for a unified industry direction.

If the industry cannot pull together into a cohesive whole to form a national advertising program promoting the play of coin-op

equipment, if the industry is going to remain wholly incapable of promoting a national coin-op tournament that is void of individual partisanship—then not only will player interest begin to fall off, but, more seriously, adverse legislation will scuttle what remains.

The operator who shirks the news reporter's question about the industry's true earnings picture is going to help create the negativity which has for too long clouded this industry.

The answer to those who inquire about the industry's \$8.2 billion revenue question?

"Yes, sir, we've come a long way. But let me tell you something. Only fifty percent of that \$8.2 billion makes its way back into this industry. The other \$4.1 billion goes to subsidize other small businesses across the country."

And, "I know \$4.1 billion sounds like a lot, but did you know that the entire take of videos in 1980 was less than the gross revenue for McDonald's restaurants alone? Not counting Burger King. Not counting Wendy's. Now if only these fellows would see the light and let us start operating these games in their establishments..."



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Building a favorable image

By Ray E. Tilley

In the competitive and almost "show biz" world of coin-op entertainment, imagination is a precious commodity. The pipeline of ideas fuels the creation of new game product, and it also boosts the industry in the public eye. Imagination and creativity are clearly necessary today for coin operators to improve relations with governing bodies—and to compete for the players' entertainment outlay.

Ideas for achieving these ends are abundant. And, fortunately, there is no copyright or proprietorship on ideas. The following collection of ideas for improving image—and revenue—as applied by various sectors of this industry can be adapted by others. It requires only the element of creativity to see the viable applications to one's own business "health"...

Operators' tactics

A Central City, Nebraska operator saw a market for games-playing youths after school and on vacation. The Pinball Palace, opened last May by Ellen Roscoe, received a favorable item in the Central City newspaper after setting up in a building that had formerly housed a social club.

Located on the second floor of the downtown American Maize building, the arcade is operated from 2 to 10 p.m. daily, with the school kids in view. It features various pinball machines, table games, electronic videos, a pool table, a jukebox for listening or dancing in the spacious Pinball Palace floor area, and a separate concession bar for the teenagers' soft drink and snack needs.

Mrs. Roscoe told the newspaper's writer: "We want everyone to come in and spend an enjoyable afternoon or evening." The news photo pictured a neatly groomed floor manager and clean pingames, free of drink cans or cups, with individual



J&J Distributors/Indianapolis used this hot-air balloon to catch attention for its summer '81 open house in new quarters.

players' high scores and names logged on the backglasses.

The above example shows that it does not require a lavish arcade or a mall setting to engender good press relations and community good will.

★ ★ ★

In Herrin, Illinois, the owners of the Cherry Street Arcade, Jim and Pat Fosse, were very promotion-minded. For opening day of the arcade, the Fosses held an "Asteroids World Record" event. The promotion received publicity from several broadcast media and local newspapers, a spokesman for the operating firm reports.

Two local radio stations gave hourly updates as player John Paul Jones attempted to beat the world's record of 25 million points on *Asteroids*. The 16-year-old player from Marion, Illinois didn't set a record but held out for 41½ hours to score 20,245,470 points.

Sam Westgate, speaking for the operating firm, said: "With his help we had a very outstanding promotion and an unexpected amount of publicity." That publicity was gained with the only basic cost to the operating firm being that of a plaque presented to *Asteroids* champion player Jones.

Lesson there the enthusiastic player can be your best testimonial for the arcade. As he appears in the news account of the Cherry Street tournament, the player is no beer-guzzling thug; he is a competitor in the best American sense, like an athlete in nature.

★ ★ ★

Captain Video's Games, a Los Angeles arcade, made use of the clean-cut super-hero image both for its game room and its logo: a muscular, marvelous "Captain Video," defender of kids and senior citizens.

"He" was on hand to award the winners of Captain Video's Games' *Scramble* Tournament which ended August 15. The three top shooters on *Scramble* won small cash prizes—and "Captain Video" also presented the tournament week's proceeds of \$350 from two video games to two children from the Poseidon School, a center serving learning disabled adolescents in West Los Angeles.

The arcade announced its plans for similar tournaments twice-monthly, "to test the skill and endurance of adults and kids alike" on various video games in Captain Video's.

The evident lesson is to make an association with a clean image and a charitable cause.

★ ★ ★

In a saturation campaign to publicize its late-August video tournament, the 40-location Malibu Grand Prix arcade chain focused on Houston under the theme that the city was under "armor attack,"

playing cleverly on the name of the *Armor Attack* games used in the tourney.

The multi-phased event at four Houston area Malibu Grand Prix locations (described in *Play Meter*, November 1 issue) drew in the local media—almost as if they were drafted. To accent the pre-championship activities of August 20, Houston media personalities were brought in to compete in a challenge event which devolved proceeds to benefit an emergency service program of a local hospital.

Meanwhile, the U.S. Army had given cooperation to the promotion and on play-off day landed a helicopter on the grounds of a Malibu Grand Prix arcade. Media reporters and camera people interviewed and shot the winning player as he sat in the cockpit of the chopper.

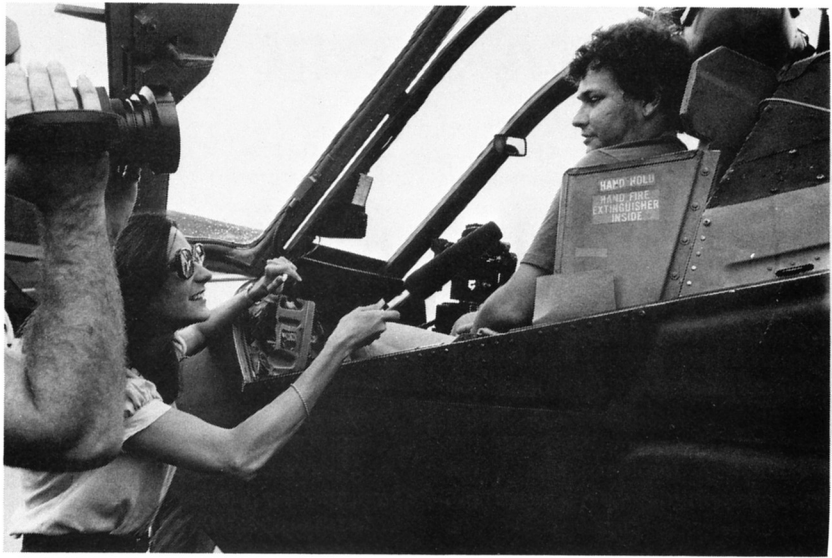
During the competition, the Army had announced its purchase of several million dollars worth of electronic games to aid in soldiers' hand/eye coordination. Although the timing could not be foreseen, Helen Vollmer/Public Relations, handling the publicity for Malibu Grand Prix, was able to turn this announcement into an asset and obtained more media coverage, using Army spokesmen at the arcade to talk with reporters about the advantages of electronic games.

All in all, the event—planned and unplanned—gave Houston residents ample exposure to the reasons game rooms are so popular, according to Steve Williams, area supervisor for Malibu Grand Prix. The public relations firm logged exposure for the tourney in twelve different media in the area, with multiple exposures in several.

It didn't happen by accident. A publicity writer for Malibu Grand Prix had mailed readable, personal letters to each media director in the area, at the outset of the promotion.

One of the more effective promoters, not only of coin-op games but for the cause of severely handicapped persons, Gary Marince tied-in the third annual Quadriplegic Pinball Tournament with a Pittsburgh radio station and a telephone workers group for co-sponsors. A mass mailing by Radio 102 FM invited participants to the "Quad Pinball" event September 17 at Harmarville Recreation Center, outside Pittsburgh.

Utilizing Marince's "sip-and-puff" switch for operating pinball and video games, the tournament



Malibu Grand Prix's tournament winner is the darling of the press as he poses in the Army helicopter which helped promote the event.



Winning Scramble players show off checks presented personally by 'Captain Video,' living symbol adopted by a Los Angeles arcade.



Gary Marince with one of the pingames he has modified for tournament play by the handicapped. The media have shown keen interest in his work.

allowed the handicapped to play at no entry fee. WDVE Pittsburgh radio personnel Jimmy Roach and Steve Hansen were on hand to award the trophies and prizes to the winners. The Telephone Pioneers of American labor group's sponsorship, according to Marince, involved placing "sip-and-puff" modified machines in the homes of handicapped persons in the area.

Winners also in the Marince event were the coin industry, with its image shining in the light of a worthy cause, and the handicapped persons, made able to play the electronic games on equal ground with players their own age.

★ ★ ★

Manufacturers have not failed to rise in sponsorship of charitable causes. Almost every week at *Play Meter*, the mail brings announcement of a games producer's donation of time, money, and/or equipment to a not-for-profit organization.

Distributors rise to the occasion also. Brady Distributing Co./Charlotte, North Carolina in conjunction with Brunswick Corp. raised funds for the muscular dystrophy fund during the Labor Day weekend. As had been done in the past, games donated for the event were made available for play in a Charlotte mall. Brady contacted Exidy, Inc. for help in this worthy cause, and Exidy donated a *Fire One* game.

Exidy Director of Marketing Lila Zinter commented: "Exidy feels a strong commitment to use the strength of the video game industry to benefit charitable organizations, such as for muscular dystrophy." She also saluted the Brady distributorship's cooperation.

Meanwhile, Empire Distributing/Livonia, Michigan organized the third annual benefit for retarded citizens of the state. Again, Exidy donated a *Fire One* for this cause on August 30. (Exidy has extended charitable help also to non-profit institutions near its Sunnyvale base area, including donation of a game to be raffled by a San Jose high school to raise funds for school equipment.)

And again, the cue for the operator is favorable local exposure. For example, donation of a used game to a children's home or other institution. (Don't forget to call the news media beforehand.)

Promotional tie-ins come in many forms. For one example, Bally Pinball Division combined efforts with Carson, Pirie, Scott and Co., a leading Chicago department store, to

promote pinball and a line of indoor sportswear.

Eight Bally pingames were displayed in the store's windows facing the State Street Mall in downtown Chicago. Mannequins, dressed in the latest "pinball playing" sportswear, were posed all around the games during the two-week promotion.

The effect on the coin-op image: association with upscale fashion and lifestyle for the coin-operated game.

Similarly, Midway Manufacturing tied-in with athletics, placing a *Pac-Man* video in the locker room at the Wrightman Cup Tennis Tournament in Chicago in July. The tournament at the International Amphitheatre featured the top female players from the professional tennis circuit.

The video game was reported to be a hit with the players for relaxation between matches of the Wrightman Cup.

Positive action Down Under

The Australian Music Operators Association has this year demonstrated its ability to utilize media in the industry's interest, as detailed in the Aussie AMOA's "Muse Letter."

Operators had introduced 40¢ play (equal to about U.S. 50¢), and by June the AMOA reported: "So far, practical results indicate that players are prepared to spend 40¢ if the game offers something new. All those nervous about the price increase, please take note," stated the "Muse Letter."

How did smooth pricing-up from 20¢ play come about? The newsletter reports: "The introduction of 40¢ play on new games coincides with media publicity regarding the price increase. Press releases to the media ensured that they were not kept in the dark regarding price increases.

To be advised to "please take note" also, we might add, are those coin machine operators outside of Australia who do not find the need to seek favorable media coverage of industry concerns until it is near too late and damage—such as restrictive legislation—has been done.

★ ★ ★

These are but a few of the imaginative ways the coin industry has demonstrated use of public opinion, the media, and favorable tie-ins in its own interest. Many more and many variations of these are possible and practical. Operators with creative image-building ideas are invited to share them by writing Play Meter.

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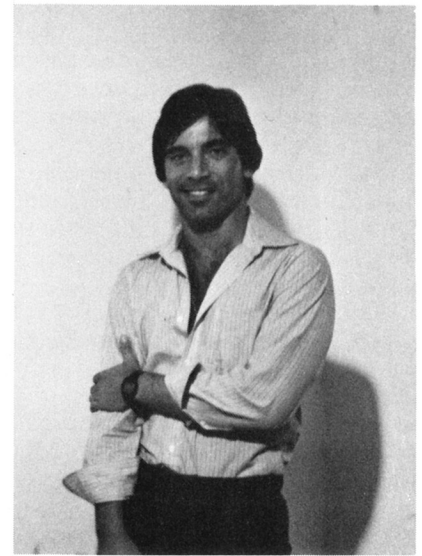
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Operators must be watchful, united

By Michael Mendelsohn



Four men ranging from 32 to 60 years old and one woman in her mid-thirties, acting as the group's leader, sat regally behind the raised platform. They were listening carefully to testimony given by a handsome young gentleman well dressed in a conservative three-piece business suit. The businessman stated, "You would most certainly be amazed at the number of three-piece suits that could be found playing video games on a regular basis at most of the arcades."

One of the more elderly gentlemen behind the podium spoke down at the businessman, "It's not the three-piece suits that bother me. It's that damn sneaker crowd that I'm afraid of." The older man was more and more taking on a striking resemblance to Archie Bunker.

Calmly and with touching sincerity, the young businessman replied, "I have two children at home who are wearing sneakers, and I love them very much." No reply from Archie Bunker.

The scene just described was a meeting of the Redondo Beach City Council on Monday evening, June 22. The young businessman was Donald Osborne, vice-president of Atari, Inc. The elderly gentleman was a member of the city council for Redondo Beach. The motion up for adoption was to make the ownership of coin operated games in the city of Redondo Beach illegal except in duly licensed arcades. The industry was well represented, most notably with fine speeches by Ira Bettelman, speaking for both C. A. Robinson Co. and the nationwide distributor organization of which he is president; Osborne, vice-president of Atari; and Dean McMurdie, president of Circle International.

Others speaking for the industry included representatives from Gremlin, Southland Corp. (7-11 Stores), and at least a dozen operators in the Redondo Beach area. All together approximately fifty or more people were present.

Impressed by the concern of the industry, as much by the sheer numbers that turned out, the city of Redondo Beach withdrew the motion and will be meeting at a later time with industry representatives to enact a compromise solution.

The scene described here is becoming more commonplace to our industry. On Thursday, June 25, a hearing was held at the Van Nuys Women's Club concerning arcade licensing in the city of Los Angeles. This council has also agreed to work together with our industry in formulating worthwhile solutions for all involved. Fountain Valley met June 30th on similar legislation.

The problem in many of the cases coming up is not that some controls aren't necessary in the game industry. Almost all of us agree that some regulation will have to be imposed in order to insure that the growth of video games and pinballs develops in a manner as to be a credit to our industry and further improve our image nationwide. The problem, as Dean McMurdie described so perfectly, was; "They don't realize that what they are doing is throwing out the baby with the bath water."

These council meetings will continue, and in greater numbers and frequency. We must protect ourselves from being legislated out of business. It is one of the utmost importance to all of us that we have representation at as many council meetings as possible. The more of us

who attend, the greater our chances for worthwhile legislation.

Be prepared with a short speech of your feeling regarding the proposed motion. If you do not like public speaking, your presence alone shows the council the extent of your support, not to mention the moral support it gives the rest of us in fighting this battle.

In working with the city councils it will be important that we show our concern for their city's well being as well as our own. As I stated earlier, the proper controls can be very healthy for all of us. A rampant growth of this industry will give the cities absolutely no choice but to outlaw coin operated games. This would most certainly be a grave mistake for everyone concerned.

Possibly most important of all will be awareness of the legislation and the meetings at which these motions will be discussed and voted upon. Unfortunately the majority of the cities publish small classified ads in obscure newspaper pages to announce hearings on such matters. Consequently it will be necessary for all of us to keep up to date for any news of upcoming meetings and any new legislation. Upon learning of an upcoming meeting, a phone call to your local distributor will get the word out to hundreds of concerned operators. Get involved! Each of us makes a difference.

The matter of image

I see this as a good time to discuss the further development of our image both locally and nationally. There are two main reasons why the cities are now looking to legislate us out of business.

First, there are some street and

arcade operators that do not show enough concern for the environment created in their game areas. Without proper controls each game area has the potential to become a hangout, where the worst elements of our society can be viewed first-hand. No, we do not create the social problems which may pop up at improperly supervised game rooms. But by tolerating it you are giving the entire moral force of your community a chance to condemn your arcade and games in general. When their fears of adverse effects on their children and community are aroused, something must happen.

Many of us get into the game business for many different reasons. Some get in only either for investment or a tax loss, and may not want to be involved. It will be our responsibility to see that the unconcerned operators are legislated out of business. For the good of the rest of us, who are concerned about the industry's future, this will be a necessity.

The second reason for the gradual decline of our image is the lack of enough positive and cooperative promotion nationwide. The public relations department of the major game manufacturers have taken some effective steps on their own. Many of us operators contribute games and time to help worthwhile charities. All well and good.

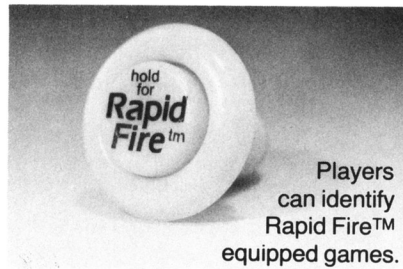
But we need a more unified effort as an industry. I would like to put forth a suggestion which may be worthwhile uniting around: A nationwide advertising campaign using television, radio, and magazines to promote the good clean fun that video games and pinballs represent. The campaign would not only focus on creating a good image, but also on the excitement of going to your local family game room as an alternative to our other forms of entertainment.

We are all familiar with the milk commercial put on by the nation's milk producers. The success of their campaign has been astounding. This kind of cooperative advertising can be so instrumental to our growth. Unfortunately our industry has not been well-known for its ability to organize and cooperate. I believe it is time to change.

Most of us are very concerned about the image we present and how it relates to our growth. It is time to put that concern to positive use. Look forward together. We have much to gain.

Mendelsohn is president of Games Unlimited, Los Angeles.

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The U.K. shows life in videos —but in unexpected sectors

By Roger Pearson

on Play Meter's London Desk

A major drive to rejuvenate flagging video sales in the U.K. can be expected at the forthcoming London previews. Video manufacturers and distributors will, no doubt, be pulling out all the stops in a hard-sell effort to inject new life into the tailed-off video market on that side of the Atlantic.

But their chances —of succeeding to revive this sector of the machine market to the boom state it was enjoying last year and early this year—seems debatable.

Certainly the video is nowhere near dead in the U.K. Stories of a drastic drop in sales should not be taken as indicating this. Videos still account for a sizeable percentage of U.K. sales.

But in recent months there's been no doubt that this percentage has dropped. There has been a definite downturn in this area of machine sales. On analysis, a number of comparatively wide ranging factors appear to have combined to account for this situation.

First and foremost of course is the general recession Britain is currently weathering. Despite all the talk by financial pundits who say that when times are hard the leisure industry still flourishes, this is not true of Britain in the 1980s.

Coastal U.K. resorts report a big drop in the number of visitors and this has of course hit the hard core of amusement operators based at these resorts. Trade in pubs, clubs, bars, and other sites where amusement machines are often found has also fallen dramatically. The outcome is that there are less people playing machines generally, income from machines is proportionately down, and in consequence operators are investing less in new machines.

New life in gaming

The second important factor, and one rated highly by top amusement men when it comes accounting for the drop back in



Rising star in the British video picture is the amusement-with-prize payout, or 'fruit' electronic machine.

video popularity, is the raising earlier this year of AWP ("fruit" payout) prize levels in Britain. These were doubled and the result has been to make AWP's more attractive to the machine playing public. The move has undoubtedly given them a new lease on life.

But many sites which support videos also support AWP's. The result has been that the AWP machines have taken players away from the videos. Coupled with the incentives to play AWP's rather than videos because of increased prize levels, there is also the well recognized factor that when money is short, people would rather use a machine which may give them some money back—rather than one that is purely for amusement.

Another factor to be taken into account is that sales to small-time "cowboy" operators during the video boom helped create artificially

high sales figures. All over Britain there were people who had never before been connected with the amusement industry trying to catch in on the boom by investing in a few machines, often as few as two or three, and sitting them.

What these people did not appreciate, however, was the short play popularity of a video game. When they realized the need for continued changing of games if a site was to remain profitable, many cut their losses and pulled out. They turned out to be lost customers rather than added customers of return sales for videos.

Yet another element contributing to the downhill slide of videos—and this of course is an international problem—is the difficulty for manufacturers to continue to come up with new and imaginative games.

Williams Electronics' *Defender*, which has been built under license in the U.K. by Streets Automatics is widely accepted as one of the last really good games to catch the imagination of the machine playing public.

But games like the *Defender* are not created every day. And, as Martin Williams, managing director of Streets, and a man with long and varied experience in the UK industry admits: "There has been something of a video void since the *Defender*."

Changeable games

There have been wide hopes throughout the U.K. industry that introduction of game change systems on a wider scale will go some way to pepping up the market. But here there are conflicting schools of thought on the value of these systems and whether they will give such a boost.

Several U.K. companies now offer such systems and in a field where constant variety is the life blood leading to success, they are in theory undoubtedly an excellent idea for the video industry the world over.

Where they fail, however,

THE MYSTERY OF FATHOM

SOMEWHERE OFF THE COAST OF BERMUDA...

STORY: GREG FRERES
ART: KEVIN O'CONNOR

I JUST CAN'T FATHOM WHY HE'D DIVE BY HIMSELF. ESPECIALLY IN THESE WATERS. HE SHOULD HAVE WAITED FOR US!

I THINK YOU SHOULD WAIT UNTIL THE COAST GUARD GETS HERE. HE STILL HAS SOME AIR LEFT.

DON'T WORRY. SOMETHING TELLS ME I'M GONNA FIND HIM. HE'S PROBABLY EXPLORING A GREAT CAVE. I'LL BE BACK IN 5 MINUTES. THE COAST GUARD SHOULD BE HERE BY THEN.

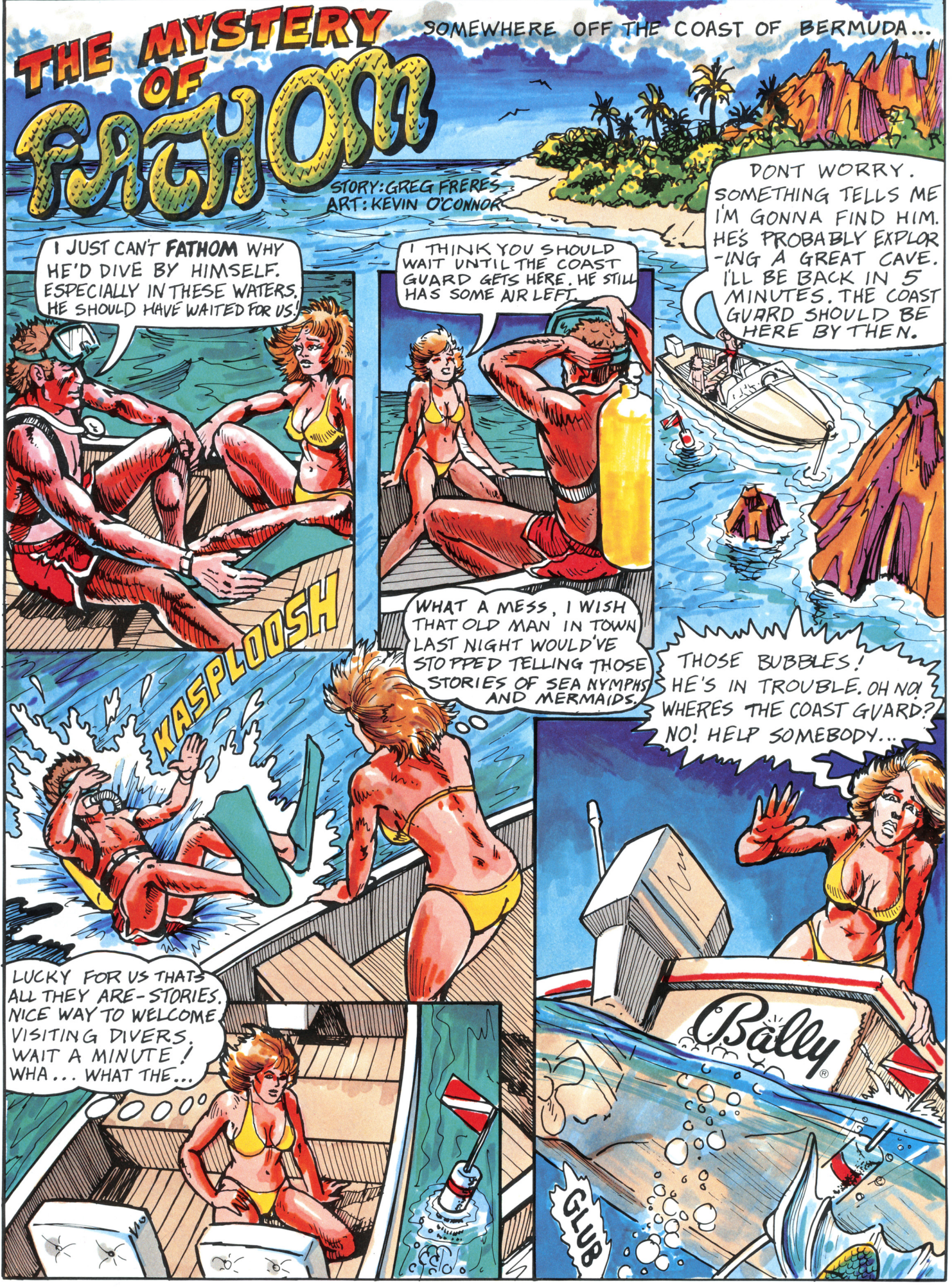
KASPLOOSH

WHAT A MESS, I WISH THAT OLD MAN IN TOWN LAST NIGHT WOULD'VE STOPPED TELLING THOSE STORIES OF SEA NYMPHS AND MERMAIDS.

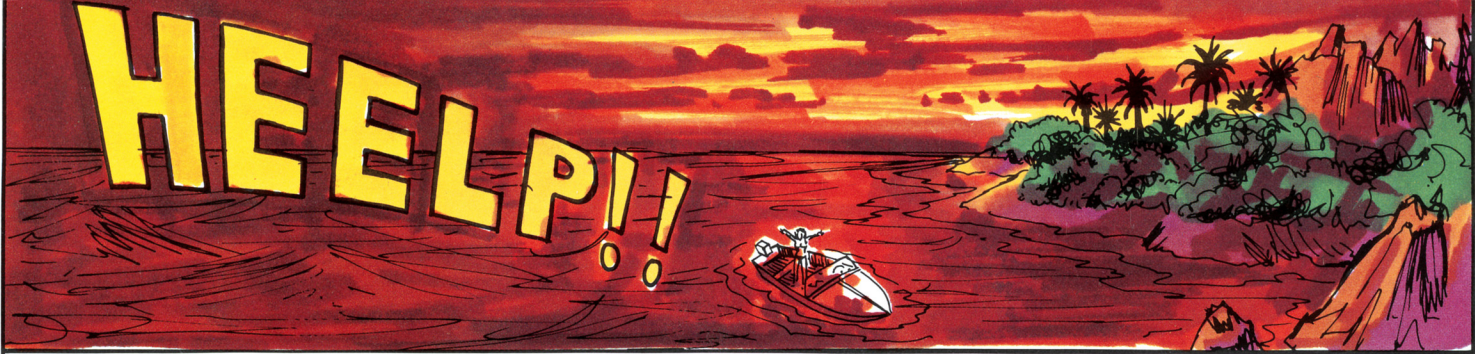
THOSE BUBBLES! HE'S IN TROUBLE. OH NO! WHERE'S THE COAST GUARD? NO! HELP SOMEBODY...

LUCKY FOR US THATS ALL THEY ARE-STORIES. NICE WAY TO WELCOME VISITING DIVERS. WAIT A MINUTE! WHA... WHAT THE...

GLUB



HELP!!



WILL THE COAST GUARD ARRIVE IN TIME? WERE THOSE STORIES THE OLD MAN SPOKE OF JUST STORIES? FIND OUT. PLAY **FATHOM!**

Beware the Blue and Green in-line drop targets that guard the Lagoon and Cove Traps. They appear only after the balls are captured in the saucers.

Use the multi-ball feature to double or triple all playfield value, depending upon how many balls are in play.

Spear the center 1-2-3 drop targets in sequence to light the extra ball stationary target and advance the bonus 5x. Hurry! You have a limited amount of time to hit it before your air runs out!

Release the captive balls and multiply the corresponding bonus by dropping the in-line drop targets, or the three Blue or Green left side targets when in-lines are not up. The in-line drop targets can be activated by remote control from the left side drop targets, which also multiply the bonus from 3x through 5x when a ball is not captive.



Explore the depths of the playfield through the Blue and Green bonus features. Color-coded targets, roll-overs and lanes advance the bonuses from one to three advances.

Dive through the A-B-C Rollover lanes to advance either the Blue or Green bonus. The right flipper button rotates the lane lights; each completion of the three lane sequence qualifies different lanes for points, then others for Specials.



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according to some distributors, is that while in theory they're a good idea, in fact the change system games offered at the moment are not coming up to scratch.

Colin Mallery is sales director for one of the U.K.'s largest distributors, Ruffler and Deith. "These system are not the answer in their present form," he says. "At least, not until they start offering sets of really good games. It's no use offering a system with ten games, of which only one is a really good one. All, or at least most of the games offered have got to be worthwhile ones." Other distributors agree with these sentiments.

On the other side of the coin, Malcolm Ray, head of Surrey Automatics—a south of England company which has enjoyed rapid expansion this year and which specializes in machine conversion, also handling some game change systems—feel there have been improvements recently in these systems.

"These systems provide a convenient means of retaining player interest on a video site," he says.

"I believe they do have a role to play in helping keep the video market buoyant. And, while maybe in the past some of the games offered have not been that good, I think the companies providing these systems have now realized this. As a result the games that they are now offering are showing a marked improvement over those of the past," said Ray.

One of the major problem in drawing any conclusions from the drop in U.K. video sales is that they have fallen from a high that had several unrepresentative factors contributing to its cause.

And they have dropped to a low, which taking into account the recession and the AWP prize boost factor, is probably as unrepresentative of the true video market in Britain as was the sales high during the Boom.

Time will tell, but it could well be that as market factors take a realistic bearing on video requirements, a true sales level—somewhere between yesterday's boom and today's slump—will be found.

That, however, is going to be no consolation for some U.K. companies. They are the ones who invested heavily in videos in the ground days and now have idle stocks in their warehouses and resultant cash flow problems.

For some of these it could be that the eventual leveling out of the market will be too late to save them from going to the wall. ●

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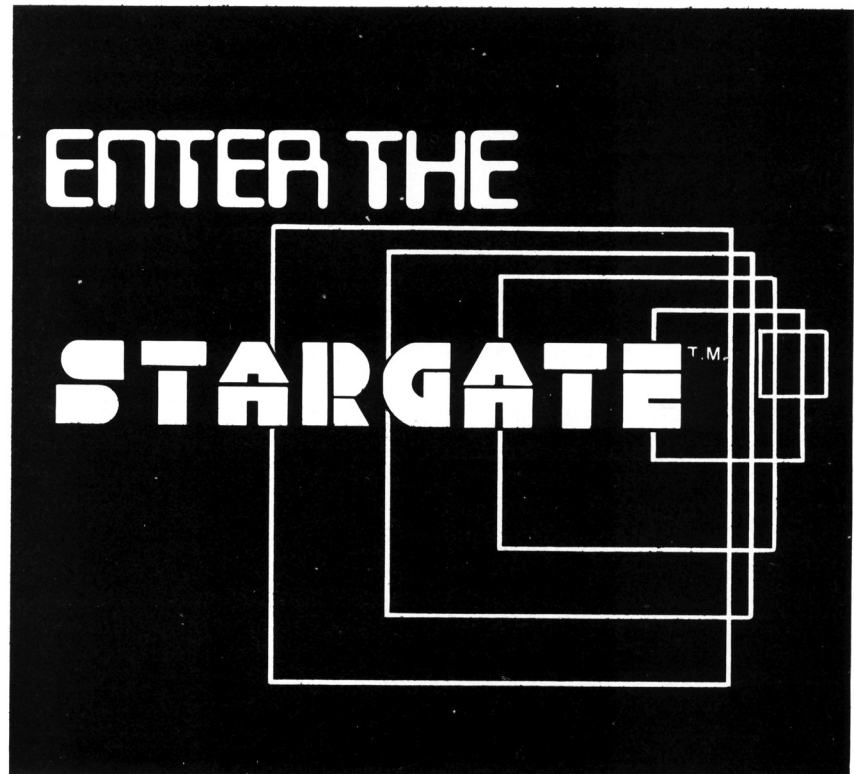
to be successful at repairing Solid-State games. The course stresses the efficient use of test equipment like the Logic Probe and Digital Multimeter; relatively inexpensive equipment that operators and mechanics can easily afford.

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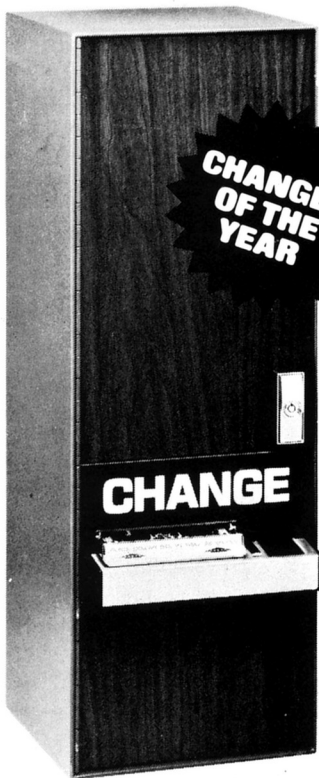
Not really. The tuition fee of \$400.00 includes over \$75.00 worth of textbooks, databooks, and other materials!

Randy Fromm's Arcade School will not teach you how to repair a jukebox, electromechanical pinball or vending machine. You will learn about diodes, transistors, power supplies, electronic pinball, video games (including a special session on video games that use the X-Y monitor system), cross referencing semiconductor replacement parts, using a logic probe, and more.

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Youths-and-arcades legal issue:

AMOA joins Aladdin's fight in U.S. Supreme Court

The AMOA has filed a brief in the U.S. Supreme Court in support of Aladdin's Castle's position which challenges a Texas local ordinance prohibiting minors from playing games in amusement arcades.

The AMOA newsletter *The Location* (September issue) notes the widening problem of communities considering ordinances to restrict minors' play or to limit issuance of arcade licenses. (See also: discussion in *Play Meter*, November 1 issue, pages 9, 12.)

Aladdin's Castle opposed the age-restriction ordinance passed by the city of Mesquite, Texas, and the arcade chain's case was upheld by U.S. District and Fifth Circuit Appeals courts. The city challenged the appeal ruling to the U.S. Supreme Court, which agreed to consider First and Fourteenth Amendment constitutional questions in the case—including the right of minors to freely associate (*Play Meter*, August 1, page 24). However, the high court has not issued certiorari nor set a hearing date in the matter.

The AMOA's attorneys recently filed an amicus curiae brief with the Supreme Court, supporting the arguments of Aladdin's Castle and asking the court to uphold the Fifth Circuit decision. The Amusement Devices Manufacturers Association also submitted a similar brief.

In part, the AMOA brief states:

"The Mesquite Ordinance denies to Appellee and its young customers their rights to provide and to receive entertainment by coin-operated amusement machines contrary to the First and Fourth Amendment to the Constitution of the United States.

"The Ordinance shows on its face that its target is the 'congregation' of youths. But 'congregation' is simply another way of saying 'association' and the freedom of association is a First Amendment freedom. The City's task in upholding the Ordinance is compounded by the fact that the congregation of youths is for the purpose of entertainment, and 'entertainment, as well as political and ideological speech, is protected' by the First Amendment."

GDI Inc. 'Alert' to video market

GDI Inc. has recently entered the video field with a new game feature an enemy missile attack.

At a recent open house in the Hilton O'Hare Hotel; GDI executives hosted distributor principals and their sales execs, and GDI's new video amusement game called *Red Alert* was displayed. *Red Alert* is licensed from Irem Inc., of Osaka, Japan. Twenty-two distributing offices were represented at GDI's open house.

During the afternoon and evening's display, Bob Breither, marketing manager, stated that "GDI is in the video amusement business to stay and will offer many new, interesting and profitable games for the trade in the near future."

With *Red Alert*, according to Breither, "the ultimate challenge awaits the players, regardless of their skill rating."

King is ADMA counsel

The Amusement Device Manufacturers Association has appointed Rufus King as its Washington, D.C. counsel.

King, a partner in the law firm of King & Newmyer, is well known for his legal expertise in connection with court and legislative matters involving the operation of coin-operated amusement games.

Over the past 25 years his roster of clients has included many outstanding and prestigious manufacturers in the industry.

An ADMA spokesman said that the appointment of King by ADMA is further evidence that the association is pursuing a very positive course in its determination to do its utmost on behalf of the entire coin machine industry."

NAMA has a full slate awaiting record crowd at McCormick/Chicago

More than 210 exhibits, a record number, are expected to await the more than 6,000 executives and managers of the vending and foodservice management industry at Chicago's McCormick Place October 29 to November 1 at the annual NAMA convention and trade show.

Jack Rielley, director of sales, said, "By mid-September we had enlisted 210 exhibitors, topping the record of 201 last year, and we will equal or surpass the approximately 55,000 square feet of last year's exhibit space," Rielley announced. "We will have 30 companies exhibiting for the first time at our national show," he added.

NAMA President G. Richard Schreiber termed the exhibitor interest "a very pleasant surprise and indicative of the improved vending industry business climate which a number of member firms have reported recently."

How the public looks at vending machines will be the featured presentation at the convention business meetings. (See related story on NAMA surveying public opinion.) On Saturday, October 31, the results of a nationwide public attitude study regarding vending machines, commissioned by NAMA, will be revealed to the convention audience. Television quiz show host Art James will test industry members on their predictions of the study results, followed by Professor Sidney Levy of Northwestern University and Social Research, Inc., which conducted the study through 500 personal interviews. Levy will report details of the results and distribute copies of his report.

Implications of the findings and recommendations for marketing and communication actions by industry members will be covered by Schreiber during the three-part presentation.

William Buckley keynoter

Among other meeting program highlights will be a keynote address by William F. Buckley, Jr., editor and television program host, following the NAMA annual meeting on October 29.

Vending industry route structure and controls will be discussed by a

panel of industry executives on October 30, followed by Dr. Kenneth H. Blanchard, San Diego management consultant, who will discuss managerial leadership.

"Putting 'Reaganomics' in Perspective" will be the title of keynoter Nicholas Beadles of the University of Georgia that day.

"Keeping Financial Management And Control" is the subject of the October 31 lead-off session, presented by Paul Lombardi, vice president of finance, Sands & Co., Atlanta, and Robert Deutsch, industry consultant, Northbrook, Illinois.

The vending industry image study presentation will be the other major Saturday program feature.

On November 1, "Successful Survival For The Privately Held Business" will be the topic of Frank M. Butrick, director of the Independent Business Institute, Akron, Ohio. All business meetings will be held at McCormick Place.

Entertainment features of the convention will include a reception, sponsored by exhibitors, on October 30 at the Chicago—Marriott Hotel and the annual NAMA Banquet on October 31, also at the Marriott. The banquet entertainment, sponsored by the Philip Morris Company, includes the "Pied Pipers" in concert with the Warren Covington Orchestra. The banquet reception will carry out a Halloween theme.

Convention registration is free to NAMA members. Fees for non-member operators are \$35 per person, including all events except the banquet, which carries a separate \$35 per person price tag.

Registration for nonmember supplier and manufacturer companies is \$75 for the first person and \$50 for any additional persons from the same company, said G.H. Tansey, director of conventions for NAMA.

Transcending space, time
and all other video games!

STARGATE T.M.

WILLIAMS ELECTRONICS, INC.

Bally teams with home video producer

Bally Manufacturing Corp. has signed an agreement with a major microcomputer manufacturer, licensing it to manufacture in cartridge form the video games that Bally develops as coin-op video amusement games.

The video games would be licensed to Commodore International Ltd. to be produced by Commodore for use solely in the microcomputers and home computers manufactured by Commodore now and in the future.

Irving Gould, chairman of the board of Commodore stated that "this license agreement is intended to give Commodore a very important and large library of video game cartridges for use in Commodore's VIC-20 home computer."

He went on to note that "priced at \$299, the VIC-20 home computer is priced lower in cost to the consumer than any comparable microcomputer and is also priced at the same level as a number of other very large selling consumer video arcade games which do not have computer capabilities."

Gould concluded by noting, "Commodore expects to sell over

200,000 VIC-20 home computers between now and June 30 and expects cartridge sales of considerably more than that. This agreement with Bally is therefore expected to be quite important to both companies."

Robert Mullane, chairman of Bally's board concluded that "the agreement does not prohibit Bally, at

a later date, from manufacturing and selling video game cartridges for use in consumer video arcade games manufactured by companies other than Commodore."

Commodore International Limited is a fully integrated microcomputer manufacturer and one of the leading companies in its industry.



Distributors met with Bally folks at its recent distribs meeting at Itasca, Illinois, and among the crowd were (above, left to right) Lou Feng of Bally; Chat McMurdie, Advance Automatic/San Francisco; John Britz, Bally; Mrs. McMurdie; and John Brady, Brady Distributing/Charlotte, N.C. New product introduction were given to Medusa pingame and Centaur (the first black-and-white pin) which was in the prototype stage.

Seeburg sets jukebox history display

Kaleidoscopic colored jukeboxes of earlier eras will be showcased in the "Music Machines" exhibit, retrospective of coin-operated phonographs, scheduled to open October 29 at Chciago's Museum of Science & Industry, 57th Street and Lake Shore Drive.

In a dazzling display of light and

sound, classic jukeboxes—dating back as far as the 1920s—will be spotlighted. The exhibit will be on view through January 3 and is presented by the Seeburg division of Stern Electronics, Inc., Chicago.

Among featured music machines, selected for technological or design achievement, are:

—A turn-of-the-century nickelodeon, predecessor to today's jukebox;

—a radio-styled "Troubador" jukebox from the 1920s;

—the more than six-foot-tall "Singing Tower" of the 1930s;

—a trio of flashy 1940s jukeboxes with spectacular lighting effects;

—the "Happy Days"-styled jukebox from the 1950s; and more contemporary, psychedelic from the 1950s and 1960s.

Representing the present "state of the art" of the jukebox industry will be the introduction of Seeburg's new Phase One model, described as "the beginning of the cinemasound explosion of the 1980s."

The "Music Machines" exhibit will be located on the entrance floor of the Museum of Science & Industry. It will be open to the public 9:30 a.m. to 4:30 p.m., weekdays, and 9:30 a.m. to 4:30 Saturday, Sunday and holidays. Admission and parking will be free.



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NAMA surveying public's attitudes on vending

Americans drop more than 190,000 coins every minute into merchandise vending machines around the clock but, until now, no one has ever checked, on a nationwide basis, what the public thinks about the silent salesman.

For the first time a public attitude study on that subject is now underway, commissioned by the National Automatic Merchandising Association (NAMA), national association of the \$13.9 billion industry.

"We have asked Social Research, Inc., of Chicago to research how people react to vending machines, and they are now completing some 500 interviews," said G. Richard Schreiber, NAMA president.

Dr. Sidney Lewis, professor at Northwestern University and director of psychological research at Social Research, Inc., is directing the project. Schreiber said the results will be presented at the 1981 National Convention—Exhibit of Vending and Foodservice Management, October 29 to November 1 in Chicago.

"Preliminary in-depth personal interviews already have shown that people's feelings and reactions may be a lot more favorable than what our members might expect and they certainly vary from the 'kick-the-machine' or 'impersonal automat' concept sometimes described by feature article writers," said Schreiber.

After the nationwide telephone interviews with consumers are completed, the results will be tabulated by computer and interpreted by Social Research specialists. Reactions from heavy and light users, different age, sex and geographic segments are some of the variables to be shown in the completed research.

After the NAMA Convention presentation, all NAMA members will be furnished a complete report of the results, together with a model survey from which they can use to supplement the nationwide results with research in their own market area.

Presentations of the results will also be made at meetings of NAMA's affiliated state councils and before other groups, Schreiber said.

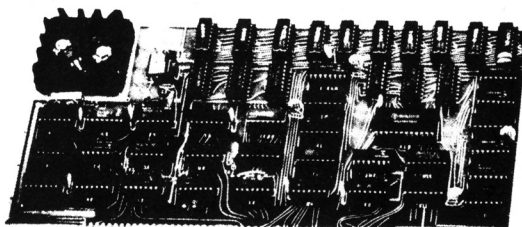
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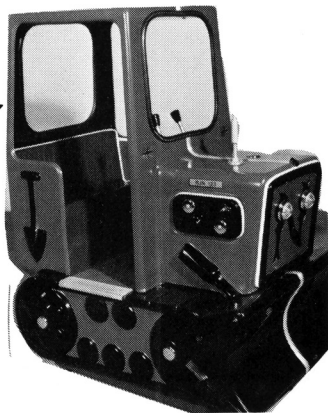
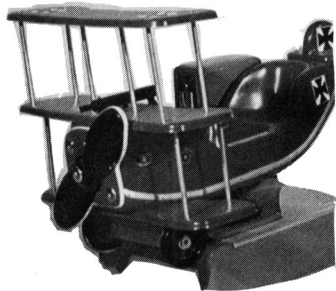
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Video elbow?...

Popular sports seem to have a typical "popular ailment" associated with their play, as in tennis elbow. Now it has been found that it can be true with coin-op games.

Muscle tears in those who are taken with playing the mechanical bull machines have been reported, for example. Urban-cowboy rhabdomyolysis, a condition associated with extreme exertion and reportedly caused by the strenuous bouncing of the bull ride, was written up in *The New England Journal of Medicine* (1981 volume, page 427). One of the authors, Dr. R.D. Powers said sudden falls from the saddle are not necessarily to blame, although "the falls certainly don't help things."

A perhaps more serious case in Britain linked video game playing with an epileptic seizure. Writing in *The Lancet* medical journal, Dr. D.N. Rushton of King's College Hospital in London reported that, after playing an electronic space-theme game for 20 to 30 minutes, a 17-year-old boy on two occasions experienced the peculiar sensations that precede epileptic attacks. On another occasion he had an actual seizure.

It was believed that flashing lights, such as the graphic display at the end of the video game, can initiate epileptic seizures in susceptible people.

The doctor reported that, after the boy avoided electronic games of this type, he had no further auras or seizures.

Another area of machine jeopardy was written of in *The New England Journal*: slot-machine tendinitis, termed by the author, Dr. Richard Neiman, as "rarely seen by physicians practicing outside of easy driving distance to gambling casinos."

Two patients had this year reported the sudden onset of right shoulder pain but had no recent injury. Questioning revealed to the physician that both had spent the previous weekend in Lake Tahoe, Nevada, playing the slot machines. Repeating the motion required in playing the slots resulted in "excruciating pain; in addition they had the classic signs of bicipital tendinitis," reported Neiman.

The severity of symptoms was said to vary widely—"perhaps a reflection of the duration and vigor of play..."

"The optimal treatment is rest or winning a jackpot early," noted the physician.

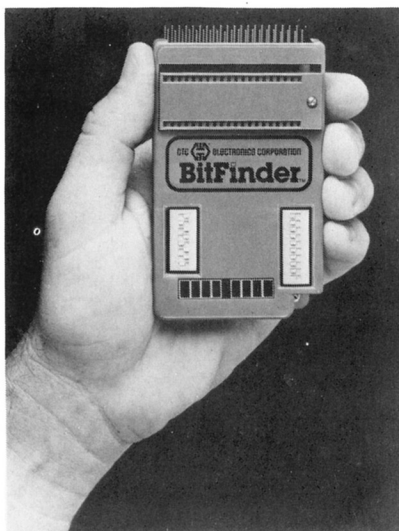
'Suds' dispenser

Coming to Britain is what has been termed in the U.K. trade press as a "revolutionary vending machine"—a Japanese model which dispenses canned beer.

An operator, Madeline Butterworth, proposed to install the vending machine, timed to serve cans of beer only during permitted opening hours in accordance with the local licensing laws, according to *Coin Slot* of London.

She contended that "the pubs and clubs are taking away our livelihood by installing amusement machines...and some pubs are beginning to look like arcades." Now she intends to "fight back," Mrs. Butterworth said, by plugging in the beer machine in the arcade at Morecambe on the sea, owned by her and John Butterworth.

The installation of an alcoholic beverage dispenser was seen as having possible national implications in Britain.



Handy troubleshooting

The CTC Bit Finder Module has been introduced developing systems and/or software for the popular microprocessors as well as troubleshooting problems. It can examine I/O or display the data read from or written to any byte of memory within the address range of the microprocessor, according to CTC Electronics.

The module works by simply replacing the CPU and setting the switches to the desired address. Any data written to that I/O or address will be displayed in 8 LEDs. Separate switches allow the user to select read or write, or both.

As an aid to wave form analysis, a sync pulse appears on a test point whenever data is written to or read from the selected I/O or address. It presents minimum loads to the system.

Measuring only 2¼ x 4 inches, it is easily handheld or carried in tool boxes and weighs just 4 ounces.

CTC Bit Finder Modules are available now for CPUs Z80, 6502, 6512, 6809, 6800, 6802, 8080, 8085.

A brochure is available on request from CTC Electronics Corporation, 11724 West Olympic Blvd., Los Angeles, 90064.

Lots of hamburgers

The games cost a quarter to play, but it's not a two-bit business...The 1980 gross receipts of McDonald's Corp. (\$2.2 billion) and Denny's Inc. (\$716.5 million) would have to be combined to match the \$3 billion figure now being attributed to video game receipts.

—Harry Jupiter, writing in the *San Francisco Chronicle*

Venture Line handles 'Spiders'

Sigma Enterprises, Inc. of Tokyo has announced that Venture Line, Inc. of Arizona has exclusive distribution rights in the United States (outside of New England) to distribute Sigma's original video game *Spiders*.

T. Hagiwara, executive vice president of Sigma said his firm has completed registration of the copyright of *Spiders* in the U.S.A.

Excepted from Venture Line's distribution territory were the states of Maine, Connecticut, New Hampshire, Rhode Island, Vermont, and Massachusetts, as well as Canada.

Sigma warned that infringement action would be taken against "manufacturers, distributors, importers, and operators of copy *Spiders*" games in the U.S.A.

The announcement added: "However, *Spiders* obtained from another supply source before September 10 shall be free from claim (of infringement) provided evidence certifying the fact is presented.

Authorized *Spiders* in the U.S.A. will have a license seal issued by Sigma from September 10 forward, said Hagiwara.

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Second Japan conference on game piracy:

'To enlarge the circle against plagiarism'

By Masaya Nakamura

CHAIRMAN, JAPAN AMUSEMENT MACHINE MANUFACTURERS ASSOCIATION, TOKYO

In recent years video game machines, which have become high among the main amusement devices, have been copied, one after another, illegally and unethically by plagiarists; thus, they are disrupting the world market.

We, who truly love the amusement industry have been trying to eliminate these plagiarists from our industry, and this is going to be our continuous effort until such a day that the sign of plagiarism is no longer in existence and, so that, the industry will be well-recognized by the public and be worthy of its respect.

In order to obtain a consensus of such intention, the First International Conference of Video Game Manufacturers was held on March 9th, 1981 in Tokyo, which in fact was publicized by trade journals internationally. Henceforth, a strong support of the First International Conference and its intention as well as its activities was extended not only by the people who attended the Conference but also by many of those who did not attend. We trust, therefore, that the intention which was clarified in the First Conference disclosed the majority of the people's consensus in the industry, as they kept urging us to call for the Second Conference to which many more will be attending.

Now, I believe that this is the time to enlarge the circle of the people who have the unified concern against plagiarism to a greater scale. In this regard, the matter has been passed into JAMMA's hands with most of the members agreed to the idea and objectives which are stated in the "Joint Statement" of the International Conference.

The date JAMMA decided to hold the conference, October 15th, was indicated one day before the

Amusement Machine Show in Tokyo at which time the greatest number of participants could be expected.

Seventeen invitations were sent to ADMA members in the United States and another 29 were sent to European and Australian manufacturers. In addition to the above invitees about forty Japanese Video



Japan's coin trade show again sited at the Tokyo International Trade Center, Harumi fairground, October 6-8.

Game Manufacturers will be attending. The majority of these manufacturers were expected to participate in this year's conference.

It was also scheduled to have lectures by experts on copyright laws and other related matters which will be definitely very beneficial to all of us.

Announcement and Joint Statement Issued at the First International Conference

Attempts at imitation of video games created by original manufacturers have become so common throughout the industry that there are those who almost take them for granted and this tendency shows every sign of growing.

Without a doubt the vast majority of individuals in this industry has always sought to preserve the good reputation of the industry and uphold high ethical standards, while working to produce innovative new games. The good faith of these individuals is being violated, and the sound growth of the industry is in serious danger of being impaired.

We, who are concerned about the present state of the industry, wish to cooperate in preventing such plagiarism, and are eager for the sound development of the industry, and therefore have hathered in Tokyo, Japan, March 9, 1981, and have joined to issue the following Joint Statement:

"We the members of the amusement machine industry hereby state our intention to make continuing and tireless efforts towards strengthening the industry on higher ethical standards so that the original work of innovators of new games will be highly regarded and their rights securely protected, so that all individuals can be sure that they will receive what they justly deserve, and so that the industry will be well-recognized by the public and be worthy of its respect."

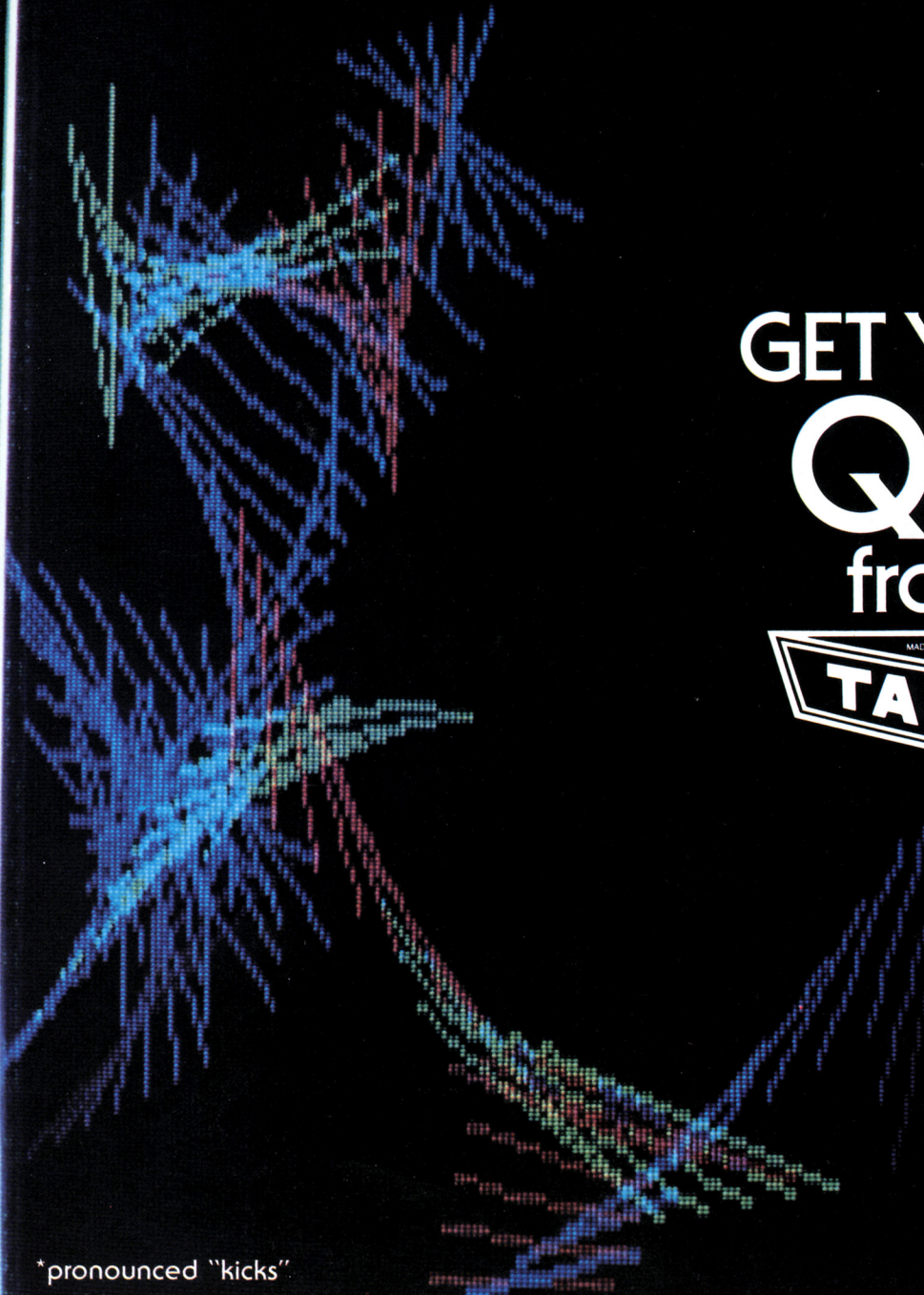
March 9, 1981
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Signed by representatives of: Atari, Exidy, Midway, Namco, Nintendo, Recreativos Franco, Sega, and Taito.

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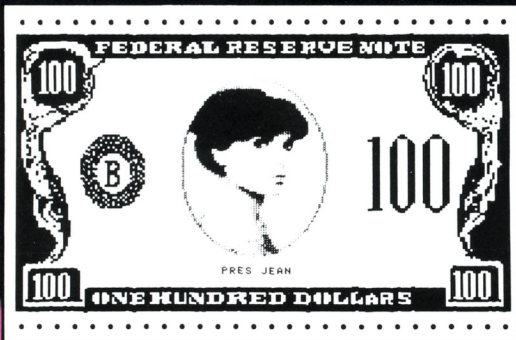
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Five years ago in Play Meter's pages...

Coin-op makes the 'news'

The coin industry was hopping with news, as reported in *Play Meter's* October, 1976 issue preceding the Music Operators of America (now the AMOA) show for Chicago.

Out in California, a contract had been struck by Warner Communications, Inc. to infuse capital into Atari, Inc. for controlling interest in the coin game producer. Atari, founded in 1972, was in late 1976 considering entry into the pinball market.

Plant workers at the Williams Electronics plant in Chicago who were members of an electrical workers union were on strike, but a Williams spokesman was confident of a quick contract settlement.

On television, pinball had received exposure on the NBC late-night "Tomorrow" show hosted by Tom Snyder, with Pinball National Open of 1975 organizer Steve Kirk and media analyst Marshall McLuhan. A demonstration had been given of

skill play on pins.

An estimated 5,250 players had entered a pool table competition in England, sponsored by Hazel Grove Music table manufacturers and a radio station for a top prize of \$1,750.

Operating in Italy was the subject of an article by David Snook, in which that country's shortage of small coins was pointed out; it was impacting the amusement machine operators there, and they were adopting tokens to be sold to playing customers by site owners. Taxation was also burdening Italian operators.

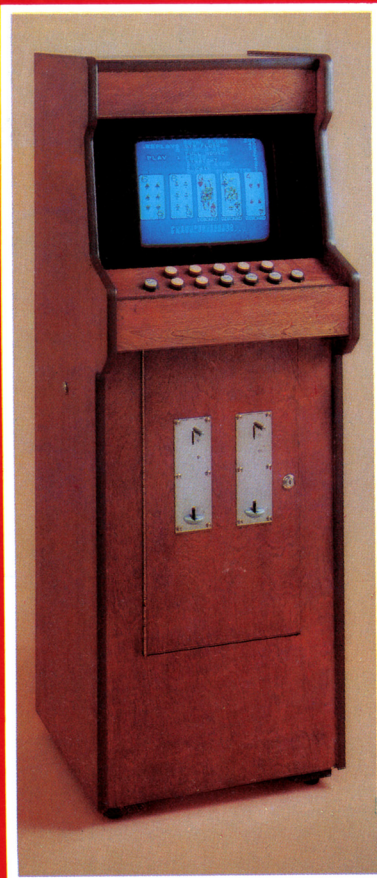
Coinman of the Month was Adrian Hoines, a South Dakota educator. In Bloomington, Minn., the three-day World Table Soccer Championships had been held with 2,140 entrants and a top purse of \$20,000.

North Carolina's coin-op association logged record attendance for its 1976 annual meeting, and a number of programs for operators were

under way in that state. And in Florida, the FAMA convention and trade show was seen as one of the largest of the state shows, just having been held in Miami Beach.

who had taken on part-time operating in 1972 and was at this point ready to go to full-time. His main game interest: foosball. Said Hoines: "A table's like a new car—when it's new and looks nice, it's treated with respect; when it gets old and broken down, then it's not treated well at all."

New Products for October, 1976 included: Chicago Coin's *Juke Box*, a pingame, not a phonograph—but we can't say that no effort has ever been made to slap an \$8 per-machine jukebox licensing fee on it, as was being considered in the copyright royalty bill that month; Sega of America's *Road Race* video game with constantly changing S-shaped road course; and Midway's *Tornado Baseball* in a cocktail model.



"El Grande"

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REVOLUTIONS

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In 1879, The Wizard of Menlo Park, Thomas Alva Edison, invented the first incandescent light bulb bringing man out of the dark and forging the way for a new industrial revolution.



1903, Kitty Hawk, North Carolina, Orville and Wilbur Wright complete the first successful powered flight creating a transportation revolution that would eventually bring man to the moon.

Video copyrighting —the British picture

American producers cannot regard the findings of U.S. judges in piracy cases as bearing on the copyright fight in courts abroad

As competition grows fiercer in the race among machine manufacturers the world over to create new video games, the incentives for video piracy are increasing dramatically.

Illegal copying of video games is now rife. It can be viewed as one of the biggest problems facing legitimate manufacturers today. And one of the major difficulties in stamping out this kind of piracy is the vague state of copyright law when it comes to applying it to videos. Just where does the copyright lie in a video machine?

It's true that in the U.S. the recent court decisions in the cases brought by Stern Electronics and by Cinematronics Inc. do throw some light on judicial interpretation of the video copyright problem. Even so though, it must be reminded that those decisions were on an interim basis and for truly settled case law it needs at least a full hearing of an action.

However, it is not just in the U.S. that legal light is needed to clarify the muddy waters of copyright law over videos. Piracy has become an international industry. And in those circumstances the copyright laws of other countries have taken on new significance.

One thing is clear: American manufacturers can by no means regard the findings of U.S. judges in piracy disputes as having any relevance when it comes to fighting to uphold copyright rights in courts abroad.

One of the major countries overseas where the pirates are likely to strike is Britain. There have been a number of legal skirmishes in the English High Court between bona fide manufacturers and companies trying to copy their ideas.

Because of the English legal system, these cases, several involving Williams Electronics Inc. of the U.S., have gone virtually unreported. And no judge there has given any definitive public ruling on

the application of English copyright law in relation to videos.

In the absence of such a ruling, the industry in the U.K. was at first tempted to seize on the recent U.S. court rulings as perhaps pointing the legal direction in Britain.

However, English copyright law is sufficiently different for it to be impossible to look at the U.S. rulings as giving any real guidance on the outcome of similar action in the English courts.

One of the leading copyright lawyers in Britain—and one who has represented the interests of American video manufacturers in interim injunction proceedings for piracy actions in the U.K.—was blunt.

“The American decisions are interesting from the point of view of application of American law in America,” he said. “But my own feeling is that what goes on in America is neither here nor there as far as Britain is concerned because there are such differences in the two countries' copyright laws.”

In these circumstances, while the industry at large still awaits a definitive judgement in the U.K. to clarify copyright laws there in relation to video machines, a general run-down on English copyright law may prove helpful to U.S. manufacturers. It may at least give some guidance to those faced with the need to attempt to uphold copyright in the English courts.

Redress for breach of copyright can be sought either in the criminal or civil courts. But criminal action against pirates can, for the time being at any rate, prove pretty fruitlessly. At the moment the maximum penalties are a £50 fine or two months in jail. And as a deterrent these penalties, set years ago, are today virtually useless. There are moves afoot to increase them. These however, are still a good way from reaching fruition.

So, it is in the English High Court through civil action that any U.S.

By Roger Pearson

It is in the English High Court that any U.S. manufacturer is going to find the best remedy for video piracy in the U.K.

manufacturer seeking to halt piracy of his product is going to find the best remedy.

The most effective and widely used weapon in the legal armory to uphold copyright—not just in video cases—is an interim injunction, usually obtained in the absence of the party accused of piracy. This is normally granted in the first instance at a private hearing. It bans continued piracy of a product, but more importantly also gives those who claim their product is being copied the right to enter the premises of those their accusations are aimed at and seize infringing material.

To this extent there is a similarity between U.K. and U.S. laws. This sort of order does have a resemblance to the one made by District Judge Nickerson in the *Stern vs. Omni* case.

In applying in the U.K. for such an interim injunction to stop copyright infringement, the first thing necessary is for those seeking the order to convince the judge they

have a real chance of obtaining a permanent injunction when, and if, the full case is heard. The “if” here is because cases of this nature seldom proceed beyond the interim stage.

To convince a judge at this point, it is necessary for those claiming copyright infringement to show they have a pretty strong case with which to establish the copyright they lay claim to.

Unhappily, however, laying claim to a copyright in the U.K. is not as clear-cut as laying claim to, for instance a patent or a trade mark. Patents are issued by the Patents Office and trade marks are registered with the Trade Mark Registry. Consequently rights to them are well documented.

There is, however, no need to register a copyright. The international copyright symbol (©) along with the name of the person claiming to hold the copyright can be sufficient to indicate a piece of work is original.

It goes without saying, therefore,

that laying claim to copyright can create different problems from those facing someone seeking to enforce patent or trade mark rights.

If a reasonable case can be established showing there is a good chance of proving existence of a copyright, the next step is for the judge hearing the application to decide whether it is fair in the individual circumstances to grant the injunction sought.

In doing this he has to take into account factors such as whether at the end of a full hearing of the case the trial judge would be likely to grant a permanent injunction, whether a damages award would be sufficient to compensate for financial loss caused by infringement, and whether those accused of piracy are able to meet a damages award.

The problem with video

A major problem is proving there has been intentional rather than coincidental copying of a copyrighted article. And, in the field of

continued on page 49

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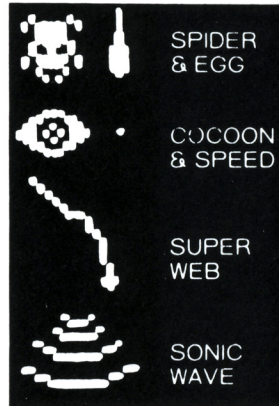
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SPIDERS

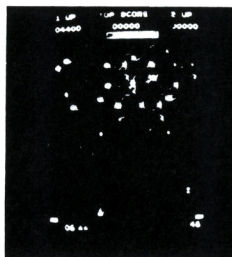
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- When all player's guns are destroyed or 16 (adjustable) Spiders make landing on the earth, the game is over. (Every time one Spider makes landing, green Spider's belt is formed)
- Every time one super web is hit, one Spider's belt is vanished.



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PlayMeter

Equipment Poll

The following are rankings of the top videos and top pinballs making above average weekly gross collections nationwide. The dollar amounts appearing are the average weekly grosses as reported to Play Meter magazine through its regular national operator survey, including both arcade and street locations. Games with less than adequate responses (less than fifty percent) but with above average collections are so noted. Games not appearing on the poll either (1) did not generate over a ten percent response rate to provide an adequate representative sampling or (2) did not register weekly gross collections above the national average. **Special note should be made that these earnings figures are gross revenues. When computing operator revenues, these amounts should be reduced by fifty percent to reflect the most widespread industry practice, that of granting fifty percent commissions to the location owners.**

TOP VIDEOS

Fourteen of 30 videos (47%) with a response rate over ten percent have above average earnings.

	Nov. 1	Nov. 15
National average for videos	\$186	\$205
1. DEFENDER/Williams	\$265	\$282
2. CENTIPEDE/Atari	\$259	\$271
★ 3. OMEGA RACE/Midway	\$242	\$257
4. PAC-MAN/Midway	\$234	\$254
★ 5. SUPER COBRA/Stern	\$236	\$254
★ 6. WIZARD OF WOR/Midway	\$211	\$241
★ 7. VENTURE/Exidy	\$196	\$239
8. SCRAMBLE/Stern	\$200	\$223
★ 9. PLEAIDES/Centuri	\$191	\$213
10. GORF/Midway	\$198	\$211

TOP PINBALLS

Eleven of 18 pinballs (61%) with a response rate over ten percent have above average earnings.

	Nov. 1	Nov. 15
National average for pinballs	\$113	\$113
1. EIGHT-BALL DELUXE/Bally	\$143	\$160
★ 2. VOLCANO/Gottlieb	—	\$135
3. MARS/Gottlieb	\$123	\$127
★ 4. PHARAOH/Williams	\$118	\$122
★ 5. LIGHTNING/Stern	\$124	\$118
6. BLACK KNIGHT/Williams	\$114	\$115

★ Conditionally Rated— Weekly average based on less than 50% response rate

Provisionally Rated Pinballs and Videos

(Above average earning games, with a response rate between 10—25%)

VIDEOS

Provisional Ratings	Nov. 1	Nov. 15
QIX/Taito	—	\$320
DONKEY KONG/Nintendo	\$288	\$300
VANGUARD/Centuri	\$250	\$250
WARP-WARP/Rock-Ola	—	\$225

PINBALLS

Provisional Ratings	Nov. 1	Nov. 15
BLACK HOLE/Gottlieb	—	\$236
SPLIT SECOND/Stern	\$158	\$137
EMBRYON/Bally	\$123	\$136
MEDUSA/Bally	\$150	\$133
FATHOM/Bally	\$164	\$130

Operator/readers who would like to join the ever-growing numbers of readers participating currently in the survey, write: Play Meter, Equipment Poll, P.O. Box 24170, New Orleans 70184.

DONKEY KONG



Nintendo

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DONKEY KONG

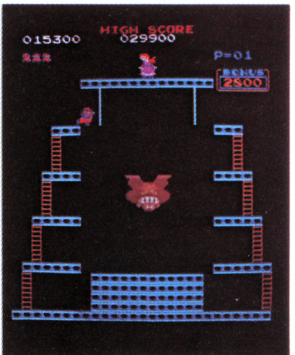
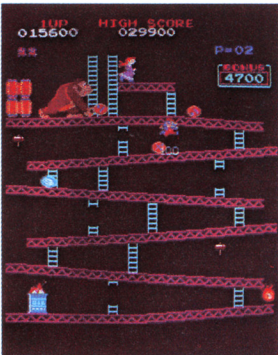
from Nintendo

EVERYONE'S GOING APE OVER DONKEY KONG!

"HELP! HELP!" cries the beautiful maiden as she is dragged up a labyrinth of structural beams by the ominous Donkey Kong. "SNORT. SNORT." Foreboding music warns of the eventual doom that awaits the poor girl, lest she somehow be miraculously rescued. "But, wait! Fear not, fair maiden. Little Mario, the carpenter, is in hot pursuit of you this very moment."

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Mario tries desperately to climb the mighty fortress of steel, to save the lovely lady from the evil Mr. Kong. Little Mario must dodge all manner of obstacles—fireballs, plummeting beams and a barrage of exploding barrels fired at him by Donkey Kong.



Amidst the beautiful girl's constant pleas for help, your challenge is to maneuver little Mario up the steel structure, while helping him to avoid the rapid-fire succession of hazards that come his way.

As little Mario gallantly battles his way up the barriers, he is taunted and teased by Donkey Kong, who brazenly struts back and forth, beating his chest in joyful exuberance at the prospect of having the beautiful girl all to himself. It is your job to get little Mario to the top. For it is there, and only there, that he can send the mighty Donkey Kong to his mortal doom. Leaving little Mario and the beautiful girl to live happily ever after. "SIGH. SIGH."

So, if you want the most exciting, most fun-filled, most talked about family video game on the market, don't monkey around with anything but the original Donkey Kong.

STARRING



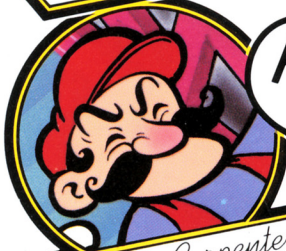
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Donkey Kong



HELP!

The Beautiful Girl



FIGHT!

The Brave Carpenter

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DPH 22 in. (560mm)
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CABARET
HT 55 in. (1400mm)
WTH 20 1/2 in. (520mm)
DPH 23 1/2 in. (600mm)
NET WT 123.2 lbs. (56kgs)

UP-RIGHT
HT 67 in. (1700mm)
WTH 23 1/2 in. (600mm)
DPH 33 1/2 in. (850mm)
NET WT 220 lbs. (100kgs)

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A major problem is proving there has been intentional, not coincidental, copying of a game—and this can prove to be difficult...

alleged video piracy, with numerous variations of themes this can prove a harder problem to solve than in other cases.

One of the best pieces of guidance on this can be found in a leading English textbook on copyright law, which says: "Direct evidence of copying is rarely available and reliance frequently has to be placed on circumstantial evidence.

"The basis of secondary proof of copying normally lies in the establishment of similarities between the plaintiff's work and the defendant's work, combined with proof of access by the author of the defendant's work to the plaintiff's work.

"The existence of a striking similarity coupled with evidence of the opportunity to copy will establish a prima facie case—a case at first sight—of copying, which the defendant has to answer," explains the English text.

Looked at in a video context this means that if a video machine is

sufficiently like another and the one manufacturer has had access to the other—such as by purchasing a model—there could be a strong case to say there had been piracy.

As pointed out earlier, there has been no public judgement in Britain to give a clue as to the view judges there take on where the copyright lies in video machines.

However, judges have reached decisions at private hearings aimed at obtaining orders such as the one outlined earlier.

And one judge, Justice Graham, in granting such an order in an action brought by Williams Electronics against a French company, does (according to out of court information we have been given) at least give some pointers.

For the purposes of granting the order, we are told, the judge decided there was a sufficiently arguable case that copyright subsided in computer programs, even those never written on paper but those written straight onto magnetic discs, for him to give

Williams its order. In a nutshell, he decided the copyright lies in the program copied onto the micro chip.

He is also said to have accepted that having a machine code version of the assembly code program stored in a read-only memory was a reproduction of, or at worst, a reproduction of a translation—of, the origin program.

And he said additionally that there could be an argument that reproduction of drawings, which appear temporarily on a TV screen, also amount to reproduction of a copyrighted article.

These findings, reported very much on a hearsay basis, are a long way from establishing a precedent to be followed by the English courts. In the absence of anything more concrete, however, they do perhaps act as some sort of pointer to indicate the sort of arguments that can be pursued by any U.S. companies which find themselves involved in a video copyright dispute on the other side of the Atlantic. •

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ANALYSIS

Wagging over video gaming in New York State

By Roger C. Sharpe

There's a distressing development that might well occur if those in power get their way. What I am referring to is a situation in New York City that is rapidly unfolding and may bear consequences in the future for the rest of the industry. The center of the controversy has to do with what have become known as gray area games, and which are, in part, in the process of being legalized for operation in the Empire State.

At this date, the stage is set for their unveiling in late October or in the beginning of November, although there already have been some discussions to stop things before they ever get off the ground. Fortunately, the media which had been strangely silent during preliminary talks, have finally brought the matter to the public's attention and no one is betting what will eventually happen.

Basically the story came to light on August 20 with coverage in both *The New York Times* and the *Daily News*. In essence, things were put on hold before they ever started, for the time being, but the scenario goes something like this: The director of the New York State Lottery Division, John D. Quinn, "who is not a lawyer, asserted that he had power to offer electronic card-game gambling under a 1976 law that allowed the Lottery Division to 'use vending machines or mechanical devices of any kind' to promote the sale of lotteries."

To this end, Quinn "without providing specifics, 'ran the computerized games idea past' several top aides to [Governor] Carey and was told to proceed with the experiment. The spokesman, Stephen Morello, said the Governor had a great deal of confidence in Mr. Quinn's ability to operate the lottery system."

Another newspaper account

provided additionally that "the electronic gaming experiment was approved by Robert Morgado, secretary and top aide to Gov. Carey." But while all this was going on, no one considered that State Attorney General Robert Abrams would step in and say that the games were of "questionable legality" and thus throw a monkey-wrench into the plans.

In fact, adding fuel to the fire, "Mr. Abrams, emphasizing that he had not been consulted by the lottery agency, said that 'it looks like a backdoor effort' to get casino gambling into the state."

So the intrigue unraveled with some other interesting facts thrown out for discussion.

"Because the state constitution contains a general ban on gambling, with specific exceptions for horse racing, bingo by nonprofit organizations and the state-run lottery, 'video blackjack and poker could be allowed only if it were deemed that the legislature meant to include such games in the definition of the term 'lottery' as contemplated by the constitution,' said Abrams."

To test the viability of his plan—or should we call it his "scheme"—Quinn had worked out a game plan that would have "avoided competition between the various games" by excluding the more than 11,000 vendors who already featured lottery games, by not telling them to operate the video games. However, what he did propose was to "install 20 video games in such public places as hotels, bars, and transportation facilities in the city, in Westchester and Nassau Counties and in the Albany area. If the games proved to be popular in a 90-day trial, then more computers were to be added in the state." The dates were to be the end of October or early November, so things were fairly close, and continue to be, regarding the

projected timetable.

Of further interest was the fact that only one company was offered the deal (or they offered the deal themselves), which makes you wonder just a bit as to what the behind the scenes wheeling and dealing was all about.

"Mr. Quinn said the card-game computers would have been manufactured and operated by Multi-Games Ventures Inc. of Yorktown Heights, N.Y., a subsidiary of the Syntech Corp. of Dallas, a computer manufacturer. Under the contract with Multi-Games Ventures, Mr. Quinn said the state would bear no financial risk.

"The company would be responsible for all operating costs, he added. The state would get 45% of the total bets, and 40% of the bets would be returned to get a nice 15% back (if my arithmetic is correct). Not too bad, especially when you consider the figures that were thrown around.

Betting on 50¢ play

The minimum bet was to be 50¢ although most would go out on dollar play. "In poker, there is no house hand. Five cards appear on the screen. The player has the option of staying pat or taking up to three cards to improve his hand. Payoffs depend on the final hand; a flush, for example, would pay more than a pair. No decision has been made on the minimum hand that would generate a payoff, one official said.

"In blackjack, the player is dealt two cards. The machine's hand—with one card down—is also visible. The game proceeds as regular blackjack, with the player either holding or drawing cards to get as close as he can to a point total of 21," noted the news account.

Now the best part to all this is that "Quinn said he hopes the games will

generate \$1 million a week and windfall revenues for education in the state." Did you get a load of that figure for just 20 games and how the appeal was to the heart-strings with money going to education.

It really is a beautiful scenario created by masters of the craft. After all, how can anyone go against Mom, Apple Pie, and education?

The important thing bringing this whole subject up is that even if you don't think there's any harm in the games, you have to still be aware of what the ramifications could be for the entire "novelty" coin-machines business which has perpetually battled against those who call the games gambling devices.

It really is scary to think that someday in the future we might find a judge somewhere trying to decide whether an *Asteroids* is really different than a poker video game. You may laugh at the notion, but consider back when there were legislators who couldn't tell the difference between a bingo machine and a flipper machine.

That's not necessarily the most knowledgeable audience out there to depend upon.

More important is what such a decision could mean for the opportunists, of which there are many in the industry. In fact, already, even before the granting of the games has been proposed, the Fascination Arcade at 47th and Broadway in mid-town Manhattan, which also operates video games and pinball machines, had suddenly turned a wall over to poker games (video variety) which are paying out awards in packages of cigarettes—and this in a city that doesn't allow free play on pinball machines. The mind boggles.

It's unfortunate, because no one can speculate as to the eventual impact on the industry—but then silence, it seems, has always been considered as being golden and this should prove to be no exception.

Update

In another development, a follow-up to the above recap story about the possibility of video gambling in New York City, has had its plug pulled—at least temporarily. The lottery director of New York had tried to put his scheme into motion which would have allowed for the operation of video blackjack and poker machines in a variety of locations, with the glut of the "profits" to go to the state and

city. However, the supposed windfall won't happen at this time....

"Video poker and blackjack—the New York Lottery's latest get-rich-quick gimmicks—were ruled out of the picture yesterday by Attorney General Robert Abrams, who said that the computerized games are unconstitutional and illegal under the legislation that created the state lottery.

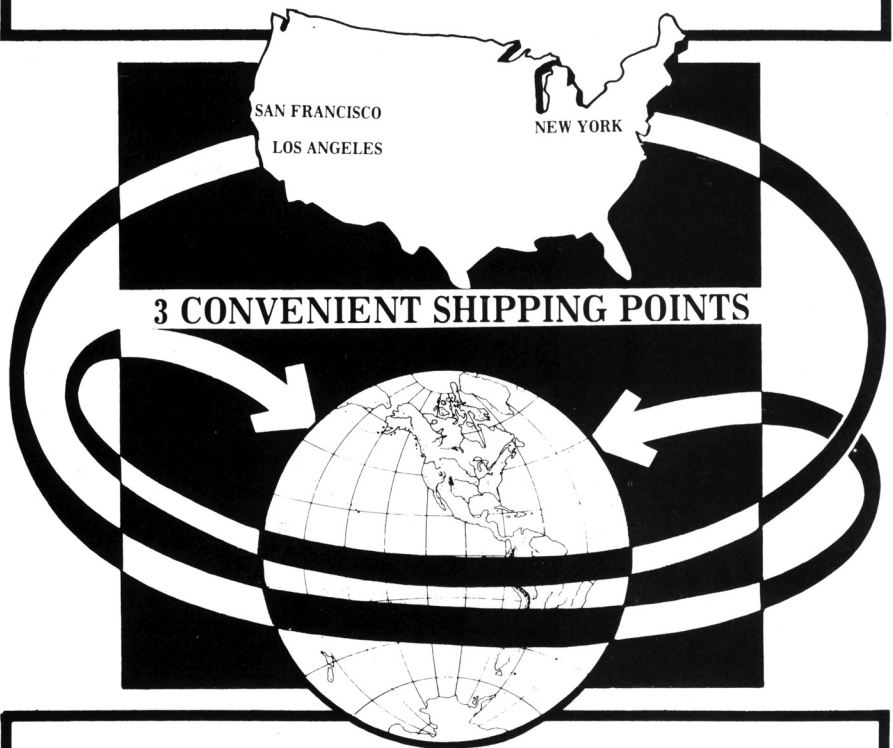
"And, in decking plans for a scheduled test run of the game here, Abrams said that permitting the Lottery Division to install such machines would be the same as allowing casino gambling—an issue

that the legislature has been wrangling unsuccessfully with for years."

My initial reaction to this report in the *New York Daily News* in early September was that it's the best possible thing that could happen, only because of the ultimate impact that could have been created if they were allowed to be put in operation.

So at least for the time being, things are safe, although I'm sure the same type of effort will be tried elsewhere as individuals try to bend the rules in order to make some quick bucks. ●

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Computer Portraits to be 'a market staple'—Pacific

The first production run of *Computer Portraits* was sold out by late September, according to Wayne Crawford, marketing director for the manufacturer, Pacific Novelty of Marina del Rey, California. Crawford termed the coin-operated computer print-out portrait machine "a terrific way to beat the 'hit video' rat race."

Crawford credited the initial success of new Pacific product to "the extraordinary efforts of several distributors," naming Circle International of Los Angeles, Coastal Games for Western Canada, and Winford Marketing, handling the state of Florida.

He noted that the walk-in product has caught the fancy of the college set in a number of areas and that it has profitable play in resort spots.

A second shift has been added at

Pacific's production facility to accommodate demand for *Computer Portraits*, said Crawford. "It's an incredible manufacturing achievement," he added. "He (Brian Semler, Pacific's president) believed in it and stayed with it. Now it's really paying off for everybody." Crawford said he expects *Computer Portraits* to become "a standard item that Pacific will build for a number of years, in addition to constant video efforts."

He summarized: "This is such a pleasure to sell. Think about it: What's on the market today that's reasonably priced, has an earning potential that's measured in years, not months, and has absolutely no competition?"

Crawford won't allow the listener to get an answer in before him: "*Computer Portraits* is it."

Empire promotes five to v.p.

Empire Distributing, Inc., Chicago, recently announced the promotion of five of its personnel to vice president posts.

Those promoted were: E.R. Barth, to vice president/finance; Robert Rondeau, vice president/general manager, Green Bay office; Richard Dugan, vice president/general manager, Indianapolis office; Henry Heisler, vice president/general manager, Livonia office; and Harold LaRoux, vice president/general manager, Wyoming office.

Jerry Marcus, Empire president, said the promotions were made for the five individuals' "outstanding performance in helping Empire triple in size over the last three years." The four branch distributorships "could stand on their own and be outstanding successes in today's marketplace," said Marcus.

Barth has four years' experience at Empire, starting in a comptroller post. He was a former assistant corporate comptroller at Seeburg.

Heiser has 18 years background in the coin-op field, six with Empire, and previous experience with David Rosen in Philadelphia and Banner in Baltimore.

LaRoux spent nine years in the insurance field before coming to Empire, where he has had 18 years in the coin industry.

Rondeau started with a peanut machine route after he attended college, later becoming sales manager for U-Select It. His experience totals 30 years in the coin industry, with 22 years at Empire.

BULLETIN:

Dugan dies at 59

Richard Dugan, age 59, general manager of Empire Distributing, Inc., of Indianapolis, newly promoted vice president, died on September 20, 1981 after less than a year long siege of cancer. Dick, as he was known by everyone, graduated from Cathedral High School in 1940, and from Purdue and Indiana University School of Law in 1959, after studying pre-law and law.

He had been associated with the amusement industry for eight years, seven of which were with Empire Distributing. Dick also worked as manager for Merz Engineering, J & J Distributing, PR Mallary Co., and Progress Tool.

Mr. Dugan is survived by his wife, Sandra, and children Nancy, Beth Ann, and Michael.

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Matthews at the supermarket's platters

MUSIC PROGRAMMING

by pat matthews

Pat's back with 25

In case you haven't noticed, I've been absent in the past for a few issues. "Hey, he's right," you undoubtedly uttered in new-found amazement. I have, but it's been for a very good reasons. First, there was a well deserved vacation...you know, time off for a little R and R. Then, there was the very popular Buyer's Guide Issue of *Play Meter*. So, you can see, it wasn't my fault. But to make it up to all of you who missed reading these immortal words of musical wisdom, you're in store for another first:

"THE PAT MATTHEWS SUPERMARKET OF MUSICAL VALUES"

Just Once—Quincy Jones (featuring James Ingram)—A & M/2357

A beautiful soulful ballad from what has to be the most varied album of 1981...Jones' genius is certainly rare and one of life's greatest pleasures... incredible vocals from Ingram on a song penned by that classic songwriting team of Barry Mann and Cynthia Weill...has all the earmarks of a classic that'll withstand the test of time....10 out of 10 on highest chart.

It's All I Can Do—Anne Murray—Capitol/P-A5023

No, not the Cars' song of same title...what we have here is nothing less than a beautiful ballad from a lady we've come to always expect the same from...verse, chorus, verse, middle eight, etc....all so nicely done...Murray's velvet tones have

never sounded better...Pop, Country, and MOR chart-bound... 10 out of 10 on highest.

Straight From The Heart—The Allman Brothers—Arista/AS 0618 Finally, a song and not just Allman Brothers record...they've finally attained much-deserved recognition and success...nothing short of GREAT!!! 9 out of 10, at least.

I'm Gonna Love Her For Both Of Us—Meat Loaf—Cleveland International (Epic)/14-0290

It's been years, but he's back...hasn't lost a step, or a pound...Jim Steinman's songwriting talent are showcased once again on this song which is, as usual, over-produced... but, in Mr. Loaf's case, that's always a plus....9 out of 10, at least.....

Memphis—Fred Knoblock—Scotti Brothers/ZS5 02434

Time-tested material given a face lift by Knoblock...two years ago an unknown and now a mainstay on the Nashville scene...solid instrumentation clinches hit status for this one....10 out of 10 on the Country charts.

Hard To Say—Dan Fogelberg—Epic/Full Moon/14-02488

A bit of country tinge adds a nice touch to this, another pretty song from the undisputed Songweaver of our time...it's from the "epic" *Age Of Innocence* lp and thusly, is only one of many great ones....9 out of 10 for sure.

Alien—Atlanta Rhythm Section—

Columbia/18-02471

First off, a new label...what isn't new is the toe-tappin' melodies from one of the greatest bands from the Southland are back...it's just good music and interesting lyrics blended together for a powerhouse of a debut for ARS....10 out of 10.

Fancy Free—Oak Ridge Boys—MCA/51169

This time out it's a ballad replete with that famous four-part harmony which has just recently been introduced to the masses with the enormous crossover success of "Elvira"...this one may crossover only because the "ground" has been broken a short time ago...nice string and overall song arrangement to compliment the outstanding vocals...10 out of 10 on highest chart.

Tryin' To Live My Life Without You—Bob Seger & The Silver Bullet Band—Capitol/A-5042

There's nothing like Seger on stage, so here it is—the ultimate sold-out experience on record!...great party song to boot...9 out of 10...

Atlanta Lady (Something About Your Love)—Marty Balin—EMI America/P-A-8093

It's breezy just like the previous smash hit "Hearts"...nice arrangement of a pretty song...somewhat localized in lyrical content, but definitely not a deterrent...should be a female favorite, especially guess where? 10 out of 10 easily.

Private Eyes—Daryl Hall & John

Oates—RCA/JH-12296

Just the right formula success... almost an identical copy of previous chart successes...nice melodies compliment a hand clapping beat...hooks all through the song...10 out of 10.

Take Me Now—David Gates—Arista/AS 0615

Talk about your label changes!... great recognition is immediately there for this mainstream female "killer" artist....Gates is in rare form and his voice has never sounded better than now—a little higher pitched, but great all the same... another simple love song, but effective, as usual....10 out of 10, MOR.

No Time To Lose—The Tarney/Spencer Band—A & M/2366

Great song, but for obvious reasons has to be worked by local record promoters...highlighted by Crosby, Stills, Nash & Young-ish vocals... entire package has been meticulously produced by Tarney, who happens to be Cliff Richard's producer....'nuff said...7 out of 10, depending on promotional push.

Say Goodbye To Hollywood—Billy Joel—Columbia/18-02518

One of Joel's favorites from a newly released collection of his personal favorites culled from hours and hours of live recordings...this one is a crowd favorite, as well, and sounds just as exciting on record...8 out of 10 possibility.

I've Done Everything For You—Rick Springfield—RCA/PB-12166

Springfield is a lot more rockin' this time out...it's a catchy, clean sounding rocker with a great hook-filled chorus....9 out of 10 for sure.

There's A Long Road Ahead Of Us—Dionne Warwick—Arista/AS 0630

Pretty song co-written by Carole King's former co-writer and ex-husband Gerry Goffin...hear it on Solid Gold and hear it now, hear it

often...the flip side has a live recording of her now—famous medley of greatest hits...10 out of 10MOR.

Let's Put The Fun Back In Rock And Roll—Freddy Cannon & The Belmonts—MiaSound/MS-1002

What we have here mostly is a great novelty item—going nowhere on radio, it should be a great way to arouse someone's curiosity when placed conspicuously in a jukebox... and to top it off, Cannon has never sounded better....no rating...the lyrics could tell the story of your life.

It Was So Easy—Stacy Lattisaw—Cotillion/46024

Sounds like old Bee Gees—great vocal range...nice chord and tempo changes...10 out of 10.

He's A Liar—Bee Gees—RSO/RS 1066

Their first record in two and a half years sounds like slowed-down Saturday Night Fever offerings with a lot rougher edges to both the instrumentation and the vocals... same, but different...Eagles' guitarist Don Henley is featured on this easily recognizable product from a sibling act that refuses to go away...though some had hoped they had...10 out of 10—may go straight to the top of the charts...again!

(Want You) Back In My Life Again—Carpenters—A & M/2370

A lot different for them...sounds like a cross between the Pointer Sisters and the Doobie Brothers.... Somewhere in the middle of those superstars "families" can be found the sound of this new record by the sister-brother act of the Carpenters... refreshing, with a great irrepressible beat...10 out of 10 on the highest chart.

Share Your Love With Me—Kenny Rogers—Liberty/A-1430

Typical Rogers spells another crossover chart success...once again produced by the genius that is Lionel Richie, though not penned by

that Commodore...another instant classic, but can he continue forever?...stay tuned to this column....10 out of 10 on all applicable charts.

Back To The '60s—Tight Fit—Arista/AS 0638

It's, as you may have guessed, another medley record....songs include: "Dancing In The Street," "(I Can't Get No) Satisfaction," "You Really Got Me," "Do Wah Diddy Diddy," "Black Is Black," "Bend Me, Shape Me," "When You Walk In The Room," and "Mony Mony,"...all songs have been given great treatment...much better production than Stars On 45....as you can see, the song selection is impeccable... public may soon grow tired of this sort of thing, but not just yet....looking for 9 out of 10.

Older Women—Ronnie McDowell—Epic/19-02129

Rousing Country and Western.... great bar music....everybody sing along!....10 out of 10, country.

Oh No—Commodores—Motown/M 1527F

Here's one Richie wrote...not much that can be said about this beautiful ballad with great harmonies and pretty melody, except that it's another instant winner...great sentimentality in the lyrics...10 out of 10 on Pop, R & B, and MOR.

Really Wanna Know You—Gary Wright—Warner Brothers/WBS-49769

It's been awhile, huh? I'll say it has. Not that Gary hasn't continued to play good music, but the chart successes have been virtually non-existent. This time he's teamed his excellent songwriting ability with that of on again off again Ali Thomson. Naturally it's loaded with electronic instrumentation as in all Gary Wright music, but not since the "Love Is Alive"/"Dreamweaver" days has all the pieces of a hit record fit so perfectly together; 9 out of 10 and that ain't bad, right Gary?

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'The Arcade School'

by Randy Fromm

Technical editor Fromm is director of arcade service schools with San Diego, Dallas, and Philadelphia branches.

Caution—high voltage!

Working on a video game monitor, to many technicians, is deserving of hazardous duty pay. The high voltage power supply in a color monitor can exceed 28 thousand volts, so some people are understandably concerned about their personal safety when they are thrust in the position of having to perform a monitor repair.

There is, however, no reason to be concerned to the point where you are afraid to work on a monitor. There are some simple precautions that you can take to ensure your safety when working on monitors, and some simple observations that you can make that will tell you if you have a working high voltage supply or not. Some of the simple tests for the presence of high voltage do not even require the use of a meter!

Why use such high voltage?

To understand why we need to use such high voltages in video game monitors, let's take a look at a typical picture tube and see how it works. In the neck of the picture tube, an "electron gun" shoots a beam of electrons toward a phosphor coating on the inside of the glass front of the screen itself. When one of these negatively charged particles strikes the phosphor coating, it causes the phosphor to glow. By moving the beam of electrons with "deflection coils" and turning the electron gun on and off, an image can be formed on the face of the picture tube.

But there is a problem here. After an electron has struck the phosphor coating, it does not simply pass on through the front of the picture tube. The glass envelope of the tube acts as an insulator and will not allow the electron to pass through it. After striking the glass front of the picture tube, the electron bounces off, and back into the "bell" of the tube.

These electrons would soon form a negatively charged "cloud" (repelling the electrons from the electron guns) if we didn't do

something to prevent it.

Enter "high voltage" to the rescue! The high voltage is connected to the picture tube through a small metal plug in the side or top. This plug looks very much like the freeze plug in the side of an engine block. It is called the "second anode," and is connected to a metallic coating on the inside of the picture tube.

The high voltage is used to attract the negatively charged electrons as they bounce off the front of the picture tube. In this way, the spent electrons are immediately sucked out of the picture tube and cannot affect the beam of electrons coming from the electron gun.

Checking for high voltage

If you lose the high voltage in a monitor, you will not see anything on the screen. If you have any kind of brightness or any picture of any kind on the face of the picture tube, your program is not loss of high voltage!

If you suspect that you have a loss of high voltage in your monitor, there are some simple ways that you can safely check to see if you have high voltage or not. The procedure varies between the different types of monitors, so we'll look at them one at a time.

Motorola XM501/XM701 black and white monitor

In most monitors, you can hear the high voltage transformer (called the flyback transformer) making a high pitched "squeal". The frequency of the squeal is around 15 thousand cycles per second, which is pretty high. Most people can hear it but some can't. If you can hear that squeal, chances are extremely good that your high voltage is okay.

Between the flyback transformer and the second anode is something called a high voltage rectifier. This rectifier changes the high frequency, high voltage output of the flyback transformer from alternating current (AC) to direct current (DC). This diode cannot be tested in the same

manner as conventional diodes.

Although a high voltage rectifier failure is a rarity, you might have reason to suspect a bad rectifier some day. The easiest, best, and fastest way to test the high voltage rectifier is by substitution. It's easy to pop a suspected bad rectifier out, and test it in a working monitor.

Another way to test for a working high voltage rectifier is to perform the following test: Secure a long thin, slot screwdriver with an insulated handle. Use a clip lead (jumper wire with an alligator clip at each end) to connect the shaft of the screwdriver to the chassis of the monitor.

Turn the monitor on for about thirty seconds, and then *turn the monitor off!* Holding the screwdriver by the insulated handle, thrust the blade of the screwdriver under the "suction cup-like" cover of the second anode connector.

Hear the snap of a spark? If you did, your high voltage is okay! The snap you hear is the high voltage stored in the picture tube being safely discharged to the ground through the screwdriver and clip lead.

By the way, this discharge procedure should be used before you attempt to remove the second anode connector from any picture tube!

Motorola M5000/M7000 black and white monitor

Checking for high voltage in this monitor is easy. The filament (heater) voltage for the picture tube is derived from a winding on the flyback transformer. A quick glance at the neck of the picture tube tells you if you have high voltage or not. Since the heater voltage is obtained from a few turns of wire coiled around the flyback transformer, a glowing heater means that the flyback transformer must be producing high voltage!

If the neck is dark, you have lost your high voltage or the filament has

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burned out. The latter is an extraordinarily rare occurrence.

The high voltage rectifier can be tested as the one in the XM501 monitor.

Electrohome and Wells-Gardner color monitors (all models)

As with the M5000, the color monitors in video games derive their heater voltage from a winding on the flyback transformer. Just look for the telltale glow to indicate the presence of high voltage.

In fact, the flyback transformer is part of a single unit in these monitors, called the "high voltage unit." The high voltage unit also includes a device known as a "voltage tripler."

The voltage tripler takes the AC output of the flyback transformer, and triples it and changes it to DC before passing it to the second anode of the picture tube. In this way, high voltages of 28,000 volts or more can be obtained without increasing the size of the flyback transformer by adding extra coils of wire.

In the highly unlikely event that the voltage tripler has failed and has still left the flyback transformer running properly—when the tripler fails it will usually short, blowing a fuse—the absolute test for the presence of high voltage is to use the grounded screwdriver to draw an arc from the second anode of the monitor.

Electrohome "Quadrascan" black and white X-Y monitor

The Canadian and European term for high voltage is "EHT". EHT stands for (as far as I know) extremely high tension. I often wonder if that describes the condition of the voltage or the technician's state of mind while working with it!

The high voltage in this monitor is created by the EHT unit, mounted on the side of the chassis. This unit contains a flyback transformer, a high voltage rectifier, and a handful of transistors and other components. The EHT unit operates at such a high frequency, that you cannot hear any squeal coming from the high voltage transformer.

To test for high voltage in this monitor, use a meter to check for the presence of the +90 volt power supply at pin 5 of the EHT connector (P900). This is the output of the +90 volt supply that is created by the EHT unit. The EHT unit also creates a +400 volt power supply and the +12,000 volt EHT supply. If you have your +90 volts, you have high voltage!

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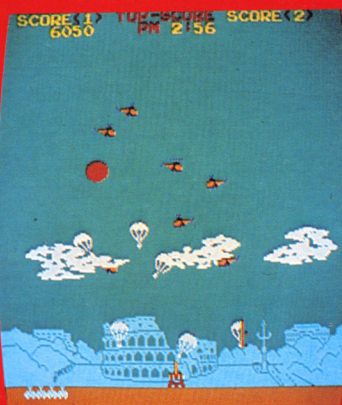
- Sonic Jet Fighters
- Attack Helicopters with Parachute Bombs followed by the terrifying destructive forces of
- MIRV [Multiple Independent Re-entry Vehicle]
- Heavy Night Bombers

The enemy is well equipped. . .but you have rocket launchers and search lights. YOUR MISSION. . .Use your skills to get high scores while you defend against the initial onslaught of bomb attacks on the Eiffel Tower of France in the time allotted, followed by a savage attack on New York's skyline and the Statue of Liberty. Rosé Alérté! Now you must preserve the ancient Coliseum in Italy from the deadly payloads of near invisible night bombers. As the intensity of the attack increases the strike forces seek to demolish Big Ben and the London Bridge. Rote Wachsam! Yes, now the enemy's intent is to wipe out the beautiful scenic villages of West Germany. Finally your defense efforts are turned to Japan and Mt Fuji.

Can you save these countries from destruction? Remember, time is against you and high scores are your goal. If you're good enough you can do it!

You can't be complacent. The strike forces become exceedingly cunning as the attack progresses from country to country.

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INSTRUCTIONS

Insert 1 coin per player.

Press 1 PLAYER or 2 PLAYER button

Press LEFT button to move friendly rocket launcher left, RIGHT button to move launcher right.

Play begins with number of friendly rocket launchers allocated per player visible in lower left corner of screen.

Press FIRE button to fire friendly rocket launcher.

OBJECTIVE:

Destroy all enemy jet fighters, then all enemy helicopters in time allotted for each or enemy MIRV is launched.

Destroy red bomb and entire MIRV.

Destroy all enemy night bombers to save country and advance to next country attacked.

ROCKET LAUNCHERS LOST BY:

Direct hit by bomb

Red bomb lands anywhere

Launcher in red area created by exploding bomb

MIRV lands anywhere

COUNTRIES ATTACKED:

France, USA, Italy, Great Britain, Germany, Japan

Game ends when all friendly rocket launchers are destroyed

SCORING:

Scoring values are displayed on the monitor shield. High scores to date register on screen.

OVERALL DIMENSIONS

Height : 68 (1727 mm)

Width : 24.5 (622 mm)

Depth : 33.5 (851 mm)

Shipping weight : (crated) 225 lbs (102 Kgm)



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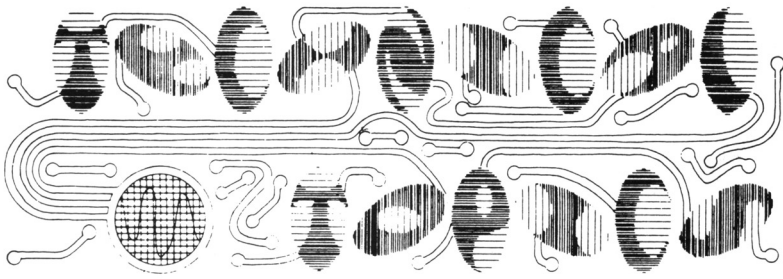


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I.C. LOGIC DESIGN COURSE

Lesson Four:

Boolean Algebra and Theorems

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In this lesson, the student is taught a mathematical system which will assist in logic circuit design. Boolean algebra provides the designer with a tool for circuit analysis and simplification.

Minimization with Boolean algebra:

Up to this point, our work has been restricted to a consideration of the basic logic gates and their use in simple combinations. Using the same techniques, it is possible to design circuits which can handle even the most complex switching functions. Perhaps the logic designer's chief problem is to implement a desired switching function with the simplest and most inexpensive circuit.

To accomplish the task of minimizing a circuit, we shall use a form of mathematics called Boolean algebra. Unlike ordinary algebra, Boolean algebra deals only with the numbers 0 and 1. Some of the fundamental Boolean relationships should already be familiar to the student from the truth tables in the first lesson. They are shown in table 4-1.

As in ordinary algebra, we can use letters instead of numbers to represent the input and output

a) $0 \cdot 0 = 0$	} AND functions
b) $0 \cdot 1 = 0$	
c) $1 \cdot 1 = 1$	
d) $0 + 0 = 0$	} OR functions
e) $0 + 1 = 1$	
f) $1 + 1 = 1$	
g) $\bar{0} = 1$	} NOT functions
h) $\bar{1} = 0$	

Table 4-1. Fundamental Boolean Relationships

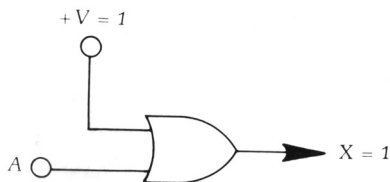


Fig. 4-1. One input of an OR gate continuously high on 1. This circuit demonstrates the Boolean expression $A + 1 = 1$.

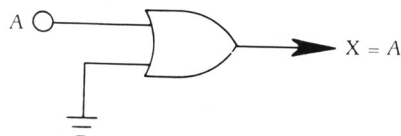


Fig. 4-2. One input of an OR gate continuously low or zero. This circuit demonstrates the Boolean expression $A + 0 = A$.

variables. This is shown in fig. 4-1. One of the inputs to the OR gate is connected to logic 1 (+V). The remaining input, A, can be either logic zero or logic 1. In either case, the output must be logic 1 as long as the other input is logic 1. The Boolean identity for this condition is

$$A + 1 = 1$$

Fig. 4-2 has one of the OR gate inputs at logic zero. From the truth table for an OR gate, we know that if the A input is at logic 1 then the output will also be 1. However, if it is at logic zero, the output will be logic zero. In this case, the output is the same as the input, and the Boolean identity is

$$A + 0 = A$$

If A is OR'ed with itself, as in fig. 4-3, the truth table again supplies the results. In this case, the Boolean identity is

$$A + A = A$$

Finally, when A is OR'ed with its complement (fig. 4-4), the resulting Boolean identity is

$$A + \bar{A} = 1$$

The circuits have shown above serve no practical value, but, paradoxically, that is why they are important. For example, if we had a circuit such as in fig. 4-5, we could simplify it consider-

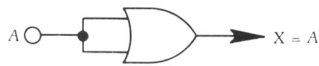


Fig. 4-3. The inputs of an OR gate, connected together. This circuit demonstrates the Boolean expression $A + A = A$.

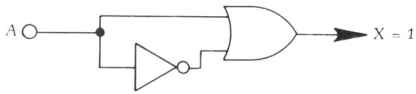


Fig. 4-4. One input of an OR gate inverted and the other input of the OR gate connected to the inverter input. This circuit demonstrates the Boolean expression $A + \bar{A} = 1$.

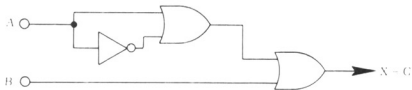


Fig. 4-5. A complex circuit which can be simplified using the previously discussed Boolean expressions.

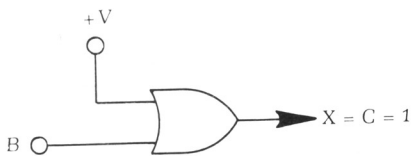


Fig. 4-6. The simplification of the circuit in fig. 4-5 after application of the Boolean expression $A + \bar{A} = 1$.

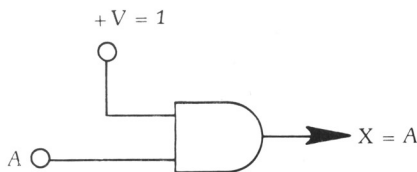


Fig. 4-7. One input of an AND gate continuously high or 1. This circuit demonstrates the Boolean expression $A \times 1 = A$.

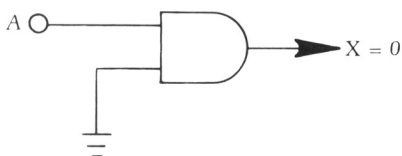


Fig. 4-8. One input of an AND gate continuously low or zero. This circuit demonstrates the Boolean expression $A \times 0 = 0$.

ably by recognizing the circuit discussed in fig. 4-4. Since

$$A + \bar{A} = 1,$$

fig. 4-6 will accomplish the same jobs as fig. 4-5 with less gates.

We also know (fig. 4-1) that $B + 1 = 1$. Not only have we simplified the original circuit, but we have eliminated it completely since its output is always logic 1.

Obviously, we have uncovered an extremely potent tool for designing logic circuits. We can further increase its power by applying the same techniques to the AND gate.

Fig. 4-7 shows the A input AND'ed with a logic 1. From the AND truth table, we know that the output of an AND gate is logic 1 only when both inputs are at logic 1. Therefore, the output of fig. 4-7 will be the same as the A input, and we have

$$A \times 1 = A$$

The truth table also tells us that any input AND'ed with a logic zero will give a logic zero output. Therefore, the output of fig. 4-8 must always be zero, and we have

$$A \cdot 0 = 0$$

If we AND A with itself, the resulting output will depend on and be equal to A (fig. 4-9). The resulting Boolean identity is

$$A \times A = A$$

Finally, in fig. 4-10, we have input A AND'ed with its complement. Since one of the AND inputs must always be logic zero, the output will always be logic zero, and we have

$$A \cdot \bar{A} = 0$$

The NOT function can provide us with one more identity. In fig. 4-11, we have two inverters in series. The output of the first inverter is the complement of A; i.e., \bar{A} , which must be A. Our identity is

$$\bar{\bar{A}} = A$$

However, the output of the second inverter is the complement of \bar{A} ; i.e., $\bar{\bar{A}}$, which must be A. Our identity is

We now have nine identities at our disposal. Disposal is indeed the right word because any of them could be eliminated from a logic circuit without affecting it. These identities are summarized in table 4-2.



Fig. 4-9. Both inputs of an AND gate connected together. This circuit demonstrates the Boolean expression $A \times A = A$.

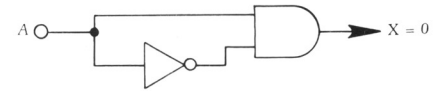


Fig. 4-10. One input of an AND gate inverted and the other input of the AND gate connected to the input to the inverter. This circuit demonstrates the Boolean expression

$$A \cdot \bar{A} = 0.$$



Fig. 4-11. Two series inverters to demonstrate the Boolean expression $\bar{\bar{A}} = A$.

Identity	Function	
1	$A + 1 = 1$	} OR
2	$A + 0 = A$	
3	$A + A = A$	
4	$A + \bar{A} = 1$	
5	$A \cdot 1 = A$	} AND
6	$A \cdot 0 = 0$	
7	$A \cdot A = A$	
8	$A \cdot \bar{A} = 0$	
9	$\bar{\bar{A}} = A$	

Table 4-2. Boolean Identities

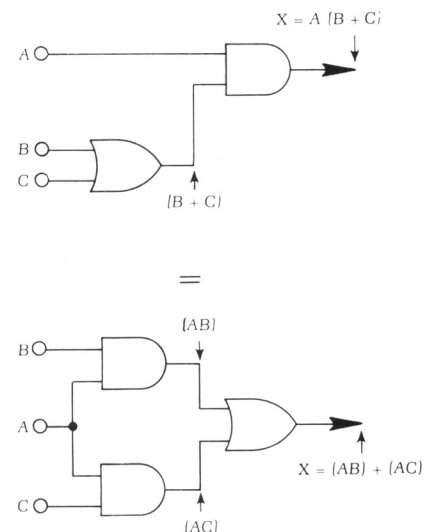


Fig. 4-12. Two equivalent circuits which demonstrate Boolean theorem 3.

Boolean theorems:

The key to recognizing the identities and using them efficiently is contained in eight theorems. These theorems are listed in table 4-3.

If we examine Theorem 3, we see that it is expressing the equivalence of two different logic functions. The same equivalence is shown in fig. 4-12.

NOTE: $AB = A \times B$. As in ordinary algebra, we have the option of putting in the dot for multiplication [here the x is used] or leaving it out; therefore, $A(B \times C) = A \times (B \times C)$.

The final proof of a theorem depends on an examination of its truth table. To illustrate, let's prove that $A(B + C)$ equals $AB + AC$. Since we have three variables, A, B and C, the number of possible combinations is $N = 2^3 = 8$. These eight combinations make up the first three columns of the truth table (table 4-4).

The value of $B + C$ is determined for each combination and placed in Column 4. Finally, we AND the value of A with $B + C$ for each combination and obtain Column 5. In a like manner, we obtain AC, AB and then $AB + AC$. Since Column 5 and Column 8 are identical, we can assume that the theorem is true for any combination of the variables.

Although it would be valuable for the student to prove each of the theorems, we shall consider only one more in this text. Theorem 8(a and b) is called DeMorgan's theorem and may be written in two different forms. DeMorgan's theorem is particularly useful in finding the inverse of a function. Obviously, the inverse of

$$A \cdot B \text{ is } \overline{\overline{A} \cdot \overline{B}},$$

but 8(a) offers an alternative expression since:

$$\overline{A \cdot B} = \overline{A} + \overline{B}$$

To illustrate the validity of DeMorgan's theorem, let us invent $A \times B \times C$ on a truth table (table 4-5). It is obvious from the table that

$$\overline{A \cdot B \cdot C} = \overline{A} + \overline{B} + \overline{C}.$$

Now that we have all the tools, let's try minimizing some actual circuits.

- 1) $A + B + C = A + (B + C) = (A + B) + C$
- 2) $A \cdot B \cdot C = A \cdot (B \cdot C) = (A \cdot B) \cdot C$
- 3) $A(B + C) = AB + AC$
- 4) $A + BC = (A + B)(A + C)$
- 5) $A + AB = A$
- 6) $A + \overline{A}B = A + B$
- 7) $A(A + B) = A$
- 8a) $\overline{A \cdot B \cdot C \cdot D \dots} = \overline{A} + \overline{B} + \overline{C} + \overline{D} \dots$
- 8b) $\overline{\overline{A} \cdot \overline{B} \cdot \overline{C} \cdot \overline{D} \dots} = A \cdot B \cdot C \cdot D \dots$

Table 4-3. Boolean Theorems

1	2	3	4	5	6	7	8
A	B	C	(B + C)	A(B + C)	AB	AC	AB + AC
0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0
0	1	0	1	0	0	0	0
0	1	1	1	0	0	0	0
1	0	0	0	0	0	0	0
1	0	1	1	1	0	1	1
1	1	0	1	1	1	0	1
1	1	1	1	1	1	1	1

Table 4-4. Truth table for proof of Theorem 3.

A	B	C	A · B · C	$\overline{A \cdot B \cdot C}$	$\overline{A} + \overline{B} + \overline{C}$
0	0	0	0	1	1
0	0	1	0	1	1
0	1	0	0	1	1
0	1	1	0	1	1
1	0	0	0	1	1
1	0	1	0	1	1
1	1	0	0	1	1
1	1	1	1	0	0

Table 4-5. Truth table to demonstrate Theorem 8 a or DeMorgan's Theorem.

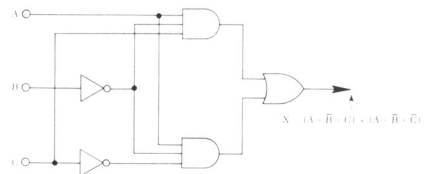


Fig. 4-13. A complex circuit which can be reduced using various Boolean theorems. The reduced circuit is shown in fig. 4-14.

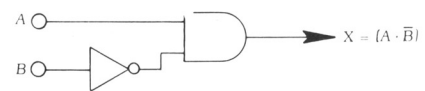


Fig. 4-14. The equivalent circuit to that shown in fig. 4-13. after Boolean reduction.

Example:

Minimize the circuit shown in fig. 4-13.

Step 1: Write the Boolean expression that describes the gating circuit. In this example, we have two AND gates whose outputs are OR'ed. This is reflected in the Boolean "sum-of-products" expression:

$$(A \cdot \overline{B} \cdot C) + (A \cdot \overline{B} \cdot \overline{C}) = X$$

Step 2: Factor the Boolean expression. In this case, we can factor $A \cdot \overline{B}$

from each term. Theorem 3 is our guide and the resulting expression is:

$$A \cdot \overline{B} (C + \overline{C}) = X$$

Step 3: Simplify by removing identities. From Identity 4, we see that

$$C + \overline{C} = 1.$$

Therefore:

$$A \cdot \overline{B} \cdot 1 = X$$

This can be further simplified by Identity 5, and the final expression becomes:

$$A \cdot \overline{B} = X$$

The minimized circuit is shown in fig. 4-14. By minimizing, we have saved ourselves one AND gate, one OR gate and one inverter. But is fig. 4-14 really equivalent to fig. 4-13? The student is encouraged to make a truth table for each circuit and show their equivalence.

Unfortunately, there is no fast and easy way to approach the problem of algebraic reduction. However, as in ordinary algebra, some techniques will usually be more valuable than others. First, keep the variables within each term in alphabetical order. Second, when factoring, look for the largest possible factor.

The following examples of circuit minimization are given along with the theorems or identities used in their simplification.

Example:

Simplify the circuit shown in fig. 4-15.

Step 1: Write the Boolean

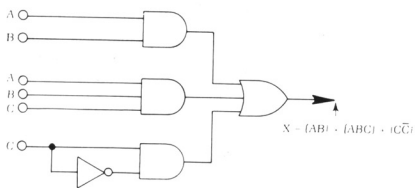


Fig. 4-15. A complex circuit with several redundant gates which can be reduced using Boolean theorems. The reduced circuit is shown in fig. 4-16.

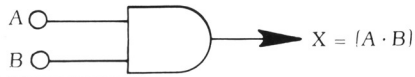


Fig. 4-16. The simplified circuit for fig. 4-15. There were four redundant gates in the original circuit.

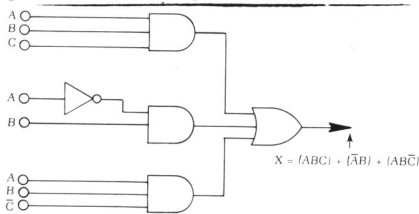


Fig. 4-17. Another complex circuit which can be reduced by use of Boolean theorem. There are many redundant gates as can be seen in the reduced circuit in fig. 4-18.



Fig. 4-18. The simplification of the circuit in fig. 4-17. Notice that all gates were redundant and the entire circuit was replaced with a conductor.

statement for the circuit. Recognizing the "sum-of-products" form,

$$AB + ABC + C\bar{C} = X$$

Step 2: Using identity 8 to reduce $C \cdot \bar{C}$,

$$AB + ABC + 0 = X$$

Step 3: Using Identity 2 to eliminate the constant 0,

$$AB + ABC = X$$

Step 4: Factoring AB by use of Theorem 3,

$$AB(1 + C) = X$$

Step 5: Using Identity 1 to simplify $(C + 1)$

$$A \times B \times 1 = X$$

Step 6: Using Identity 5 to simplify $A \times B \times 1$,

$$AB = X$$

The circuit in fig. 4-15 reduces to the circuit in fig. 4-16.

Example:

Simplify the circuit shown in fig. 4-17.

Step 1: Write the Boolean statement for the circuit. Recognizing the "sum-of-products" form,

$$ABC + \bar{A}B + AB\bar{C} = X$$

Step 2: Using Theorem 3 to factor B which is common to all terms,

$$B(AC + \bar{A} + A\bar{C}) = X$$

Step 3: Rearranging the term,

$$B(\bar{A} + AC + A\bar{C}) = X$$

Step 4: Using Theorem 3 to factor A from the terms $AC + A\bar{C}$

$$B[\bar{A} + A(C + \bar{C})] = X$$

Step 5: Using Identity 4 to simplify $(C + \bar{C})$

$$B[\bar{A} + (A \cdot 1)] = X$$

Step 6: Using Identity 5 to simplify $(A \cdot 1)$,

$$B(\bar{A} + A) = X$$

Step 7: Using Identity 4 to simplify $(\bar{A} + A)$

$$(B \cdot 1) = X$$

Step 8: Using Identity 5 to simplify $B \cdot 1$,

$$B = X$$

The circuit in fig. 4-7 reduces to the circuit in fig. 4-18.

BREADBOARD Project 4 Boolean algebra

The lamp driver used on the breadboard incorporates a NAND gate driving a discrete transistor with a lamp in series with the collector. This is shown in fig. 1.

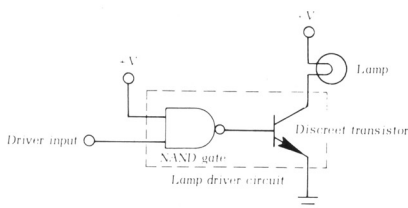


Fig. 1

When this type of lamp is used, the output is always inverted from the input. That is:

Lamp ON...Logic 0
Lamp OFF...Logic 1

The student will better understand the NAND gate and this lamp driver when he studies Lesson Three.

When a lamp is designated for a breadboard project, an inverter must be added to the driver input so the lamp will be illuminated when desired.

Therefore, for these circuits, when the student sees:

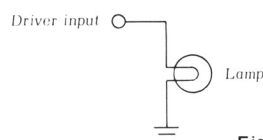


Fig. 2

He should use:

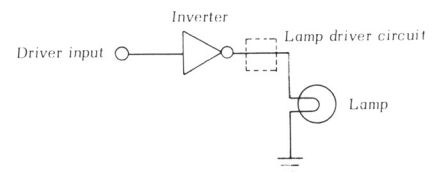


Fig. 3

Out outputs are then the same as the input. That is:

Lamp ON...Logic 1
Lamp OFF...Logic 0

The student should return to this introduction when he has completed Lesson Four and justify this inverted input by utilizing the pertinent Boolean theorem.



It takes coins just for the time to learn the games

Wizard of Wor reviewed by Robert Rosenhouse

This month's game to be reviewed brought up a very interesting point to me. In the arcade where I previewed many new games, it seemed as though these games played much faster than the previously released games. The action is a lot tougher and much harder to "get the hang of." It's almost like you put in your coins and in a few seconds, the game is over.

This fast-paced action has got to cease or it may turn out to be the doom of the video game industry. When the player puts in his money, he is expecting a two-and-a-half minute game. Not the sixty second stuff offered by these new pieces. Let's face facts: Even if your average player wins extra bases or whatever, the game will not last *much* longer, and the operator will be earning about the same amount. The way to increase revenues is to knock off the experts who win 22 ships on *Asteroids* or score 200,000+ on *Pac-Man*. These are the people who are cutting off the umbilical cord to your cashbox.

Most games get increasingly harder, and then just stop at that level. New games should continue to increase in difficulty far beyond what anyone could ever obtain. I've seen *Missile Command* go crazy after topping the 810,000 level. The player gets unlimited cities until he scores over one million! Definitely an oversight on the part of Atari.

Do not get the idea that I'm for conversion or speed-up kits, because I'm not. These add-ons cut into the manufacturers' revenue and eventually jack up the already high cost of new games. The answer is to program these games to play harder at the time when the game senses an expert. Enough said. Now let's look at the spotlighted game for this issue.

Wizard of Wor by Midway

It looks as though the Dungeons & Dragons craze is finally hitting the video game scene. First *Venture* and now *Wizard of Wor*. This game can be played by two "warriors" at the same time or by one warrior with the computer acting as the second. A random maze is generated onto the screen with escape doors placed at either side of the maze. The player steps out of his cubical and must immediately do battle with six blue dragon-like creatures called "burwors."

Each burwor has the capacity to shoot at you and to digest you if you get too close to it. If you hit the burwor, you score 100 points and destroy any bullets it may have fired. Once you destroy all six burwors, you are confronted with the red "thorwors" and the yellow "garwors". The thorwors possess the power of great speed. Both the thorwors and garwors are invisible unless in the same area as the player. When they are

continued on page 66

Vanguard scrutinized by Mike Bucki

Somewhere between maximum profit for the operator and maximum fun for the player, there is an ever-elusive middle ground where the player feels that, yes, he's received his quarter's worth, and yet he's also discovered a new challenge, one that's inviting him to play again...and again...and again. Those "agains," as the player tries to better his score, add up to higher profits for operators.

Repeat plays are the lifeblood of a successful game room. Idle time—30 seconds or 30 minutes—is a killer.

But what is enough value for a quarter? Bright lights, crisp colorful graphics, sharp clean sounds, a progressively difficult game play that challenges the novice and the increasingly skillful player—all are a part of that value. But the key element is time. So how much time? The answer I'll offer you in a moment, surprises even me.

While growing up with pinball in the '50s and '60s, I never thought much about time. Since the age of ten I've earned my own spending money and some of it has always gone to coin-operated games—pinball, shuffleboard bowling alleys, and pool—but as a teenager or even a young man of dating age, I never made the value comparison that say, a movie with a one dollar admission fee gave me two hours' entertainment while that same dollar could disappear into a pinball machine in five minutes or less. Kids, teenagers, and even young bachelors with more alluring demands on their money don't make those value comparisons.

Married and mature men: the two aren't necessarily synonymous as the boy is often very much alive in each of us—nevertheless we do more often measure entertainment values. That's why the wife and I see most movies at twilight shows or matinees. For a buck-fifty or two you can see a mediocre offering from Hollywood without feeling as if you've been robbed, but pay the full evening ticket price of \$3.50 or \$4 for a bumner and you think you've been mugged, too.

And while youngsters and young adults may not measure or weigh one entertainment mode against another, they do, at least viscerally, ask themselves: is this fun? And the key to whether or not that gut reaction is "yes" or "no" is *time*.

Did the game last long enough or did it beat me too quickly and too easily? Before that second quarter is dropped in the slot, that's the question every player asks himself, whether he realizes it or not.

So, what is enough value for the quarter. Initially about a minute, perhaps a little less, can be enough if...if the game is attractive and remains intriguing, and, more importantly, if the player can see himself progressing

Continued on page 64

Bucki review/continued

after several plays, scoring higher, higher, and higher—with occasional lapses.

The Sixty Second Rule of Thumb: If a game consistently beats a player in less than 60-seconds, its ITA (Immediate Turn-Away factor) is probably too high. If, after a few plays, the player can extend his playing time beyond 60 seconds, the game probably has a good CB (or Come Back rating).

But ITA and CB ratings, by themselves, aren't enough. Let me add a third measurement, the MO (or Max-Out rating). If a player can master a game too quickly and extend his playing hilt to an unreasonable length (unreasonable for the operator, that is) the game will not likely reap maximum profits.

ITA and MO ratings in this and future reviews will be listed negatively, from -1 to -10. CB's will appear positively, +1 to +10. In other words the ideal game, if I ever discover one, will earn ratings of: ITA -0, MO -0, and CB +10.

All the factors that make up a great game, the sights, sounds and the feel will be included in those ratings but time will possess the greatest weight.

Centuri's Vanguard

Centuri's *Vanguard* gathers a high ITA rating despite the fact that several phases of the game can be fathomed rather quickly.

Vanguard is a multi-phase outer-space motif game that gives the player an opportunity to add a quarter within 30 seconds of losing his last ship and continue play from that phase onward. To maximize profit for the operator is the obvious intention, but I don't believe *Vanguard* is the answer.

PLAYFIELD: You're flying a space ship through various tunnels, avoiding jagged peaks and dipping, but not too low, through the valleys. A joystick maneuvers the ship up and down, or left and right (the latter, not very much) and four firing buttons shoot laser beams in the four directions of the compass, N, S, E, & W.

Direct the ship through an energy field, which appears occasionally at the top of a peak, and the ship becomes an invulnerable battering ram. The firing ability has ceased but it's not needed: the ship is invulnerable. A bar graph at the top of the screen indicates the amount of fuel remaining; also, a voice says "be careful" just before the fuel runs dry and the lasers must be fired again.

To score, the player must avoid the sides of all tunnels and ram or shoot enemy ships and bases. The tunnels—which are supposed to but don't always create the illusion that the ship is moving—flow horizontally, diagonally, and vertically across the screen. In each phase the enemy ships change color, shape and size and the tunnel walls change color. In early phases the enemies can only ram the player's ship, later they can shoot it as well.

PRO'S & CONS: Press the starter button, one or two player, and a computer-like voice intones "Bon Voyage." Music at this point enhances the anticipation of an adventure. But both the voice and the music fail miserably as the game progresses. About the only mitigating sounds to be found are the explosions. Quite loud, they probably will attract other players to wander over and see what's happening. The voice fails because you can't always understand it, the transmission is garbled, and in one instance it's misleading.

When the ship is energized and has become an invulnerable ramming device, the voice says "Death Attack." Many players will assume the ship is about to be



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crushed, annihilated; but the opposite is true, the ship is actually indestructible. Compared to the wonderfully imperious character that emerges from the voice of *Space Fury*, it appears that the designers of *Vanguard* included a voice just to include a voice. And the music, in some advanced phases of the game, reminds me of bad skating rink music, although it usually matches the pace of the dancing enemy objects on the screen.

The first impression of *Vanguard* is one of variety, a wealth of shapes, colors, and movements, a game that will apparently attract one player as he watches another. The explosions are noisy. There's no delay in any of the firing buttons and a player can press more than one simultaneously. It looks, at first glance, like a lot of action.

However, repeat play quickly dispels that notion. The same tunnels appear again and again, albeit in different colors, and moving in different directions, and the same enemy ships attack but they, too, have new paint jobs, nothing more.

Novices will probably walk away from *Vanguard* very quickly. The first two phases aren't terribly difficult, yet some won't last more than 40 seconds on the first two or three attempts and they'll score less than 1,000 points. If they last a minute and a half and get to that second phase, they'll discover the hook. A printed message on the screen that indicates that for another quarter the player can pick up where he left off, he doesn't have to return to "GO."

It's a crucial decision time...for the operator. Remember the player, by this time, has run through two or three coins if he's adept, maybe eight or nine if he's not, and he's run through those coins rather quickly. He's discovered by now that phase one contains little excitement if he keeps his ship energized constantly (and

that's possible).

If he's astute, he has found out that he can joystick his ship into a "safe lane" in phase two and merely shoot those dancing UFOs like fish in a barrel. In other words, if he's expert he has spent 50 cents to \$1 uncovering very little challenge. If he's very young or not very skilled, he has probably walked away. The very young, in fact, may not be able to read, interpret, and follow the extra quarter instructions within the 30 second time limit; the wording of it is awkward.

But let's say the more skillful player answers the challenge and tries phase three, the tunnels of oddly colored tee-pees. Four to eight quarters later he has blasted away two waves of enemy ships only to end up in another diagonal "Rainbow Zone" with its dancing UFOs hokey skating rink music, and almost no challenge.

Comes the striped zone. Blast away or ram the enemy bases and easily avoid the sides of the top or bottom tunnel. A destroyed enemy base is displaced on the screen by its score value. That's nice touch; you can see how much your score is mounting without diverting your attention to the top of the screen. But if there's nothing coming at you or firing at you in the striped zone, there's no challenge.

The Rainbow Zone returns one more time to diddly-doo the player to boredom. I'm not saying that ships won't be lost in the Rainbow Zones; the UFOs in the second wave are more numerous and they dance up and down more rapidly, but the player who maneuvers his ship into a safe lane between—discovering that they'll even pass through the nose of the ship with no ill effect—will simply blast away until that phase is completed.

Finally the ship enters the vertically moving tunnel. The first wave of targets be-bop along the sides. Blast them with your East and West firing buttons and worry



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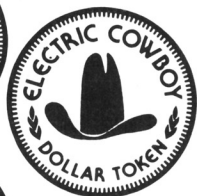
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about nothing. The second wave comes straight at the player's ship from the top of the screen. If the joystick is moved slightly left and right, and if the North firing button is fired continuously, no ships will be lost. The player flies right into Mystery City and collects his bonus.

Whoops, not quite. Are you supposed to blast away mystery city or dock there? I never could find out. I got blasted from the side and the game sequence started over.

I mentioned *Vanguard's* lack of challenge in several phases but that's not quite hitting the mark. Playing it for several hours, I was never able to complete all of its phases in less than 8 minutes or with less than seven coins spent. More often than not, it took me 8 to 10 quarters to complete the game, but sometimes I was dictating notes, so...that should be considered. But the loss of ships and/or quarters in a rapid fashion doesn't necessarily equate with challenge. The more important intangible that *Vanguard* lacks is fun.

For the novice, it eats up quarters too rapidly. Phase three, the most voracious part of the game, might prove challenging to the more dexterous, but the joystick fails here. It's left and right movement, back and forth in this phase, is limited. After several dozen runs through this phase, I felt there was little for me to control or master here. Sure there's rapid and continuous firing capability.

But the enemy rocket's lasers beam were usually too close to dodge and the joystick would not move my ship far enough away (to the left, with rockets emerging on the right); the ship remained at center screen, with good movement up and down but little or no movement forward and back. Luck, not skill, seems to rule in that situation. The game has too much control in phase three.

Overall, the expert will be bored by the repetitious Rainbow Zones, and he'll find little challenge in the striped zone, the first tunnel, and the last tunnel. Only tunnel three will seem to offer a challenge, but instead of developing a skill, it's quarters that'll get him through. All in all it's a rather unsatisfying experience.

I'm not saying that the add-a quarter-to-continue-in-this-phase idea is a total turn-off to every player. I am saying that *Vanguard* doesn't show me enough to make it worthwhile, repeatedly. Players may take that opportunity with other multi-phased game but not with this one. It's a game that may gobble up 12 or 16 quarters rather rapidly and then sit quietly by itself for hours.

RATING: ITA-8, MO-1, CB+3.

Reviewer Bucki, making his first Play Meter appearance in this column, is a broadcast journalist with an Atlanta television station and free-lance feature writer.

Rosenhouse review/continued

invisible, however, they can be traced on the radar screen that is provided at the bottom of the dungeon.

When the last of the garwors and thowors have been zapped by your trusty laser gun, a new maze appears with six more blue burwors and even more of the yellow and red creatures. Of course, as the game progresses, the monsters get faster and smarter. When the last of these creatures is killed, the elusive worluk appears and will immediately run towards the nearest escape hatch. If he is successfully hit, the next maze will score two times for each creature hit.

When the player survives the fourth or fifth maze, he is awarded an extra warrior. Then the very next dungeon that will appear will be the arena. The arena contains a lot of open space that makes the player more vulnerable. Appearing in this dungeon is the same assortment of blue, red, and yellow creatures.

When the player is skillful enough to get the opportunity to play the eight mazes, he may be confronted by the Wizard. The Wizard hurls lightning bolts at the player and can move telepathically to any position in the maze with amazing speed. If he is hit, 2,500 points are awarded to the player.

The thirteenth dungeon (which isn't seen too often) has absolutely no walls, so the player must be able to defend himself as he is attacked from all sides. Because this level is very difficult to get to, the player is again awarded an extra warrior. The game continues forever with harder and more lethal dungeons.

The factory setting of turns for 25¢ and five for 50¢ may not make it in your location. Therefore, I strongly suggest setting the game to yield three men for a quarter and seven for 50¢. If you do set the game for three for 25¢ you ought to give the player his extra man at the fifth dungeon rather than the fourth.

With the current popularity of Dungeons & Dragons, this game may turn out to be a solid piece. But because playing time is short and the game is difficult to master, it might not earn as well as some other games.

Graphics: Good

The characters are colorful, with many reds, blues, and yellows, but seem a bit 'scratchy.' It may have been the monitor, but I doubt it.

Sound: Good

From the time that the coins are deposited and all through the game, the music suits the game and its mood. The voice used is the same as was used in *Gorf*, but not quite as effective.

Appeal: Fair

When I first laid eyes on *Wizard of Wor*, I said to myself, "Oh, no! Not another *Berzerk*." If you compare the object and playfield, you will find many similarities, but enough differences to set it apart from *Berzerk*. The game play is very tough, and this may make the players wary of the game.

Progressions: Very Good

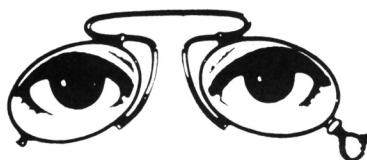
As stated before, the play is hard but is a continuous uphill battle against the machine and will provide a unique challenge for your players.

Instructions: Poor

From a player's point of view, the only way of figuring the game out is to watch the attract mode or look at the instructions. On this game, player instructions are detailed enough to give the player a working knowledge of the game. Simple rules like "Shoot the dragons" are not enough. Maybe we'll see more instructions provided in new releases from all of the manufacturers. They do it for pinball; why not for video?

Again, the hardness of the game may scare off potential customers, but the game does deserve a fair shake. Averaging the above scores, *Wizard of Wor* gets a 5.2 overall. This gives the game a fair to good rating.

Upcoming games for review include *Omega Race*, *Super Cobra*, and *Pleiades*. I'll be looking for new games and, of course, I will report them to you as fast and as early as game releases permit me to. So, until next issue, keep those customers happy by providing them with the best form of entertainment with machines in tip-top condition.



By Roger C. Sharpe

Hero-freezing pizzaz and a flashback in styling

Just as baseball had its split season, so too does it seem that pinball is beginning to gear up for its second half year of play. Every year summertime proves to be a lull due to vacation times and factories generally slowing down production, although different models always were plentiful or at least appeared to be so. In 1981, however, we haven't exactly been inundated by equipment as most of the companies have gone with the tide trying to make the best of what has been a soft market for pinball. So instead of an infinite and often overwhelming amount of games, we have seen less models, and these on the whole, have been some of the better efforts ever manufactured.

In truth, everyone has been looking for that knockout machine that would single-handedly turn attention back to pinball, but in today's world, with a greater and more diversified audience, this possibility no longer exists as it once did just a few years ago. And so the work goes on, highlighted, as I've mentioned in the past, by unique improvements, design twists, and the further utilization of programming capability that together may be missed in the grand scheme of things.

But, for the most part, earnings remain fairly stable in many areas and the exceptional effort can still pull in attention as well as business which such standouts as *Eight Ball Deluxe*, *Black Knight*, and a few others have shown during the year.

Yet, even with market conditions being what they are and some

extremists going so far as to proclaim and almost demand pinball's demise—the reality of the situation is that the games coming up and those planned for introduction at the AMOA show are exciting, to say the least. The biggest problem is whether or not the majority of them will be given the chance to show their worth.

Having had the chance to play the models that are probably now just beginning to hit the streets, I have to admit I'm impressed by what's coming down and the renewed strength of the games for what appears to be a fall/winter season push.

If you've been in the boondocks and haven't seen or heard the upcoming games I'm referring to, make a note to check out Gottlieb's innovative *Black Hole* with its playfield underneath a playfield that offers a twist to the meaning of double-level pinball. There's *Centaur* from Bally with a solid playfield design, some interesting programming touches and a different approach to multi-ball play with up to five balls possible on the board at once. Or how about Stern's *Catacomb* with its flipper in the backbox that affords a novel way to expand play and utilize literally all available space, no matter where it is. Williams also has geared up with the jam-packed double-level, multi-ball *Solar Fire* and a total effort, *Barracora* that gets back to pinball basics in a strong package that combines stunning graphics with balanced action.

And that is just a brief sampling of

what's ahead with the Chicago show sure to draw out even more machines that should prove pinball is far from dead. In future issues we'll have a chance to take closer looks at these and other games, although for now, the time has come to see what Stern's *Split Second* is all about, as well as Bally's *Medusa*. Both are interesting games that have their fair share of features and nuances.

Stern's *Split Second*

They haven't come out with that many models this year, not surprisingly concentrating on what has been a video success story, but Stern Electronics hasn't abandoned pinball or the challenge of producing something different. Following *Lightning* comes this interpretation of double-level, multi-ball action on a "big game" size machine.

PLAYFIELD: With what is really a split field design, the action begins on a plunger shot that's strong enough, at the top level, with the ball coming up to a top left flipper that helps in getting a five-drop-target bank. Also included on this almost self-contained playfield area is a right side lane that holds captive balls, three targets (1-2-3), a bottom right flipper, and an access ramp down or up at the left as well as a little metal from that drops the ball down to the field below.

Meanwhile, back to the rest of the board, at the top right are three lanes which lead down to a narrow area of two thumper bumpers before opening to a right side three-drop-target bank and a short spinner lane just behind, as well as a more

Roger's Ratings At-A-Glance

Bally's MEDUSA##1/4 Stern's SPLIT SECOND.....##1/2

centrally located three-drop-target bank at mid-field. Also at the right is a roll-over and opening for a return back to the plunger.

Rounding out the layout are two left side targets at the foot of a ramp, and over to the right a hidden little turnaround shot for increased points. The bottom brings the double lanes back on both sides to the flippers and hold two numbers for the interior lanes and extra ball or release or captive balls when lit on the outside pair.

ANALYSIS: The size of *Split Second* tends to lessen some of the inherent design problems encountered with standard efforts, while also attempting to offer some balanced play. The top field drop targets build up point values and the potential of releasing any captive balls as well as providing some decent action, especially from the bottom right flipper. The lower field has the primary shots of the two drop target banks with the right one offering bonus multiplier up to 15X and the chance for lighting that left side extra ball lane—while the other bank of targets can mean the spotting of a letter in filling out S-P-L-I-T S-E-C-O-N-D as well as lighting specials at the appropriate time, which is tied into the center target.

As for that hidden area under the top level of the game which is a turnaround for the ball, after too many weeks of play and too much money invested, I'm still trying to figure out what the meaning of the time increment values are and how it effects the scoring.

For the most part, however, the strategy of the game is to spell out the name, get the numbers (1 through 5) out and then activate multi-ball play. And since this doesn't happen that often, the scoring tends to be low even with the large bonus multiplier, which tends to keep the challenge alive. Shots are basically left to right and right to left off the bottom flippers with some reverses possible and a decent entry at the left side up the ramp to the top field.

GRAPHICS: A further departure from space (outer space, that is) and a return to an old pinball staple—the thrill of the big top with people flying through the air on the backglass and the added sounds of the circus incorporated to round off the effect. One thing that can be annoying speaking about the sound on the game is the repetitive "Hurry, hurry, hurry..." one hears when shooting at that top drop target bank. It can get to be a bit to much.

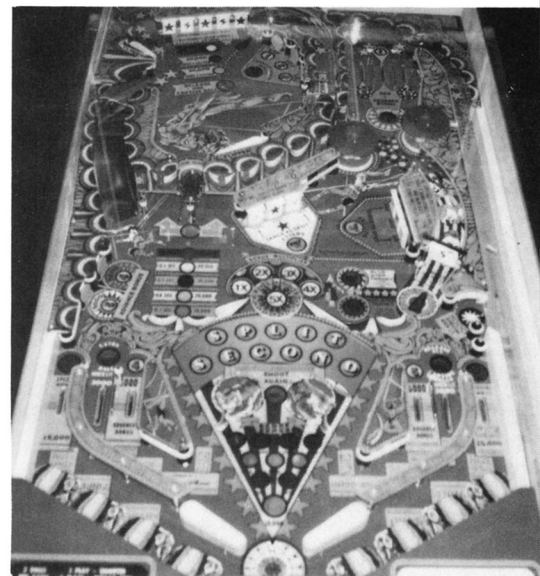
PLAY: Although *Split Second* does have scoring potential on the surface, hitting big seven-digit numbers is going to be difficult and for extra ball areas you should be all right with a first limit at about 360,000 points followed by 800,000 points. On free play you might want to increase these levels by about 200,000 points depending upon your percentaging and how the players are hitting it.

PROS & CONS: This signature model from Harry Williams has its moments, but doesn't really hit the mark. A problem Harry has had on *Free Fall* that surfaces here is a right side that isn't totally utilized for the player if he shoots between the target banks or even through the spinner to a narrow area that doesn't supply much play from the bumpers. On *Flight 2000* the similar angles worked far better only because there was more space and action. In addition, the fact that there's really only one direct shot to the ramp and up to the top field from the right flipper tends to reinforce this side-to-side bias.

Lastly, I have difficulty with the lack of access back to the top for that much needed rest period most players tend to look for, which tends to confine the play once the ball is on the field although there is that right side opening back to the plunger and a sometime possibility of shooting the ball from the left flipper all the way through to the right side lanes, but this portion of the field is really wasted.

In essence the play centers around making the drop target banks on the lower playfield and trying to leave the center target standing last for the chance to light either a special or extra ball possibility. Multi-ball play, on the other hand, is incidental to the play only because there are no increased field values or some other reward that's tangible enough to have a player go for it as a primary feature.

The last observation is just that double-level games are no longer novel only because they have been done to death and as a design option there is a need to move back to basics and maybe resurface this form at some time in the future when it's the exception rather than the rule. What is nice about *Split Second* and should help to keep it competitive for repeat play is that the scoring doesn't abuse the seven-digit capability and provides a much needed change of pace from many of the games currently hitting the



Stern's *SPLIT SECOND*

streets.

RATING ## ½

Bally's *Medusa*

In viewing the year so far, this company has truly been the most aggressive and productive of the pinball manufacturers in an effort to find the right combination that might appeal to the players. Every game seems to have had a little something extra or different, and this model is no exception, following on the heels of *Embryon* and *Fathom*.

PLAYFIELD: The layout on *Medusa* is topped by a row of drop targets, which begins with one standing, then two, on up to the maximum of seven. These front a center red target as well as one green standup on either side, so the configuration is targets in front of targets. At the left side is a kick-out hole, and move back to the middle for Bally's return to their "zipper" flippers, complete with a spinner between and just below. There's a left side rubber and right side kicker for this top area, while both sides offer wire forms for access through either up or down.

At midfield there is an array of four thumper bumpers and an infield digital display similar to Stern's *Lightning*. The left side features three targets (1-2-3) and is balanced at the right by a four-drop-target bank. The rest of the bottom is a departure from the norm with an array of side posts and star rollover that can sometimes provide nudging for the ball to get to a short lane over to the flippers.

The kickers are fairly short and in the space between translucent flippers that light when they're flipped, is a "demon" center post for possibly popping the ball back up into action.

ANALYSIS: To get a total picture of *Medusa* and what it has to offer in the way of play features, you really have to begin with the shooter/plunger lane since there's a timed light sequence for increasing values on the playfield before the ball ever gets through the gate. It's an extra involvement for the player right from the start and utilizes something that has mostly been a lost part of the board. As for the design itself, what is interesting more than anything else is the illusion it gives as being a double-level game with the top configuration as well as the use of artwork and color tones. The resetting drop targets at top are a nice touch, and the addition of a top band of red lights indicate how well the player is doing in finishing off the bank.

There is a negative feature—that middle red target—but rather than being totally obvious to the player, it serves its purpose without detracting from the game. The basic play is to hit these targets, land in that top left kick-out hole for increased values as well as a possible last ball extended play tabulated in the left side digital on-field display.

Move down on the field and the three targets at left can mean increased points when hit out in

sequence. Also for balance the four bank at the right can mean a special. The center digital display also can mean the lining up of numbers tied into these right and left side targets for special values as well. Interestingly, the layout of the board is such that the shots back up the top from the left (where bonus multiplier can be achieved) or from the right, are perceptually far more difficult to make than is really the case.

The symmetry isn't too bad and what may have been a game that could have been "laid on" by players is infinitely more difficult because of the bottom set-up, although this has also made the machine not the most comfortable to play. There are good shots left-to-right and right-to-left as well as reverses, and the top with the zipper flippers can be fun for trying to get down the drop targets or hitting the two green targets.

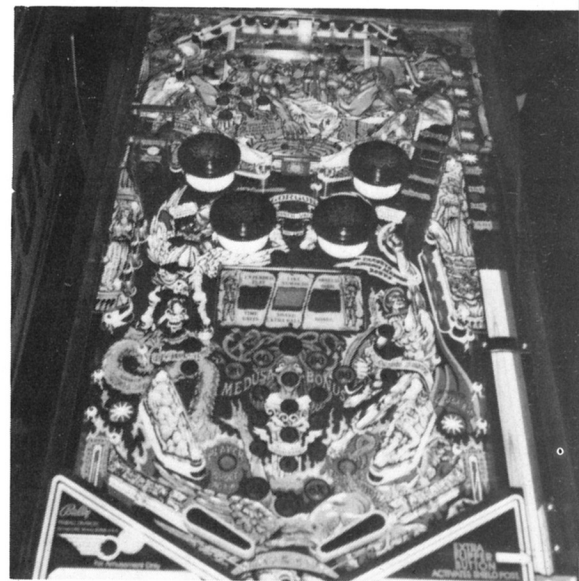
GRAPHICS: The artwork is striking and very red, which is the predominant color throughout the game. It is a distinctive Bally effort and an effective eye-catcher, as once again we see the continued departure from outer space themes and the return of multi-motif pinball possibilities.

PLAY: The scoring on *Medusa* can be high with the storage of out-hole bonus by increments of 20,000 points up to 80,000 points. Throw in some multipliers and the seven-digit readouts are easily utilized. For extra ball areas you may want to try a 500,000 point and 1,000,000 point limit, while free play should be okay with an increase of about 250,000 points to each level.

PROS & CONS: *Medusa* is the first effort of a new Bally designer and does show some promise. In fact, I was very impressed by the game when I first saw it, especially the lights at the top of the field and the use of lights in the flippers, but this tends to wane over time and is just as the Williams *Blackout* feature of the game turning lights off at a point in play. It's cute but not enough to sustain the play.

The real problem is in the play and the bottom side posts and unconventional bottom that tends to lack a cohesiveness necessary to keep the game going ball after ball, making it difficult to get comfortable with the game and set up shots. Somehow there isn't enough to keep things going over the long haul for repeat play, although the top is nice with its small flippers, but that's only half of the game.

One of the big problems, and



Bally's MEDUSA

something that has become a factor on recent Bally games, is the lack of power and strength on the flippers which tend to feel soft and sluggish—almost spongy in their action. Hopefully this can be remedied since it really takes away from the game and also influences the players approach to how he gets into the game.

In essence, *Medusa* is a standard model with a bit of pizzazz that may tickle the player initially but won't keep him coming back for more after

'The design of pinballs is constantly different, challenging, and exciting, no matter what the game. It may be the one link that has kept pins alive.'

he figures out what the game is about.

RATING ## ¼

In terms of games this time around, these are the two in the spotlight. But there's also something that needs to be commented on because of its impact on the games. What I'm referring to is the letter in the September 15 *Play Meter* issue by Paul Thiele of Los Angeles. Mr. Thiele was commenting on a story I wrote in a past issue and trying to give his own feelings, while also attempting to interpret some of my views. One point I take exception with is his claim that "video games require and develop purer skill in the player." It is something I disagree with only because of the nature of pinball and video and how one wants to define skill as applied to these two types of entertainment.

The 'art' of pinball

The skill of controlling flippers and being able to direct a ball to a

particular part of a board or to a specific target as a specific time, is truly an art unto itself and no less valid than being able to push a button or move a lever at the right time to hit oncoming targets on a video screen. Some might even suggest that the variations possible on a flipper might even be a cause to think that this is the evidence of even greater skill, but that really isn't the point. What is important is to realize that both forms have their own unique worth and appeal to the variety of players out there.

Thiele also offers that the features on a pinball machine tend to, in fact, take away the probability of ever having true control over the game—and maybe this is true in total, but it is also this variability that tends to separate pinball from video, only because who would ever want to have total mastery over anything? It would be like getting holes-in-one every time you're at the tee, or bowling a perfect game every time out. Where would the challenge be if

this were the case? And, more importantly, how long would we continue the endeavors if there were no guesswork or surprise?

The thing that Thiele mentions which is very interesting is that video tends to earn greatly when the players are learning how to play it and then tails off after they've achieved their own caliber of perfection. Maybe this point alone tends to reaffirm the beauty of design in terms of evaluating and looking at pinball, because it is constantly different, challenging, and exciting no matter what the game. It may be that one link that has kept pinball alive over the years. Who knows?

Anyway, here I sit, waiting for the birth of yet another Sharpe and whether the timing will be such that I won't get a chance to hit this year's AMOA. It is exciting and unbelievable and to those who have expressed their best wishes I offer thank-yous and the hope that all will be okay. Until next time then, as always...be well and prosper.

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'Qix' kicks off

Taito America's newest game, QIX ("kicks"), "is programmed to incorporate the possibility of trillions of configurations allowing for inestimable strategies. Qix stays unique play after play," according to the manufacturer.

The object of the game is to box in Qix, the spinning helix, by filling in 75 percent of the screen with boxes of color. Bonus points are awarded for portions of the screen filled over and above 75 percent. Boxes are drawn with a player's marker that pulls along a "Stix" behind it when a player presses a slow or fast draw button.

Players must now allow the whirling QIX to hit a line of the box before it is completed. As the game progresses the QIX divides into two. Separating them by drawing boxes between them earns 2 times bonus value. Separating them a second time scores 3 times bonus value, and so forth.

The player must avoid two "Sparx" that travel along the Stix or they will ignite his Marker. The Sparx stop their mad chase only when the Marker is caught or the screen is filled to at least 75 percent capacity. Just when the player may feel he has them outsmarted, the Sparx begin to multiply and become even more dangerous and then become aggressive "super Sparx."

If the player is too slow on the draw and doesn't complete a box, the Fuse will shoot up the Stix and explode his Marker. The Fuse will deliver a burning fate to the player who makes a wrong turn and boxes himself into a Spiral Death Trap.

Qix comes in a new electronic system that allows for more on monitor audit and test screens, flexibility, and realism of configurations and innovative special effects like the ominous bellowing sounds in stereo.

The cabinet has front-door programmability with swing-down monitor mounting and logic boards on a hinged back door to simplify service. These logic boards are compatible with the Taito Tech Signature Test System for board troubleshooting.

Qix is available in Triline and Taito America's new cocktail table version.



Around the world in 80 plays

GDI Inc. has recently entered the video amusement game market with *Red Alert*.

Play on the new game proceeds as follows:

"Headquarters" has issued orders to defend six countries and their principal cities from the sneak attack of the enemy's Strike Forces, consisting of Sonic jet fighters, attack helicopters with parachute bombs followed by the *destructive* forces of MIRV (Multiple Independent Re-Entry Vehicle), and heavy night bombers.

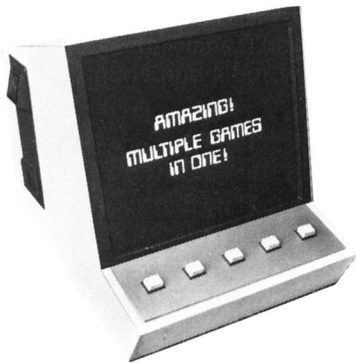
The enemy is well equipped—but the players have *rocket launchers* and *search lights*.

The players must use their skills to get high scores while they defend against the initial onslaught of bomb attacks on the Eiffel Tower of France in the time allotted, followed by a savage attack on the New York's skyline and the Statue of Liberty.

Then the player must preserve the ancient Coliseum in Italy from the deadly payloads of near invisible night bombers. As the intensity of the attack increases, the strike forces seek to demolish Big Ben and the London Bridge. Afterward, the enemy's intent is to wipe out the beautiful scenic villages of West Germany, and finally the players' defense efforts are turned to Japan and Mt. Fuji.

The strike forces become exceedingly cunning as the attack progresses from country to country.

"Peace Forever" flashes on the monitor when a player has successfully defeated the enemy shock waves.



Countertops 3

Shanco International Ltd. is the manufacturer of a new coin-operated, counter-top video game called *Little Casino* that plays in sound and color.

It is an original game that has three different games in each unit. All games in unit will play with either one or two players. The games contained in *Little Casino* are Black Jack, Draw Poker, and Craps. *Little Casino* is strictly an amusement game and was made to be placed in bars, lounges, clubs, etc., said the manufacturer.

For 25¢ the player has his choice of which of the three different games he wishes to play at any given time. The player starts with 10,000 points with any of the three games offered and can win up to 990,000 points. The player receives five hands of Black Jack or five hands of Draw Poker, or five rolls of the dice. Unlimited wagering is permitted with each game.

Little Casino is copyrighted and has been thoroughly field tested in the Atlanta marketing area with excellent results, a Shanco spokesman claimed. Shanco's game comes in three different and attractive earth tone color combinations. Shipping weight is 37 lbs. Out of carton weight is 33 lbs. Shanco has its own service department and also offers a service school for technicians. The game has a 90 day parts and labor warranty.

Pinshooting trick-or-treat

Bally Pinball Division set an October 1 release date for its new *Medusa* pin, containing a number of "timing" features and featuring a colorful mythology theme.

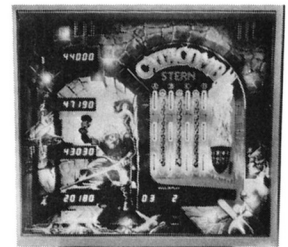
Leading off its playfield is a timed plunger skill shot which deposits the ball into the upper playfield. This section includes a progressive drop target bank relating to the Olympus bonus.

Behind this bank is a row of progressive lights, the "bonus bar," that has a series of four-step plateaus. Their advance relates to the Progressive Drop Target Bank. The threat lies in a negative target behind the drop targets that subtracts from the bonus bar.

Also tied to this upper playfield is a set of Bally's "zipper" flippers that close only for 5 seconds after the progressive drop targets are hit.

The lower playfield is challenging with its 6-digit display that contains the key to "conquering MEDUSA." Two digits on the left relate to the "extended play time units," two digits in the center relate to a "match digits" extra ball feature, and on the right are two digits for the "panic post" credits.

If the extended time units are not qualified for collection by the last ball, each unit is worth 1000 points.



Losers go under the table

Stern Electronics, Inc. announced plans for production of its latest pinball game, *Catacomb*, scheduled for release in late September.

The solid-state four-player game boasts a bonus playfield in the back-glass, a feature that gives the player added playtime and an extra chance to activate regular playfield and scoring features.

A game of strategy and skill, *Catacomb* is equipped with a 43-word audio vocabulary and an array of innovative play/action features, including:

Bonus lights control, whereby the player controls color selection of bonus lights with a flipper;

Multi-ball capability, with the "captive" ball released when four color-coded bonus lights are activated. As many as three balls can be launched simultaneously onto the playfield.

An extra-ball feature allows the player to win extra ball after knock-down of four drop-targets, in sequence.

Superbonus of 136,000 points is achieved when 16 bonus lights are lighted.

Whip action flipper in bonus playfield adds to *Catacomb's* play.

Defender revisited

Williams Electronics has introduced *Stargate*, a video game to test anew the play skills which players learned with *Defender*, Williams' first video game.

One of the new strategies a player might utilize would be to immediately maneuver his ship into the *Stargate*; once in, he'll be instantly translocated to that part of the planet where the humanoids are being abducted. Rescuing four humanoids and re-entering *Stargate* will warp his ship three waves ahead in space and time, setting off special effects and racking up high points.

If the worst happens, and all ten humanoids in a wave are abducted, the universe will explode, leaving deadly mutants on the attack. But, should the player be able to survive to wave five, his universe will be restored with his humanoids safe.

The fifth wave brings its own special confrontation, an Yllabian Dog Fight. Although there are no landers to abduct humanoids, all the other menaces will have stronger and larger forces concentrated against the player for a space battle.

As an added edge in an emergency situation, a player can utilize a secret weapon, the Inviso Anti-Matter Cloaking device. Activating this feature renders the player's ship invisible and invulnerable. Inviso Time, plus a new ship and a Smart Bomb are earned with every 10,000 points scored.

Stargate diagnostic testing not only includes *Defender's* comprehensive systems of ROM, RAM, CMOS, RAM, sound, switch, color RAM and test patterns, but is enhanced to give more capabilities—including the awarding of ships, pricing selection and personalized attract mode messages. The operator's option is for 1 coin play with 3 ships or 2 coin play with 7 ships. Forty all-time scores and 6 daily high scores can be registered as an extra play incentive.



Video attack comes in waves

Megatack, a new laser base action video game, has been announced by Game Plan, Inc. According to the manufacturer, "*Megatack* is like two games in one, loaded with excitement. The player maneuvers his ship with a joystick control, and with both left and right hand buttons, fires his laser at attacking monsters and space rings. Sound is fantastic and exciting."

In the initial sequence, monsters attack with lethal bombs. The second mode features space rings which expand and contract to absorb and destroy a player's ship.

Monsters attack ships in waves. The player can fire his laser to the right or left at 45 degree angles or straight up the center. Point values increase as the game progresses. The Score for monsters and space rings ranges from 100 to 900, depending on the phase of the game in which they are hit. If not blasted, they continue to grow until finally they absorb the ship and laser.

The unit features the same self-diagnostic modes as previous Game Plan products: color fields, color grids, continuous video clear, continuous video write, video RAM locator, DIP switches, and coin and start switches, player switches, and an audio computer.

Easy access through the back door gives operator view of the board set, power supply and monitor. Control panel removes for fast and easy switch inspection. Game Plan's proved coin drawer is equipped with twin chutes to reduce service time. *Megatack* is produced by Game Plan under license from Centuri, Inc.



Black Hole: consumes quarters

Black Hole, D. Gottlieb's new two level playfield, multiple ball pingame, incorporates a design twist in its double-level playfields. The second playfield, which is fully half the size of the main playfield, is not located above the normal playfield as has been the case with some recent games, but is located below the playfield, inside the game cabinet.

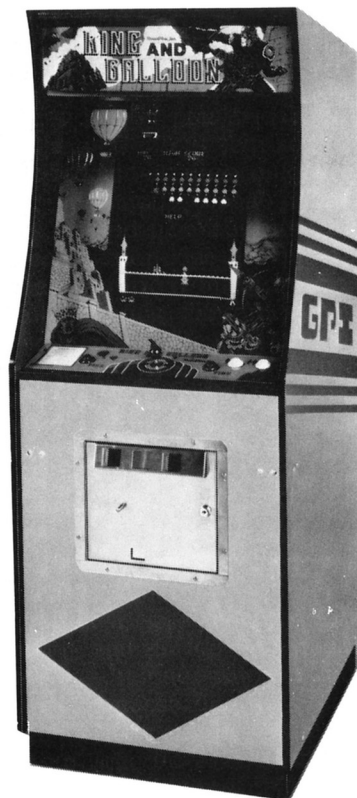
The player views the *Black Hole* lower playfield through a blue-tinted plexiglass panel mounted in the upper playfield. Players may enter the "Black Hole" at any time through the Gravity Tunnel and begin to accumulate bonus score which is logged on a playfield display.

The lower playfield's angle of play is the reverse of the upper playfield, so the player is actually shooting the ball back towards himself while in the *Black Hole*...as if by anti-gravity. This gives the player a spectrum of coordination and perception problems to cope with while learning how to play the game.

In order to assure a safe re-entry to the upper playfield, the player must complete at least one of the lower drop target banks.

In addition to these design features, *Black Hole* sports infinity backglass lightning, new lightbox animation, outer space graphics and a speech/sound system. Marshall Caras, Gottlieb's VP/marketing, said *Black Hole* "has been able to sustain earning levels on a par with any video game on the market today and that in itself is quite an achievement, but it has also convinced the industry that pinball is on the ascension. I fully believe *Black Hole* will mark a turning point in the pinball industry similar to the boost *Space Invaders* gave the video industry several years ago."

Black Hole is soon to be shipped to both domestic and foreign distributors.



Save the King!

Pure fun and high technology are brought together in *King and Balloon*, the latest color video game from Game Plan, Inc., Addison, Illinois. A king who speaks, a bowman (player) who shoots lasers, and balloons which capture kings are the play ingredients of this upright monitor game.

The player controls the cross-bowman who moves from left to right across the castle tower. The bowman shoots lasers at a squadron of 42 balloons which attack the castle. If one of the balloons captures the king who is on the castle tower, he disappears with a cry of "Help, help, save me," an audible and visual appeal for help.

Points are scored when the player shoots the balloon coming down; and more points are logged if the balloon is shot down when the king has been carried away. If this happens, the king is seen on the screen coming back to the castle with a parachute umbrella saying, "Thank you." The faster the player rescues the king, the greater the score total. Once kings are gone, the game is over.

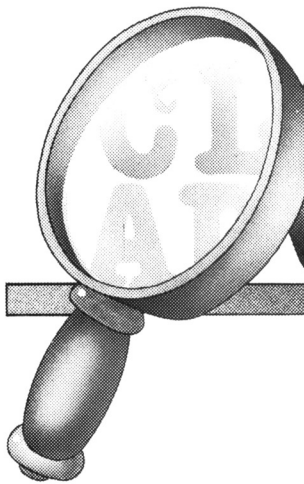
Multiple squadrons of 42 balloons, in waves, keep attacking the castle. As a player knocks out one squadron, a new, faster moving squadron appears.

The audio being part of the software and not a cassette or tape is one of the features of *King & Balloon*. The fact that the screen contains the same message as the audio enables the operator to control the sound.

The operator can also adjust the unit to have one to two players, one or two coins, and have one, two, or three kings in play. Bonus point settings can also be established by the operator.

With the software containing all the video and audio action, the hardware is the tested, unit found in other Game Plans games. The same self-test features, easy access door, service switches, and diagnostic tonal signals make for trouble-free operation and service.

Game Plan, Inc. produces *King and Balloon* under a Namco license.



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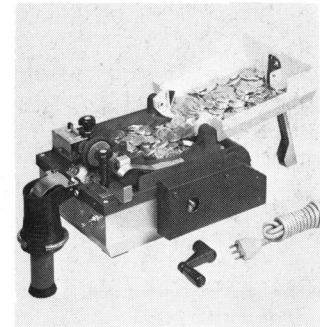
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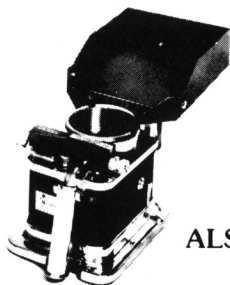
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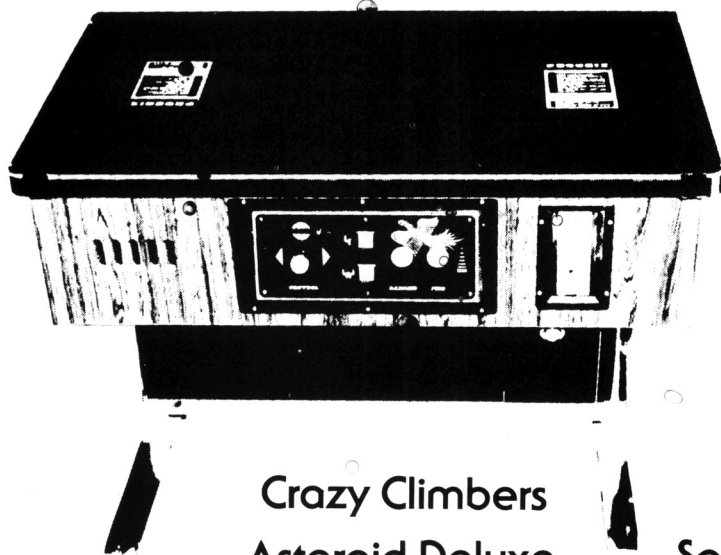
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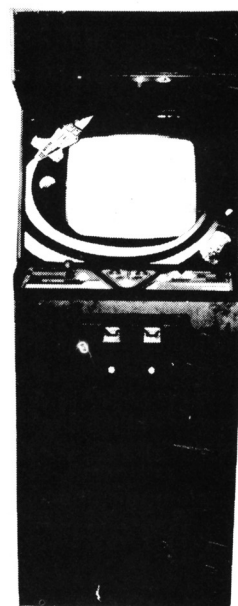
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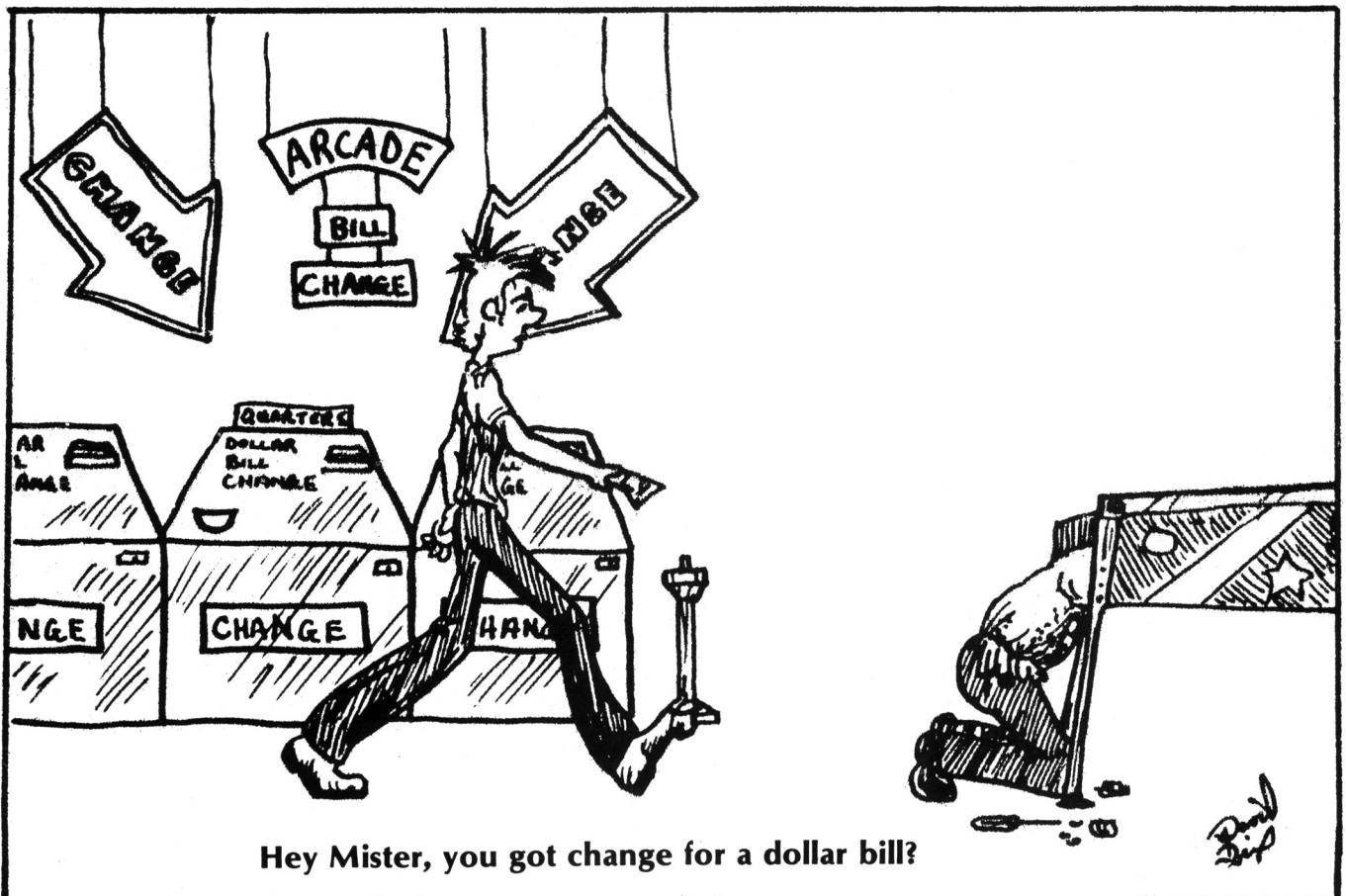
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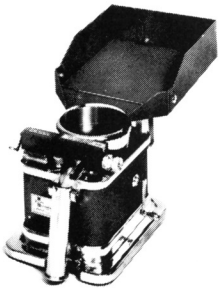
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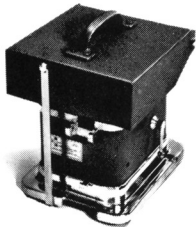
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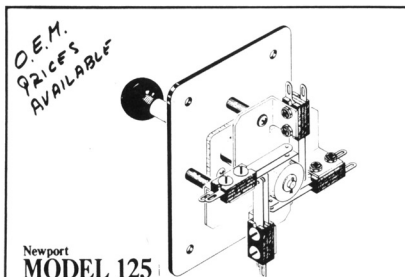
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.....Rhode Island state police charged a Smithfield tavern owner and his employee with operating an illegal electronic poker game and paying off in free beers, in mid-September. Police said the video games have cropped up in bars and private clubs in Rhode Island and southeastern Massachusetts in recent months and they are illegal games of chance. The authorities cite a distinction, however, between the "gray area games" and such coin-ops as pinball and amusement video. But with the card games, a number of bar and club owners allegedly pay off winners with drinks or money. (Free games are also illegal in Rhode Island).....

.....A reversal in the trend of local rulings against game rooms catering to youth was seen in Ohio in late August. A Bellefontaine woman who opened a coin-op arcade was cited by police for permitting youths under 18 to play the games without a parent present, in violation of the city's long-standing pool room ordinance. A municipal court judge ruled in her case that the local law is "unconstitutionally vague and broad, leading to the likelihood of uneven enforcement." The judge found no relationship between public health and safety and the total prohibition of all minors' coin-op play of any kind.....

.....But in Independence, Missouri, Kansas City, Kansas, and other localities of that area of the Midwest, increasingly stringent regulations on game rooms were reported. In Kansas City, for example, an arcade operator must pay a \$50 fee for each coin-op amusement device to the city. An arcade owner there must go through a licensing process similar to that imposed on pool hall or massage parlor owners, but not as stringent as that required for a liquor license, according to the *Kansas City Times* in a recent article.....

.....Banner Specialty/Philadelphia announced recently that it has added Exidy and Nintendo product lines. Within recent months the distributorship has also expanded to handle the products of Centuri, Stern/Seeburg, Pacific Novelty, and others in the coin-op amusement business.....

.....The third annual Gaming Conference for that sector of the coin industry will be held in New York City at the Waldorf Astoria on Thursday, October 29. Scheduled guest speakers will include G. Michael Brown, director of the New Jersey Division of Gaming Enforcement; Richard W. Bunker, chairman of the Nevada Gaming Control Board; and Saul F. Leonard, a partner in Leventhol & Horwath, organizers hosting the conference.....

.....Stern Electronics of Chicago has confirmed that it will open a production plant in the Republic of Ireland, in Limerick, the U.K. trade press reported. As well as videos, Stern/Seeburg jukeboxes may be produced there, a company official said. Stern joins Bally, Midway, Atari, and Exidy among American companies now staging European sales drives from an Ireland manufacturing base plant.....

.....Atari announced that its coin-op video *Centipede* will be the official game on which all players will compete at the Atari World Championships to be held in Chicago on October 29 through November 1. Winners will rise from local-level competition and be given entry certificates for the Chicago competition.....

.....It is reported that the government of The Netherlands will legalize slot machines and other coin-operated gaming devices in the near future. Such machines are already in wide use in that country, but without cash payout features, according to gaming trade press reports.....

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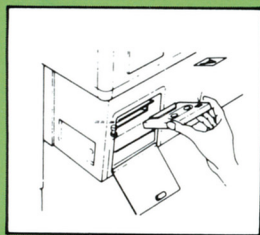
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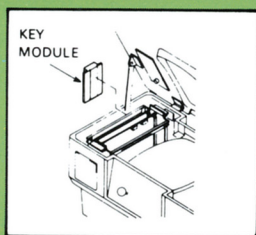
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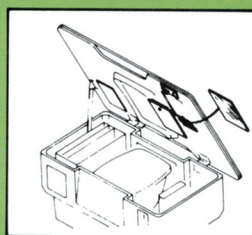
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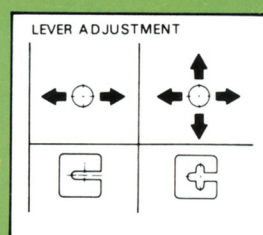
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①

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②

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