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PLAY METER

Volume 6, Number 13

July 15, 1980



**Service
Issue**



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PLAY METER

Vol. 6, No. 13
July 15, 1980

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PLAY METER

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Employees Handbook 55

Today's operator has had to become a professional. And he should consider instilling professionalism in his employees. Here's a suggestion on an approach: put it in black and white.

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Coin-op machines are made to create a fantasy world in a box. Then, can we be surprised when the customers are so wrapped up in the game box that they get emotional when the machine doesn't work properly?

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Mark Madura shows pride in his multi-amusement arcade. Repair, routine maintenance, cleaning, and dependable employees all contribute to its success.

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Cover Credit:

Hugh Armstrong III, a Blaine, Tennessee illustrator, created the design of the plugged-in Service Issue cover.

From the Editor

It has often been maintained that the unsung heroes of this industry are the service technicians. That statement is more valid now than ever before. The challenges facing today's technicians are far greater than the challenges faced by their predecessors. Space age technology and rapid changes in the state of the art have enabled manufacturers to produce equipment with more play appeal and earning power than ever before. On the other hand, these same technological advances have brought with them a multitude of service problems. And therein lies the problem.

For the most part, operator and distributor service departments have done an adequate job in keeping pace with the ever-changing times. For some it has been a nightmarish struggle. There are some who are still saying, "Give me the good old days when I could fix anything with a pair of pliers and a screwdriver." Yet to dwell in the past is to forsake the future. And the future of the industry lies in the ability of the industry's technicians to meet the challenges of this new technology.

The responsibility for meeting these challenges lies not with the technicians alone, however. It is going to take a concerted effort on the part of the entire industry. Operators should make every effort to provide their service people with up-to-date information and equipment. Equipment manufacturers should strive to promote more field service schools, provide detailed technical information on every unit they produce, and beef up existing warranty programs. Distributors and independent service organizations can do their part by providing faster turn around time on PC boards and by maintaining adequate supplies of common replacement parts.

Improving the service network within this industry has probably been the most overlooked problem facing the industry today. The solution to the problem is not a simple one; it will take a good deal of cooperation and dedication by all those involved. Other problems may seem more important, but when you get right down to it, there's nothing more important than service in this industry.

One can have the best equipment available in the hottest location in town, but if it's down, it's not making a single cent. Don't just think about it, do something about it.

‡ ‡ ‡

For this, our Service Issue, we are featuring a wide range of opinions—from the cold, hard look at the effect of technology on coin-op games in the Eighties by James Fox, to the humorous, but urgent plea for service by J.W. Sedlak.

And, of course, you can expect our "Technical Topics" section to be packed. It's filled with detailed servicing tips for videos and pins, all of it written and illustrated by our capable technical editors.

And there's our ever-popular "Technician's Reading List," for those who want to read even more technical information.

And to cap off these features and more, we present a thought-provoking interview with Art Seglin, who has some quite interesting ideas on the subject of educating servicemen: See Coinman of the Month.

In all, it's quite a jam-packed issue with pages and pages of good reading on an essential part of this industry— Service.



Ralph C. Lally II
Editor and Publisher

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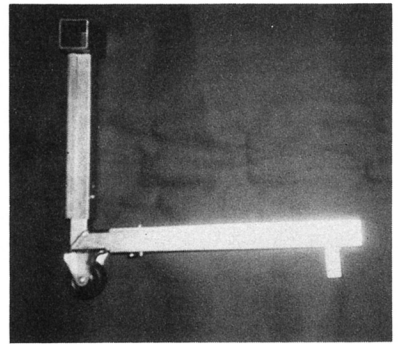
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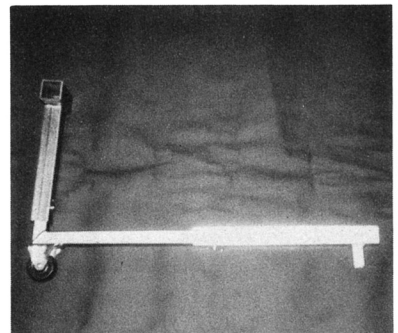
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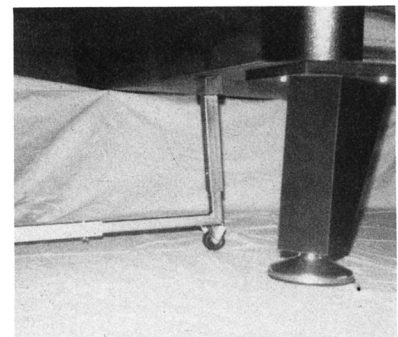
The Eazy Leveler weighs only 5¼ pounds, but it'll lift virtually all pool tables and air cushion games.



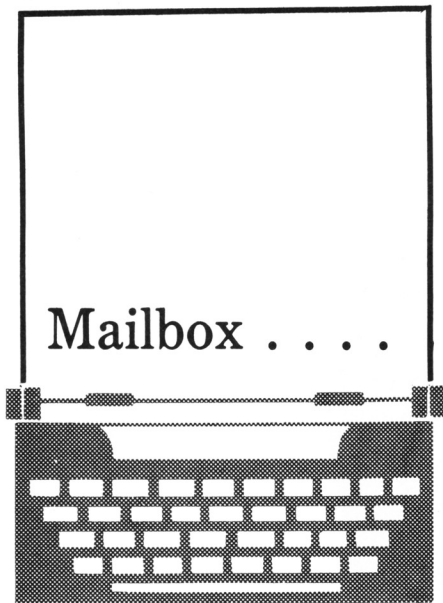
With its head and handle extended, you are ready to operate the most easy-to-use tool on your route.



Place it about one inch under the table skirt, as shown, and...



With the handle pushed all the way to the floor, you lock the Leveler in position, then proceed to level the table. What could be easier?



Mailbox

Thanks: Down Under

As an independent operator of amusement machines...I find your magazine PLAY METER a very informative and useful magazine for keeping abreast of trends and developments of machines likely to be imported into Australia. In addition, I have found your "Technical Topics" section to be very useful in understanding some of the basic problems inherent in most machines. Keep up the good work!

M.D. Kirk
Pin 'n' Ball
Gladstone, Queensland

Need 3-ball play

All the articles, editorials, and ads tell us that we (the operator), must demand higher pricing on pin games, one play for 25 cents and three-ball play is a must if we expect to survive as the price of a new pin game passes the \$2,000 mark.

Yet the games still have a setting for five-ball play.

We set our late model games on three-ball play only to be forced to return them to five-ball play when the competition down the street refused to follow suit.

If the manufacturers agree on the fact that three-ball play is a

must, why not eliminate the five-ball setting? This would be one step toward a long awaited price increase.

It's easy for the factory reps, and the rest of the pros, to say "You be the pace setter," but when a customer tells you to set the game on five-ball play like the place down the street or take it out, that advice doesn't cut much!

It's very clear that any form of price increase is going to have to originate at the factory level. As long as there's a choice, the pace

is set by the irresponsible operator and the game rooms and arcades owned by non-operators who exploit our industry with super locations or other type amusement centers.

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The flipper has stood out over the years as the single most important play feature on a pinball machine. It has been pointed to and judged in courts of law as the prime indicator that pinball is a game of skill and not a game of chance.

Likewise, players see nothing but good in the flippers. They look upon these player-controlled features as extensions of their fingers which allow partial control over the wildly careening silver ball as it bangs against target after target on the playfield.

There are, of course, other ways to influence one's score in pinball. But, for many players, it has created something of a guilt complex. The timely nudging of a pinball machine can produce desired effects; but for a lot of players, this is a lot like kicking a vending machine—it's something you'll do to get your soda, but only when no one is looking.

Actually, the games have been built to withstand a reasonable amount of nudging; but no one in the industry has ever advertised that fact to the player because it might encourage more abuse.

So many players, though they continue to nudge the machine, do so, thinking that maybe they're doing something wrong.

Now there's definitely an argument that people will enjoy something more if they feel there's something wrong or sinful about it. Many people insist, for instance, that sex isn't the same if you drag it out of the gutter. But does the same reasoning apply to pinball? Will people play the game more if they feel there's a chance they're going to be accosted by an irate vendor?

Now Williams Electronics has taken a significant step toward what can best be described as "guiltless pinball" with its introduction of a second player-controlled feature in *Firepower*.

This second feature, the Lane Change, is activated by the right flipper button which changes the lit lanes at the top of the playfield. Without having to bully the machine, in the usual manner, a player can achieve the same

effects. And there's also the interesting possibility that this new feature will reduce the amount of wear and tear the game will have to endure over a period of time.

Using the flipper buttons to control other features on the playfield opens countless other possibilities. Operators can expect to see manufacturers implement this innovation by adding other player-controlled features on their games—maybe even allowing the player to adjust point valves at certain areas on the playfield. This Lane Change feature has really opened the way for these type of possibilities.

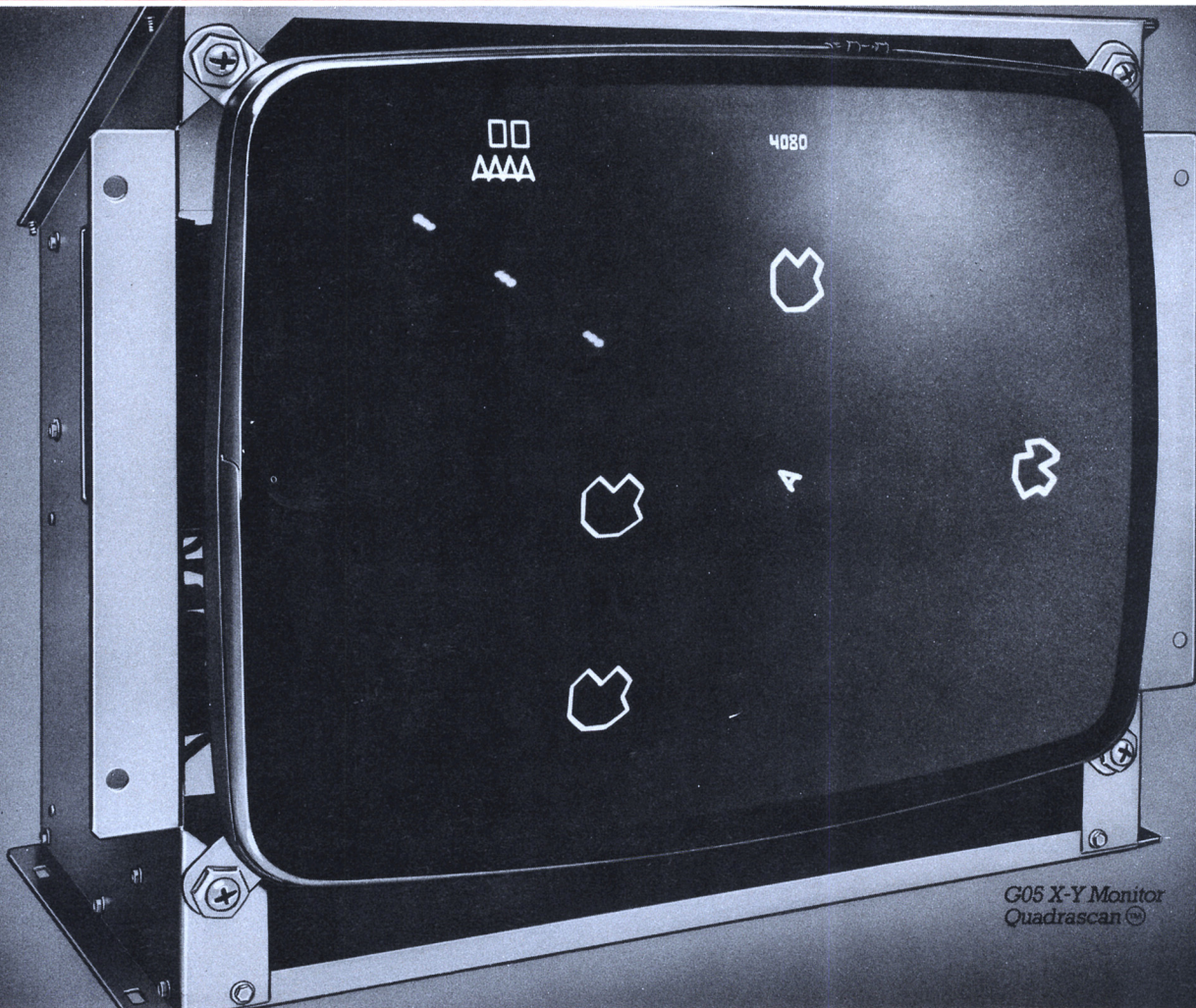
Then, of course, *Firepower* resurrected the Multi-Ball captive ball feature which many of today's players are not even familiar with. The promise of playing for those few frenetic seconds when three balls are bouncing around the playfield are reward enough for players; and, even though making the shot virtually assures a free game, the elaboration of this idea may even become enough of a reward for the player without having to give away as many free games as in the past. This could open the doors to more conservative free play percentaging since the game would incorporate its own kind of reward—in this case the thrill of "busting" three balls at the same time.

Furthermore, the *Firepower* package is enhanced by Williams' use of sound. Here in *Firepower*, Williams again uses the talking pinball feature to insure success. But even the use of the other sounds in the game come together to make this an unusual effort. Like last year's *Flash*, also from Williams, the sounds on *Firepower* make the game an even better attraction.

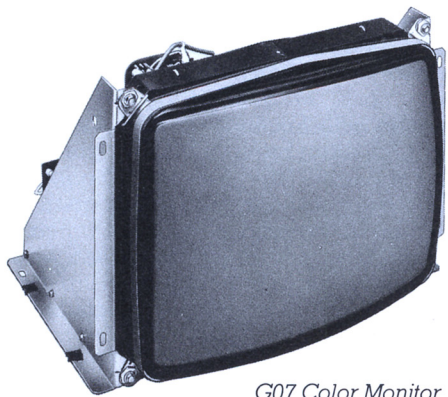
Besides the obvious contributions *Firepower* makes to the advancement of pinball (the introduction of other player-controlled features and the reintroduction of the captive ball feature) the game can stand on its own merit as a solid investment which should become a profitable addition to any operator's stable of games.

By David Pierson

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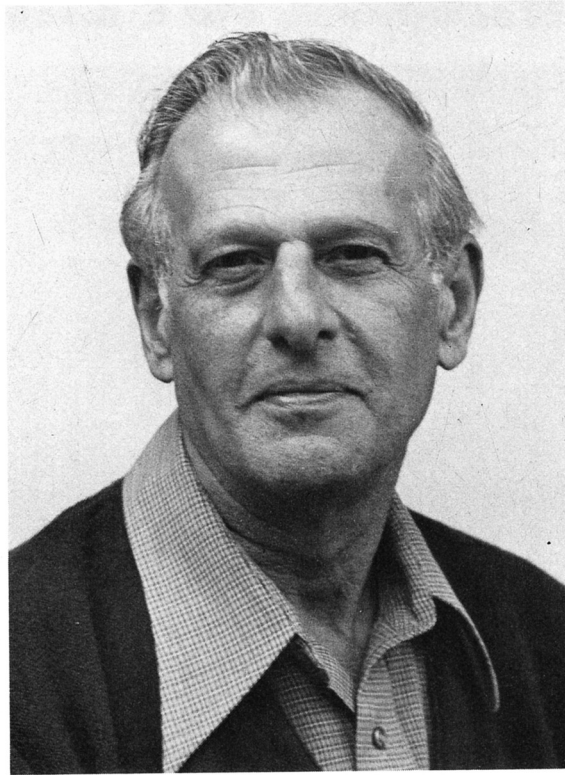
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Coinman of the Month



ART SEGLIN

Art Seglin holds a rather unusual position in the industry. He's a teacher and a director.

He teaches high school-age students at the Hudson County Area Vocational Technical School in North Bergen, New Jersey. Though still related, his subject matter is somewhat different from what you probably expect to be taught at vo-tech schools. He teaches a two-year course in vending machine repair.

That's got to be good news for this industry, especially if it catches on throughout the country. It would mean vo-tech students could have the opportunity to be trained for careers in the coin-op business and not just for careers in such fields as welding, carpentry, and refrigeration. "The course," Art told us, "includes anything operated by a coin, except telephones and parking meters." That's quite an expansive subject.

One night a week, he also teaches adults who come to him from the coin-op trade. That night-school course normally runs fifteen weeks. Additionally, for about 1½ years, he's been teaching at technical schools in conjunction with the New York State association. That program met with such great success that Art has been contracted to offer the course again this fall for member companies of the state's operator association.

Recently, however, he took on another duty—that of director of the AMOA of New Jersey. That state operator association presently boasts of 40 members, out of a potential of 125. But Art told *PLAY METER* he plans to raise that to 60 members by the end of the year, and to

75 by next year. With programs such as his technical school, chances are he'll be able to meet his expectations.

Art got into the business in 1946, starting as sales engineer with Atlantic New York, a large distributor at the time. The position of sales engineer, which he stayed with while working for various companies during his career, coupled sales and service, and it provided him with a unique viewpoint for his later positions in life as a teacher and state association director. After 10 years with Atlantic New York, he moved on to take a sales engineer position with Seeburg Corp. He eventually left Seeburg to get into communications, but came back into the industry a few years later, joining Rowe International as a field sales engineer. He spent 10 years with Rowe before taking on a position with a commercial food equipment manufacturer and left that when he saw the opportunity to mold his own course of instruction at the Hudson County Area Vocational Technical School.

Art's wife these many years is Florence, who is presently the executive director of the Faith Temple in East Orange, New Jersey. They have two children, Mark, a psychologist on the staff at Fordham and Rutgers universities; and their daughter, who resides in Beverly Hills, California, where she is a religious school director.

Most recently a featured speaker at the Amusement Operators Expo, Art has some valuable thoughts about schooling employees in this industry, thoughts that we feel should be shared with the industry as a whole.

The operator bought these two games from two different distributors.

WHICH ONE WAS THE BETTER BUY?



The one on the left because it comes from C.A. Robinson & Co. where they sell you more than just the game.

In this particular instance, it was a Bally pinball game, but the same standard holds true for games from Allied Leisure, Atari, Cinematronics, Exidy, Game Plan, Gremlin, Midway, Namco, Stern, Taito, Tournament Soccer, Universal, U.S. Billiards, Valley, and Williams.

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PLAY METER: What is the major need of operators as far as the service end of their operation?

SEGLIN: The major need is skilled personnel who are technically qualified and who can handle most of the locations' problems. It's not a new problem; we've always had a shortage of skilled personnel. It's just become more apparent in the past couple of years as the equipment has changed.

We've gone through phases where skilled personnel have tended to remove themselves from our business and search for other fields. So we're finding ourselves in the reverse position of searching for good personnel.

PLAY METER: Is there incentive enough for skilled personnel to come into this industry?

SEGLIN: There has to be an incentive. One of them, of course, has to be money. But it must be more than that. I'll say this—the business does offer a challenge that is different. With most nine-to-five jobs, the challenge is gone and everything is routine. But in this industry it changes almost every day.

I got turned around on this at my seminar in New Orleans at the Amusement Operators Expo. I questioned why people in this business are looking in the field for computer technicians as the answer to their prayers. I questioned why a man would leave a job where he worked a set nine-to-five day in an office-type atmosphere and then come into our business where he's exposed to all types of tavern owners, etc. It's certainly quite different from a clean office area. And I questioned why a man would leave that, especially if he was paid well and had good benefits. Are we sure we're not picking up those who can't make the grade there?

But one fellow in my seminar answered me that he had left just that type of environment because he found it boring. He found this business much more stimulating. And whether it paid as much or a little less was immaterial to him. He said he was not bored in this business, that he enjoyed his work more here. And I bought his thinking. I think he may not represent a majority of people in this area, but I think he represents a good portion of them.

PLAY METER: What are your thoughts on schooling for employees in this industry?

SEGLIN: First of all, I think what we presently have in the business has its good points. I would not want to denigrate in any way the types of schools going for us right now, whether they be a manufacturer's one-day or two-day school or whether they be something like Cal's Coin College, Nevada Gaming Schools, or AMOA's ten-day school. But there are problems involved with all of these.

The problems involved are the result of trying to educate a man who is already employed. It means the man has to take time from his work day. In the case of the AMOA school, for instance, the man is away from his job for a ten-day stretch. And most companies don't have extra help lying around where they can spare someone

like this without creating a burden. And if that burden is not picked up, then the man is snowed under when he gets back. That's one problem.

The other problem is the learning ability of most people and their capacity to remember. It's limited; we're just human beings. We can't absorb everything that's thrown at us. And even though our spirit and willingness to learn may be very very high and peaking, particularly when we're attending this type of school, and we're learning quite a bit—our retention will drop off rapidly after we leave. We can't carry notes with us all the time. So my feeling is that any concentrated course—and, of course, there are exceptions to the rule—is faced with this problem. The average person has a problem of remembering everything he learns, during a compressed period.

PLAY METER: You're painting a pretty bleak picture. Is there any alternative?

SEGLIN: It's not meant to be a bleak picture because there are some options. I think one solution may be something like what we're doing in New York state right now. We hold three-hour sessions one morning a week. We've found that morning is the best learning time. So we hold our three-hour sessions on Saturday mornings because the students are fresh. The learning time actually spent is 2½ hours. We have a break in between and a question and answer period at the end. So they are there for 2½ hours.

And we give them a homework assignment which is something they would run into in their normal day's routine. And this assignment would reflect back to what we had just covered or what we're about to cover the following week. They need that week to reflect on it.

We designed our school like this because we felt the problem was getting the students to the school; so we took the school to the students. They are not away from their jobs for an abnormal amount of time. And they have time to absorb what they were taught. I think this is a more logical way to go for those who are already employed in the business.

We found Saturday mornings to be best because that's when I'm free and when most of the students are also free. Unfortunately, there's only one Saturday morning in a week. We work from a fixed curriculum. You see, one of the things we do lack in our educational area is the fact that nobody in this business has ever set up a true training schedule, with guidelines and standards that we feel would set up a method of evaluating skilled help.

PLAY METER: But, first, who should sponsor such a school?

SEGLIN: The one that I work with is sponsored by the state association. I think that is the best way to approach it because the state associations can pretty well get the group together. This has been proved by the AMOA Schools. They can set up the scheduling. They can set up their personnel and form a class for it. We're not looking for large numbers, by the way. In fact, we feel that fifteen

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PLAY METER: What is the cost of something like this to the operator?

SEGLIN: To the operator, this works out to be about fifteen dollars per session. This includes all materials and the coffee break. We usually take a hotel room at a central point, rather than at an operator's place because we want to be removed from any phones or type of business where there would be any interference. And, as far as getting games to work with, the operators have been very cooperative. When I have requested a certain manufacturer's games, they'll bring them up in the morning and take them back in the afternoon. We have had no problems in that area. So, to my mind, this once-a-week school is probably the best type of setup for those already employed in the business.

PLAY METER: Before we move on to another area, I would like to get your feelings about the manufacturer's schools?

SEGLIN: I think they are fine, except for the fact that they too, from a viewpoint of cost, have to condense all the knowledge they wish to impart in a day or two. The manufacturers just can't afford to keep men out there much longer. I think it's obvious all the manufacturers are interested in personnel knowing their equipment and being able to repair it. And I think that most of them set up a very good curriculum and they follow the outline of what they are going to do, whether they work from a syllabus or from outline. But again, they're fighting that time element and that retention factor. It's a very difficult thing to sit for eight or nine hours and have information poured into you and walk away, having completely absorbed it.

PLAY METER: In your opinion, are schools like this worthwhile?

SEGLIN: I would say that it is certainly worthwhile. I think the manufacturers do a good job. I think you'll find they are interested in trying to teach and are doing the best they can under the circumstances. They would like to have everybody know their equipment, but that's an impossible task. But I don't think it's the manufacturer's responsibility to educate the servicemen, other than to bring the servicemen up to date on their own particular equipment. The real training has to be the operator's responsibility and the serviceman's responsibility to respond to wanting to learn more.

PLAY METER: With our change to solid state, have we lost our mechanics?

SEGLIN: I do not think we have lost them. I think we've left quite a number of them behind. They have spent their lives or a long time in the business learning the electro-mechanicals, by rote mainly. And they have managed to get by very well. But with the change we've left them dragging. They would like to learn more. In fact, some of them are making a great effort to learn more. But again, where do they go for this? This is the problem they face.

If you want to look at it from a national basis, I think there are enough skilled people out in the field who understand the equipment. But one of the problems we have up to this point is that very few have said what is the way we have to go. We need to start out with the basics, what goes into solid state circuitry. From there, we can apply the knowledge from all types of equipment, and not just the one particular manufacturer.

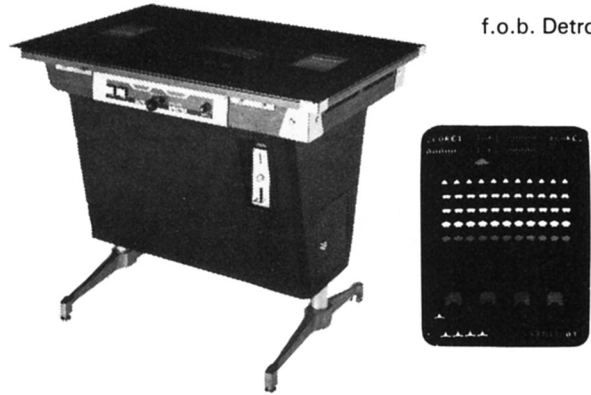
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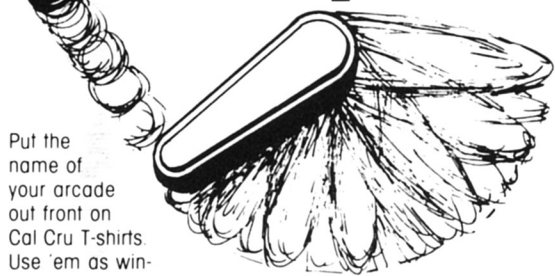
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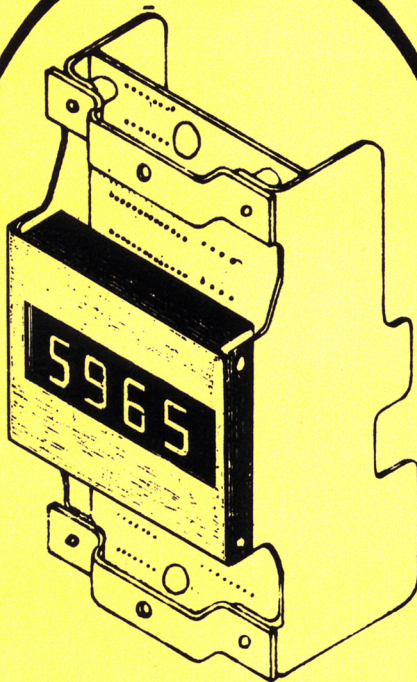
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troubleshoot.

Now, as I was saying, we have quite a number of skilled people that have come into the business, who are knowledgeable of solid state circuitry. But one of the things we are lacking in is that we don't have a set curriculum, guidelines to go by, testing to be done prior to and after completion, and someone is there to reach those who are going to teach. I think we have some pretty good possibilities of working out something like that within this industry.

PLAY METER: So you think there is a need for some sort of national guidelines?

SEGLIN: I think so. I would like to see something set up so that when a man who goes from the east coast to the west coast has a rating that the employer on the west coast can look at to get a good idea of the man's capability and the salary scale he can fall into.

PLAY METER: But this is something above and beyond what the state associations can offer?

SEGLIN: Yes, the state associations would set up their programs within these guidelines. But, by doing so, we would have something that would put everybody on a scale. In some industries they have to take so many hours, then have to take a test before they qualify. Now, I don't know if we can go that far in this business, but certainly we could follow some of the guidelines set up by other industries.

PLAY METER: What type of education should the operator provide for new employees?

SEGLIN: For new employees who you are going to hire into the business, the operator could project his needs. But this requires an investment by the operator. In another industry for the same type of help, it has been determined that it costs about \$5,000 a year to train a man. These are established figures that companies with allied type of learning use.

In other words, over a two-year period, it would cost about \$10,000 to train a computer technician. Companies such as Burroughs, for instance, use a figure such as this for their determination of the cost of training an employee. And I'm sure companies such as IBM go through the same projections. The actual figure quoted to me was \$5,160. So now we get down to the point as to whether the operator is willing to invest in the employees' future, which is also the employer's future. Is he willing to invest \$10,000 in a man to get a good employee who has everything he needs at that point except field experience.

It would mean the operator would have to pick up the tab for this individual's learning. Now, before he would invest that kind of money in a man, the man should have already been pre-tested for his qualifications within the business. And a test of this type should separate those who would not qualify for that position—because they didn't have the necessary characteristics or didn't have the necessary ability. That way, if a man is pre-tested and final-tested, the operator knows he's not just throwing out \$10,000. He's being pretty well assured he's getting an individual who will fit into his picture.

PLAY METER: And you don't think this would be better for them to learn this on the job rather than at a school?

SEGLIN: Experience has proved that on-the-job training doesn't work out, because the workload is too heavy for all the individuals involved. It's pretty hard to learn on the job.

PLAY METER: What's the problem with learning on the job?

SEGLIN: The problem with learning on the job is the

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conflict of what takes precedence—a service call on a new location or a learning experience? And the immediacy of having to repair that machine, regardless of how, doesn't allow for the learning time needed. This is one of the problems with on-the-job training.

You see, here we're taking a newcomer to the business who is going to learn on the job, and he is immediately thrown in with someone who has been in the business for a number of years. And the individual whose been in the business for a number of years has never been formally schooled, and probably isn't doing it the right way; so here again we are perpetuating their mistakes. The bad habits they picked up are being passed along.

PLAY METER: Okay, so let's say the operator decides to invest \$10,000 in a student for a future employee—apparently, according to you, before this man ever does a day's work. What guarantee does the operator have that the employee isn't going to take all this experience and go market his talents elsewhere?

SEGLIN: For that, we simply have to look at the legal aspects that would bind a man to a contract for a period to time. It can't be an overly long period of time. And you can't restrict the man from earning a living. But I think a good attorney can write up a legal contract under the guidelines.

We do it when we sell operations. We put in restrictions which prohibit the seller from getting back into that business for X number of years. But I think that even if that \$10,000 were advanced salary or whatever it may be, there are legal ways to tie an individual quite thoroughly to, say, a three-year period. Other industries do it.

PLAY METER: But how many operators do you think can really afford to train someone at a cost of \$10,000 for

a two-year period?

SEGLIN: Operators are doing it right now whether they realize it or not. But almost anyone who requires an outside technician should be prepared for the eventuality when his man might leave him. For instance something could happen to the man; so the operator has to look forward to the future.

PLAY METER: But can an operator afford to carry someone in the wings, so to speak?

SEGLIN: No, I'm not talking about carrying him in the wings. For example, if you have an employee who is sixty years old, and you know he's going to retire in five years, you have five years in which to replace that man. And rather than wait until he retires, you can make plans. So when that man's retirement is two years off, you're ready to train someone ready to replace him.

PLAY METER: Is there any workable formula so that an operator would know how to plan for all these eventualities such as men quitting him, or leaving, or something happening to them?

SEGLIN: I think something like that could be done by the state associations. Possibly when you combine all of them within the state association, there could be a couple of men going through that the state association could pick up the tab for, on a combined effort. And the operator who eventually chooses the man eventually picking up the tab.

PLAY METER: So then you think the state association could create a pool of trained workers to draw from?

SEGLIN: Yes, that's it. Also, I think you'll find some people who will want to pay their own way through

continued on page 93

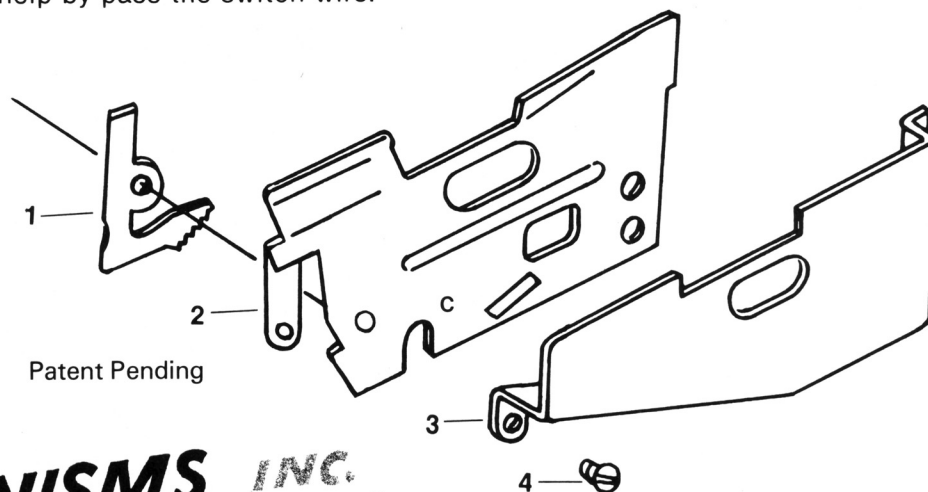
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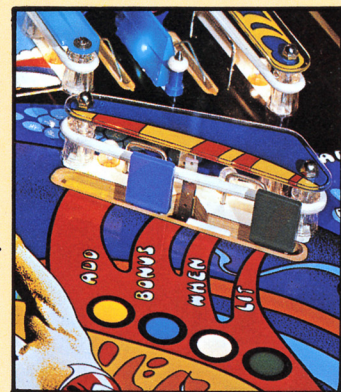
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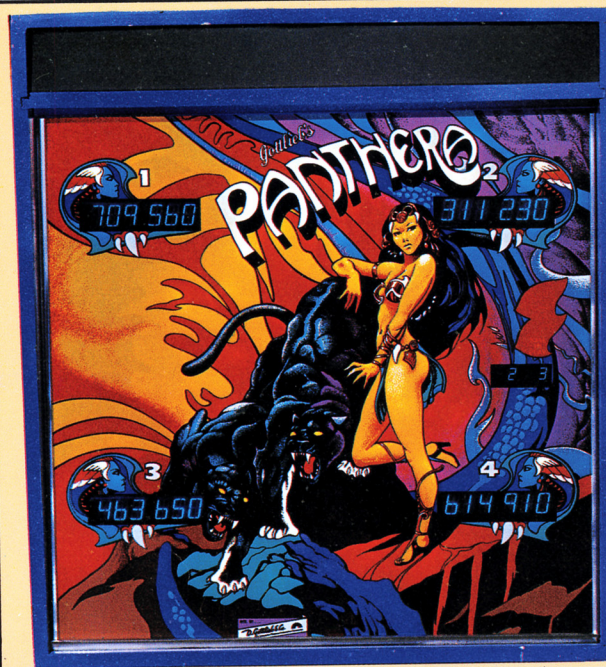
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The state of the art

A technician's critical look at changes in the industry

by Zac Oliver

We have seen changes come about in the coin industry at different rates. At times we lag behind technically speaking, at times we advance too fast, creating a gap among technical personnel which disrupts the overall flow and sets the industry, from manufacturers to street operators, in a frenzy to catch up. Actually, if we try to draw a picture of the industry, we will find a total unbalance in all of its levels.

However, right now, the coin machine industry thrives in one of its best moments, despite the world's socio-political and economic situation, which by the way is one of the causes for this upward development.

The increasing widening in the range of players, generated by games such as *Space Invaders*, *Asteroids*, and *Galaxians*, changed the balance from pinball to video. Not only videos are preferred over pinball nowadays, but in the main the video games are better built and breakdown is extremely reduced due to mechanical simplicity.

However, the electronic sophistication limits field repair—and parts availability is, in most areas, scarce. Technical documentation is often poor, limited, or non-existent—exception made to Atari, which presents some of the best printed technical material in the video sector

of the industry.

All things considered, video game breakdown proportionately compared to pinballs is much less.

It is not a matter of comparison between the video's mechanical simplicity and the intricate, profuse mechanisms in the pinball playfield. As a prominent figure in the coin biz once mentioned: "A steel ball bouncing and hitting amidst rubber, plastic and wood will cause something to break and certainly it is not going to be the ball!"

What we have here is improper design. During the changeover from electro-mechanical to electronic, the playfield mechanical design almost remained the same. It was obvious then that the same mechanisms could not be used with the new forces in action on the playfield.

Although changes and improvements were made, it was at a very slow rate and what is more important, the improvements were based on systems already in use. Instead of a new approach, manufacturers redesigned old mechanisms. Bally, Williams, Stern, and Gottlieb, the four major pinball manufacturers are coming out with redesigned mechanisms this summer season. From the prototypes, one can tell that definitive improvements have been made but the weak points

are still there. Reinforced perhaps, but still there. On the playfield area, the ball will still break posts and plastics; it will go behind the rubbers, it will destroy bumpers, and it will eat up some of those precious artworks.

For the operator this will represent more different parts to buy and carry along. His choice stands between an endless parts replacement routine or his customers' dissatisfaction due to improper mechanism operation.

Pinball has been the bread and butter of the coin machine operations. We have seen the video craze before, during the Pong years. I think that today, however, the picture is different and involves other parameters.

To properly survive, pinball will not only have to keep its play appeal, but change to a more reliable configuration. If one is going to redesign, why not create within realms of reality? Why keep patching up?

We all know the problems. It is time to analytically look into them and to come up with the proper solutions.

This may represent a change in the look of pinball as we know it today. Innovation within the framework of the game industry is acceptable and profitable. We are waiting for it!

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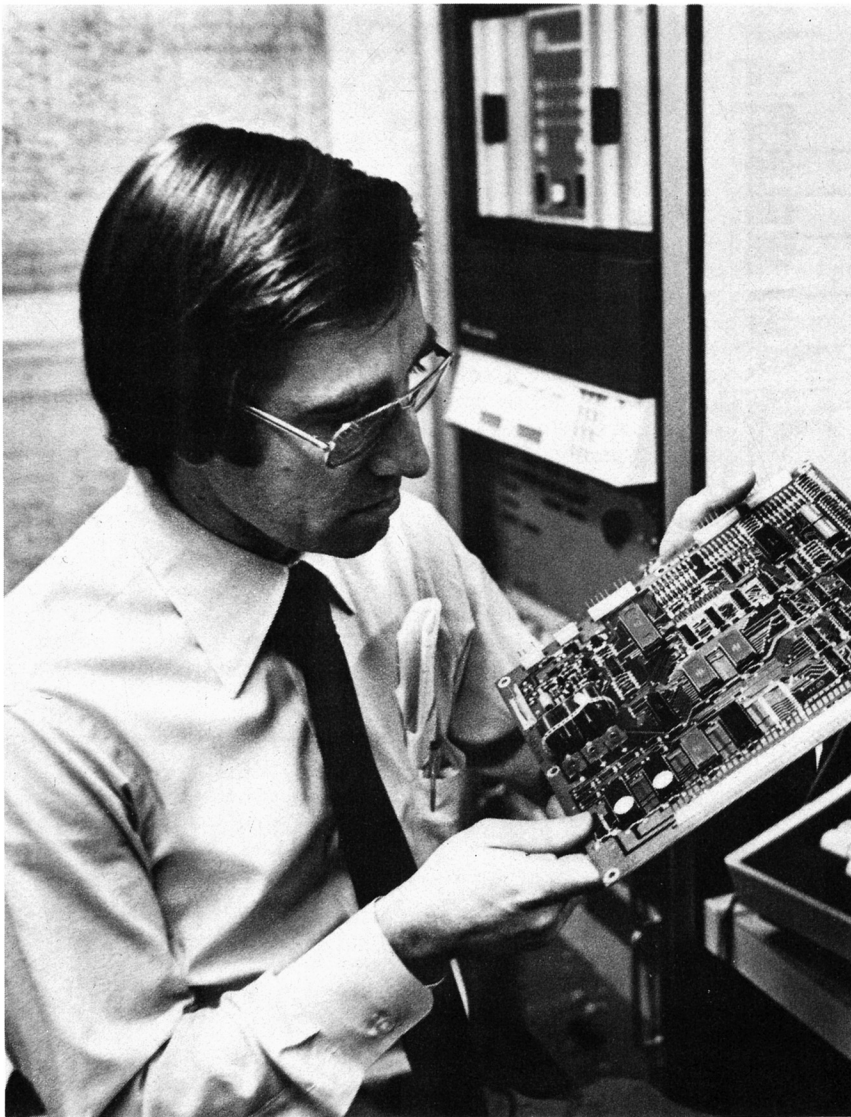
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Amusement games are on the leading edge of electronics' technical applications. The knowledge, game parts, and equipment to deal with the 'data stream' will be the factors making the operator and the distributor more profits in the 1980s.

The new decade is upon us with the fury of a woman scorned. Inflation is running rampant, Americans are being held hostage, and politicians are once again repeating old promises they never keep. If all this seems gloomy, take heart. The '80s promise to be the most exciting decade yet for the still fledgling electronic amusement industry. Predictions for growth are staggering.

If you have kept pace with the technological trends and developments during the 1970s, you will undoubtedly have a decade of prosperity. On the other hand, if you closed your doors to the developments during the 70s, your ability to participate or even survive will depend largely on how you prepare now. If you're not ready for the 80s, it's not too late to do something about it...now is the time.

The phenomenal change and growth in our industry during the mid to late '70s were fueled primarily by unparalleled technological innovation. From the development of the transistor in 1948, we have now progressed to the threshold of the VLSI era, when over 100,000 bits of memory or logic gates can be manufactured on a single silicon chip.

This revolution has forced, or will force, those who want to remain competitive in the market place to adapt technically as well as address the problems these advances have brought to the industry. While there are a multiplicity of problems, three are on the critical list and should be tackled now.

As technology moves forward so must education. This decade will not be nearly so tolerant of operators and

...But be prepared for game technology advances

distributors who lack knowledge. Ten years ago you could get by with mechanics doing mechanical repairs. Today and tomorrow you will require trained technicians to keep your games' down time low and your profits high. There are many fine technicians in our industry today who have made this not-so-difficult transition by taking home study courses, attending tech schools, or just reading everything they could get their hands on. Fortunately, today we have several fine schools available dealing specifically with the amusement industry and dedicated to this business of repair. Try Nevada Gaming School, Cal's Coin College, Don Miller's AMOA Pin School, or Randy Fromm's Arcade School.

In addition, the games manufacturers themselves also conduct many fine seminars geared towards repairing their specific equipment. Pay a visit to any of these schools and you will likely find your competition there getting ready for the 1980s. If you're not planning on participating in any of these schools, be prepared for 10 years of woe.

Second on the crucial list are the ever-increasing lead times and prices for component parts and printed circuit boards. Almost all basic materials used in electronics today are already either in short supply or subject to dramatic price increases in the future. Hydrofluoric acid, for example, used to etch oxides in wafer processing, is fast becoming critically scarce. Gold prices have gone from \$32 an ounce to over \$500 an ounce, with other precious metals undergoing similar increases. Silver has gone from \$1.29 an ounce 10 years ago to \$16 today. Platinum

recently hit \$700, while tantalum, rhodium, cobalt, and others keep soaring because of supply shortages. Even copper is now in short and expensive supply. The government may be able to stop minting pennies from copper, but we in electronics have no such options. These shortages will affect all of us—distributors, operators and manufacturers during the 80's—so prepare now.

The message is clear. Today is the moment to stock up on those critical parts and components or you will suffer a loss of revenue when your games are down and waiting on parts. If you are having problems with parts now, brace yourself, for it will probably get worse.

Once you have trained your technicians and secured components, you will have but one hurdle to overcome—proper test equipment. Certainly in these inflationary times it's worthwhile to take a critical look at any and all costs in order to stretch your operating dollars to the very limit.

Before you invest in any type of test equipment check out its overall usefulness for both today and tomorrow. As technology continues to advance, so must our test equipment. The advent of microprocessors, RAMS, ROMS, PROMS, etc., demands more sophisticated and complex test equipment than that of just a few short years ago, when most any game could be repaired with a VTVM or a cheap scope.

During the 80s, the new test equipment must be able to analyze and display all the many data streams constantly passing from point to point and present this information in

a fashion which can be easily understood by every technician, without his possessing an engineering degree.

This new decade will see more go-no-go type tests for all phases, from the component level to the complete P.C. boards. Automatic and semi-automatic test equipment, while available now, will become less expensive and more easily within reach. The game manufacturers themselves will incorporate more self-test and trouble shooting aids within the machines as well as increasing their efforts towards giving the technicians more field support.

A word of caution should be noted at this point. Beware of the fly-by-night gimmicks making exaggerated claims about what function they will serve. There are some items on the market today selling for several hundred dollars which have at best, a limited use. Be very certain you check with someone who is using any equipment you may plan on purchasing if you are not absolutely certain of its usefulness and utility.

‡ ‡ ‡
During the late '70s many operators adopted the policy of service as a last resort. This attitude can only be attributed to a lack of understanding as to where our industry was headed. We are now into the 1980s and this decade will be far less forgiving of your being able to survive on someone else's knowledge of the inner working of your machines.

The most profitable games are generally very complex and destined to become even more so.

A new decade: Will you be in step??

IN COLUMBUS:

State associations leaders meet to swap tactics

By DAVID PIERSON

For the second time within a year, leaders of various state associations met to discuss ways to make their organizations more responsive to operators' needs. And, although the meeting did not accomplish all of what was intended, it did at least keep the doors open for future discussions of this type among state associations.

This second gathering took place at the Columbus, Ohio Hilton Hotel May 15, the day before the Ohio state association's annual convention and trade show.

Attendance was considerably smaller than the last meeting, which was held in Chicago last November, the day before the AMOA Show.

Still, there were eight state associations represented, as well as the national association. Principals in the event included Jim Hayes, Mel Pearlman, and Paul Corey (Ohio); Walt Maner (Michigan); Art Seglin (New Jersey); Marge Halverson (Minnesota); Leoma Ballard (West Virginia); Millie McCarthy (New York); JoAnn Matranga (Texas); and Bob Nims (representing both the formative Louisiana state association and the AMOA). Also representing the AMOA was Fred Granger, the national association's executive director.

No resolutions were voted on, and several attendees expressed mild disappointment that nothing more concrete was established at this meeting. But fourteen suggestions on how interaction between state associations could improve the associations' effectiveness were noted for future consideration.

Among those suggestions were the exchange of monthly newsletters and the possible establishment of a clearing house of information (probably at the national level) for both legislative and educational matters.

Most of the participants agreed the major purpose of a state association was to provide a base for political action.

Various methods of operation were examined to make state associations responsive to the operators' needs with one of the most interesting setups being the following: The association could divide the state up into zones and elect representatives or vice presidents or directors for each of those zones. Member operators with legislative or educational concerns could report to their area representatives who in turn would relay the matter to the attention of the state association for possible action.

Interestingly, the state association directors suggested that most of the time, operators were their own worst enemies. One state association director pointed out, "Most legislators I've dealt with don't want to hurt our industry."

A second director concurred, saying that many times she found that large operators who wanted to sew up a territory had been the culprits who pushed for the higher license fees. A third director agreed. "When you get to the bottom of a legislative problem," she said, "nine times out of ten you'll find there's an operator at the bottom of it."

Mel Pearlman, one of the two moderators at the meeting, echoed the opinion of many of those in attendance—that the AMOA should take a more active role with state

associations, if only to become a clearing house for state associations to share information.

But the feeling here was not unanimous. Leoma Ballard, an AMOA officer, contended: "We can't expect the AMOA to do our job at the state level. The AMOA has its hands full with the copyright battle at the national level."

On the matter of making the AMOA a clearing house of information, Fred Granger of the AMOA told PLAY METER that he is considering revamping the national association's newsletter to include various pieces of information that state associations say is necessary. That information could include legislative action that is pending in various areas and also news of associations which have waged successful battles against restrictive legislation.

Granger told PLAY METER that possibly a rejuvenation of a bygone AMOA service, the "Link Letter," could also become the vehicle for this service.

For their part, the state association directors generally concurred that it would be a good idea to exchange newsletters with one another to keep abreast of industry news.

But the meeting broke up without any firm resolutions, other than that the attendees agreed to meet again (possibly before the AMOA Show).

So, although the interest was there for the state associations to work more closely to render more effective service, those attending the May 15 meeting left without having reached a consensus, or even knowing how to move toward a consensus. More importantly, it appeared they still were not clear as to what they wanted to achieve.

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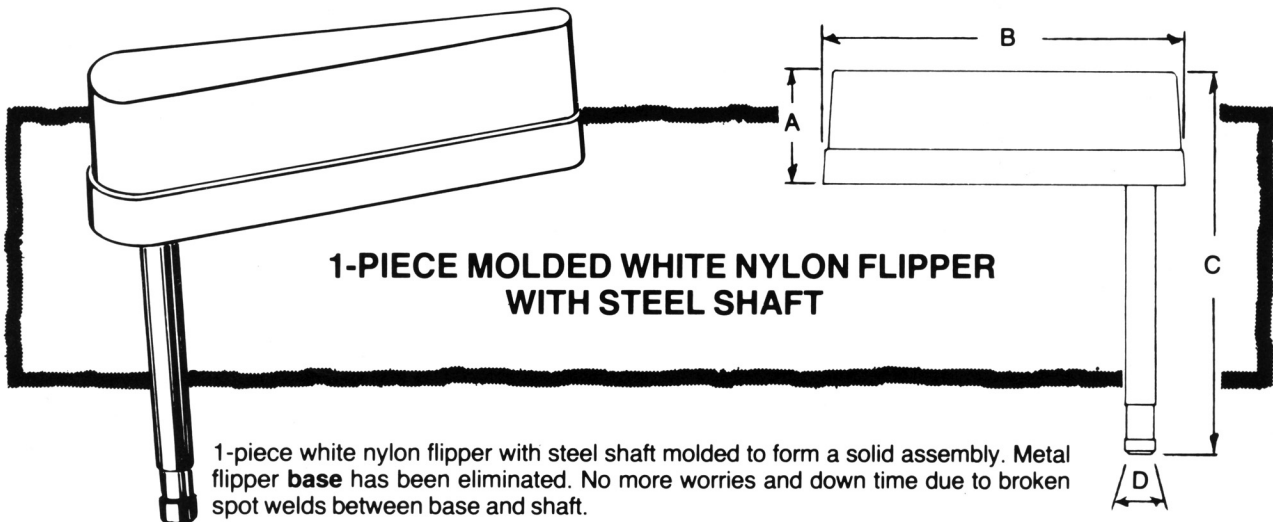
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Copyright battle extended

Proceedings before the Copyright Royalty Tribunal extended into June as the AMOA and the performing rights societies continued arguments before the arbitrating panel on the amount of adjustment that will be made in jukebox royalties.

The next round of rebuttal was set for hearing June 9 before the CRT.

Meanwhile, action was long-drawn-out in the Court of Appeals for the District of Columbia, where the AMOA civil suit against CRT's requirement of jukebox location lists is being heard. Attorneys' arguments for AMOA took less than 30 minutes before the three-judge court on May 6, but a decision in the case could be handed down in anywhere from one month to six months, said one legal source.

In the CRT, hearings were recessed in April after main presentations were made by the AMOA, versus the performing rights societies BMI, ASCAP, and SESAC. The CRT is required by law to review the current \$8 per-jukebox annual royalty fee and determine what the fee will be for the next 10 years.

BMI recommended the CRT

adopt a royalty rate which would reflect changes in the consumer price index. BMI used a 1958 recommendation from the Senate Committee of the Judiciary with a figure of \$19.70 per jukebox, and starting in 1975 applied the price index to reach a current royalty fee of \$30 per jukebox.

ASCAP and SESAC filed a joint recommendation to increase the royalty fee to \$70 per jukebox. Those organizations maintained that a royalty fee must be based on market-place considerations (the fee that would be paid if no compulsory license existed).

Further, they stated that the most useful marketplace parallels were (1) the ASCAP license fee paid for "mechanical music" by locations of the type where jukeboxes are typically placed, (2) the ASCAP license fee paid by background music operators, and (3) the license fee paid by jukebox operators in foreign countries.

AMOA made a presentation before the CRT on the economic condition of the jukebox industry today, and recommended that the

\$8 royalty fee be retained for the next ten years.

The Jukebox Economic Survey, conducted by Peat, Marwick, Mitchell & Company was a major part of the AMOA presentation. Dr. John Scarbrough from PMM & Co. spent more than 1½ days discussing the results of the survey and answering questions from the performing rights societies.

Scarbrough cited the number of jukebox operators in the country as ranging from 3,242 to 5,019, and said the number of jukeboxes owned by these operators is between 251,062 and 388,194.

The study indicated that the average number of jukeboxes per operator is 77 and that the average number of games per operator was 225.

The average annual revenue per jukebox as reported by operators was \$704, and the average annual operating expense per jukebox as reported by operators was \$599.

Operators located in various parts of the country and representing all levels of the industry testified on their jukebox business.



Members of the jukebox industry at all levels appeared before the Copyright Royalty Tribunal in April and May to testify on behalf of maintaining jukebox royalty fees without an increase. Appearing on behalf of AMOA and the industry included those pictured here: (left to right) AMOA President Robert Nims; Wayne Hesch (Rolling Meadows, Illinois); Suzzane Richards (attorney, Washington, D.C.); Nicholas E. Allen and Michael Bailey (attorneys, Herrick, Allen, Davis & Bailey); second row—Leo A. Droste (AMOA assistant executive vice president); Leoma W. Ballard (Belle, West Virginia); Don Van Brackel (Defiance, Ohio); Russell Mawdsley (Holyoke, Massachusetts); Lester Rieck (formerly with Rock-Ola Manufacturing Corp.); James R. Watkins (Albemarle, North Carolina); John W. Strong (Chicago operator); Michael J. Giblin (Rowe International, Grand Rapids), and Harold Schwartz (World Wide Distributors, Chicago).

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More licenses and taxes

Amusement game operators in New Orleans have good reason to believe they are the most highly taxed in the world. Here is a breakdown on what it costs in yearly licenses, taxes, and permits on each flipper game, video game, and amusement game in New Orleans, Louisiana:

—\$50 city license, \$50 state license, \$10 per game amusement tax, personal property taxes averaging \$16 to \$20 per game per year and—above all—every time a new game is installed in a location it costs from \$90 to \$150 per game in sales or use tax.

Insomuch as amusement games and flippers have to be changed often for new games in places where they operate in order to maintain player interest, the average use or sales tax on the games at the end of the year amounts to quite a large sum, the amount depending on the number of games in the location and the frequency of changes for new games.

In addition to the aforementioned licenses and taxes, each operator in New Orleans pays an annual operator's fee on a sliding scale from \$100 to \$1,000 depending on the number of games operated. It is this high license and tax rate together with the ever increasing cost of equipment, salaries, and other expenses that are some of the reasons many of the largest and oldest operators in the city have gone out of business in the past few years.

QUEBEC

From readers in Canada come reports on the status of the law regarding coin-op machines' license fees in the province of Quebec:

\$200 for each pinball game (in French, "machine a boules")

\$500 for each bingo or slot machine with no winning feature, no remote control or meters inside

\$200 for each pingame with free play

\$150 for each piece of arcade equipment with free play

\$100 for each piece of arcade equipment with no free play

\$75 per pool table

\$50 per jukebox each year

The operator's fee is \$200 per year.

READER'S INPUT

We will continue to run lists of license and tax problems in local communities and states, as reported by our readers. Changes, in particular, should be reported. Let us know what the license or tax regulation is in your community and state and we, in turn, will communicate with the rest of the industry. The information that you supply may well help operators elsewhere head off problems.

Do you pay Sales Tax? YES NO If yes, indicate percent:

State _____% City _____% Other _____%

What other license or tax levies do you have to pay on the following:

Name of City	Pins	Phonos	Pool	Videos

Additional comments: _____

Send to PLAY METER, P.O. Box 24170, New Orleans, LA 70124.

In Memoriam

GEORGE A. MILLER

SACRAMENTO, CALIFORNIA - Mr. George A. Miller, the first president and executive director of the Amusement and Music Operators Association, died on April 5.

Mr. Miller was known, not only in the industry, but by legislators and other government officials on both state and national levels.

Robert E. Nims, present president of the AMOA, said: "The industry and association have lost a truly great friend," and he extended his sympathy to Mr. Miller's wife and family.

Four-state contest finds best players on Midway video

On May 2-4, "Video Wars" came to the Civic Center in Hartford, Connecticut. The main feature of the show was a contest to determine the best player for Midway's *Deluxe Space Invader* game. The contest drew contestants from four states including New Jersey, New York, Massachusetts, and Connecticut. The finals were held on Sunday, May 4th with the winner being presented with his own *Space Invader* machine. The winner was Steve Weidlich from Meriden, Connecticut, who made a high score of 30,460.

The show drew considerable interest from the media including three Connecticut television stations which covered the event as news.

Video Wars also drew recognition from *Sports Illustrated* which will highlight the show in its "Scoreboard" column.

Connecticut newspapers had three feature stories written covering the event. A promotional highlight was also the fact that Video Wars was put on UPI newswire service which gave recognition to this type of show all over the United States, including news photographs on the UPI.

In terms of exposure of the electronic video machines as a means of family entertainment, the show was marked as a success. "The good public relations afforded this type of event will be a shot in the arm for Connecticut amusement vendors. On top of everything else the show was fun," said Rocco Bartile of Ace Vending, who organized the event.

Play Meter Equipment Poll

Here are the July results of PLAY METER's subscriber survey ranking pinball and video games. Standings are compared with games' ranking in the June poll.

Top Pins

JULY	JUNE	JULY	JUNE
1. GORGAR/Williams.....	1	11. SPIDERMAN/Gottlieb.....	16
2. SILVERBALL MANIA/Bally.....	5	12. KISS/Bally.....	6
3. FIREPOWER/Williams.....	9	13. SUPERMAN/Atari.....	15
4. FLASH/Williams.....	3	14. FUTURE SPA/Bally.....	11
5. SPACE INVADERS/Bally.....	—	15. BIG GAME/Stern.....	—
6. GALAXY/Stern.....	12	16. PLAYBOY/Bally.....	—
7. LASER BALL/Williams.....	18	17. SHARPSHOOTER/Game Plan.....	—
8. STELLAR WARS/Williams.....	4	18. SEA WITCH/Stern.....	—
9. METEOR/Stern.....	2	19. GENIE/Gottlieb.....	10
10. TIME WARP/Williams.....	14	20. PARAGON/Bally.....	12

Top Videos

Worth noting in this month's poll standings is the No. 1 rating. For the first time in well over a year, Space Invaders has been edged out for first place by Atari's Asteroids in the Top Videos of the Play Meter Equipment Poll.

JULY	JUNE	JULY	JUNE
1. ASTEROIDS/Atari.....	2	6. TAILGUNNER/Cinematronics.....	6
2. SPACE INVADERS/Midway.....	1	7. SPACE WARS/Cinematronics.....	8
3. GALAXIANS/Midway.....	3	8. MONACO GP/Gremlin.....	—
4. FOOTBALL/Atari.....	4	9. HEAD ON/Gremlin.....	7
5. SPRINT II/Atari.....	5	10. SEA WOLF/Midway.....	—

The PLAY METER subscriber survey of pinball and video games will be a regular feature in subsequent PLAY METER publications. If you would like to join readers currently participating in the survey, simply fill out the coupon below and return it to PLAY METER.

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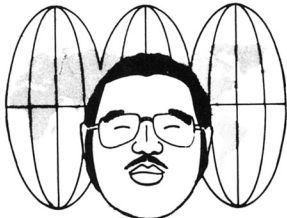
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**SOME COROLLARIES
TO VARIOUS LAWS**

If you start with the left hand console,
the fault will be in the right hand one.
(Quigley)

No matter how trivial an initial
failure, it will cause a major
one. (Thomas)

AMOA selects panels for expo '80 organizing

A.L. Witt, a vice president of AMOA, and John Estridge, a member of the association's board of directors will serve as co-chairmen of the 1980 AMOA exposition, as announced at the association's recent mid-year board meeting.

Other committees selected include the following: Registration Committee—Gabriel Orland, chairman; Donald Anderson, vice chairman; Membership Committee—Ed Shultz, chairman; Kem Thom, vice chairman; Exhibit Committee—Garland Garrett, Sr., chairman; James Stevens, vice chairman; Evaluation

Committee—Wayne Hesch, chairman; Stage Show Committee—Thomas Greco, Jr., chairman; Fred Collins, Jr., vice chairman; Banquet Committee—Dock Ringo, chairman; A.L. Witt, vice chairman; Public Relations Committee—Fred Collins, Jr., chairman; Wally Bohrer, vice chairman; Seminar Committee—Norman Pink, chairman; John Estridge, vice chairman; Awards Committee—Richard Silla, chairman; George Mouton, vice chairman and the Activities Program Committee—Wally Bohrer, Jr., chairman; Maynard Hopkins, vice chairman.

United Artists bows game center

Jon Daugherty, president of United Artists Theatre Amusement reported U.A.T.A. has opened up the newest of its "Electronic Experience" centers at Machesney Park Mall, Rockford, Illinois.

The electronic experience combines under one roof the best in electronic line of game machines, said Daugherty. The 2800-square-foot area houses an assortment of over thirty types of pinball and the latest in electronic games. The atmosphere of the "centers" will be of a new, unique design and decor—low key, family-oriented and fully attended at all times by uniformed employees.

U.A.T.A. is the new division of United Artists Theatre Circuit de-

voted to the development of game rooms in regional shopping centers and the operation of game machines in motion picture theatres.

Daugherty, a pioneer in the amusement game industry, has considerable experience in operating game rooms in shopping centers. He developed Piccadilly Circus amusement center in the Fremont Fashion Center, Fremont, California; Pennyland in Guadalajara, Mexico; Spaceway Raceway in Springfield, Virginia; and Speedway in Wichita, Kansas.

New sites are under construction in Denton, Texas; Toledo, Ohio; Wichita, Kansas; and Schuylkill, Pennsylvania.



Williams Electronics reports 'increased production' of Firepower was made necessary by high interest in the new game 'by players, location owners, operators, and the media.' In this photo, Firepower pins are shown in the final assembly area of the Chicago factory, being inspected before shipment.

Ohio operators show how

To win friends and influence enemies

By David Pierson

The Ohio Music and Amusement Operators Association (OMAA) outdid themselves this year, and they did a little flaunting, too—however subtle. Member operators, visitors, and exhibitors converged on the Columbus, Ohio Hilton Hotel May 16-17 in record numbers for the OMAA's annual trade show and convention.

The final count produced records in all categories: 303 people, representing 80 companies, attended the show (an increase over the 264 attendees of last year); the total number of exhibitors went up slightly from 17 to 18; and the number of booths climbed to 41, from last year's 36.

The steady climb mirrors the state association's continued growth. Last year the Ohio association has a total membership of 80, but this year membership topped the century mark, making the Ohio association

one of the largest such organizations in the country.

What is especially noteworthy about this state association is that it is not merely a social club. Operators in Ohio have banded together for good reasons. They remember all too well what would have happened to their industry if they had not been organized.

Not too long ago the state's Liquor Control Division had ruled that pingames were gambling devices if they awarded anything of value—free plays, add-a-balls, even open gates. But Progress Vending of Middletown, Ohio challenged the state agency on the point, and the matter ended up in the courts.

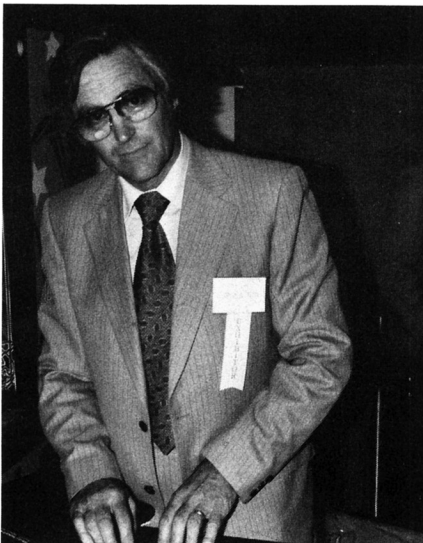
If the Liquor Control Division's position would have been upheld, the state could have been able to confiscate the games and issue citations to bar owners who held the

locations.

The whole matter came down to whether pinball was a game of skill or a game of chance. William J. Brown, Ohio's state attorney general, waged a bitter battle against pinball operators, taking up the cause of the state agency. But he lost, and the issue was judged in favor of the industry. Ohio operators were allowed to award free games on their pinballs.

That was a little over two years ago, and memories of that haunting prospect are still clear in the minds of operators in the state.

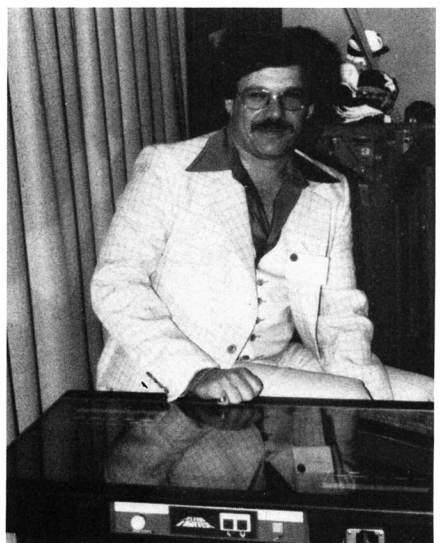
It drove home the message that operators had to band together for their common good. And since that time, the Ohio association has enjoyed a tremendous upsurge in membership. Together with that, the state association's annual trade show and convention has become a truly worthwhile event for Ohio operators,



Andre Dubel of Elcon looks up from playing Kamikaze, a new video game from the Japanese company Leijac.



Ron Gold of Cleveland Coin and Lila Zinter of Exidy stand beside Exidy's newest offering, Targ.



Hal Watner of Data East poses with his company's successful cocktail table video, Astro Fighter.

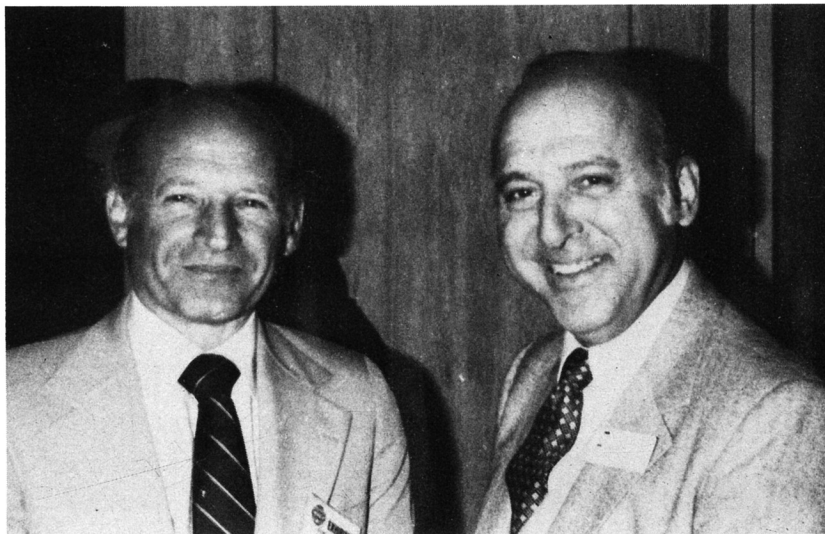
At the New York Show



Ben Chicofsky, producer of the International Coin Machine Trade Show in New York City, beckons attendees at the Statler Hotel.



Cliff Strain of Gottlieb shows off Panthera and Circus, his company's newest pin games, during the April 18-20 show.



Jerry Gordon of Betson Pacific (left) and Midway Manufacturing's Larry Berke got together to talk coin-op. Over 50 companies were represented.

featuring not only a strong trade show but also informative seminars with knowledgeable speakers.

This year, there was a little extra touch added. Addressing the Ohio pinball operators at the opening day's session was none other than the Ohio attorney general, William J. Brown—the nemesis of the industry just a little over two years ago. It shows how time and organization can turn things around for an industry.

Surely, it was a sweet moment for Ohio operators, but more importantly it pointed out exactly what could happen if operators band together for their own common good.

The attorney general's speech, as it turned out, touched on the matter of the state's energy resources and its ability to meet the demands of its citizens, not on the pinball industry per se. But Brown did make some remarks that showed he was acutely aware of his past adversary relationship with the industry.

"The state of Ohio has to be sensitized to your business," he told operators. He went on to say, "I guess you all want to hear some comments from me about pinball in this state and the skill factor of the game and all that, but I'll leave that for your other speakers." Reportedly, the state attorney general's attitude toward pinball has changed dramatically, after he came to know the people in the industry.

After his speech, Brown toured the exhibit floor, checking out the new equipment, taking time to play some of the videos and pins.

There is a strong distributor network throughout the state of Ohio, and every year the distributor booths at the OMAA Show represent the largest part of the exhibit space taken—with Monroe Distributing, Royal Distributing, Shaffer Distributing, and Cleveland Coin showing off their various lines.

Other companies exhibiting at this year's show included parts and accessory suppliers Amusement Emporium, Wico, Amusement Supply, Vanguard Accessory, and J-S Sales. J.A. McNaughton showed off the Qwik-Lift hand truck for moving equipment; and Mobile Record Service and Priority Cigarette Service of Cleveland also displayed their services.

Split Second showed off its new Reaction Timer, which was introduced at the Amusement Operators Expo. Kurz Kasch exhibited its Signature II system, and Kimco showed off its line of electronic tooling equipment. Kimco, incidentally, entered the industry at the Ohio state show last year and commemorated the occasion this year by

donating \$1,000 worth of equipment to the state association for door prizes (see related story elsewhere, this issue). Abloy Security Locks exhibited its line of security equipment.

Representing Wurlitzer's phonographs was Hilltop Vending, which showed off the *Atlanta*, the *Cabrina 160*, and the *Wurlitzer 200X*. Coinco showed off its coin acceptor mechanisms. And a new distributor, Central Ohio Sales and Marketing, among other things showed off the Tournament Soccer foosball table, Arachnid's English Mark Darts, and the Tournament Eight-Ball pool table.

Most of the major manufacturers were represented in the four distributor booths. Bally's *Rolling Stones*, *Nitro Ground Shaker*, and wide-body *Space Invaders* were shown, as was Bally's newest, a conventionally-sized game, *Mystic*.

From Gottlieb, there was *Torch*, *Circus*, and *Spider-Man* on display, and the company's newest offering, *Panthera*, a good-playing, attractive pingame.

Stern was represented by *Ali*, *Big Game*, *Seawitch*, and a new one, *Cheetah*, which made its debut at the show and drew a fair amount of attention.

And Williams, which is enjoying great success from its *Firepower*, was represented by that game and *Laser Ball*.

In the hot video field, Exidy attracted quite a bit of attention with its newest offering, *Targ*, which features a screen of intersecting corridors. The player controls a space ship and tries to shoot down all the enemy spaceships before they shoot him down. The game should add even more fuel to the already booming video game market.

Another new video game offering which deserved attention came from none other than Elcon Industries, which was debuting a new game called *Kamikaze*. The game, which was licensed to Elcon from Leijac of Japan, features a novel twist to the *Space Invaders* theme. In *Kamikaze*, a UFO loads aliens into ten channels which, when loaded, will descend on the earth. It is the player's task to stop the alien tide before it reaches earth.

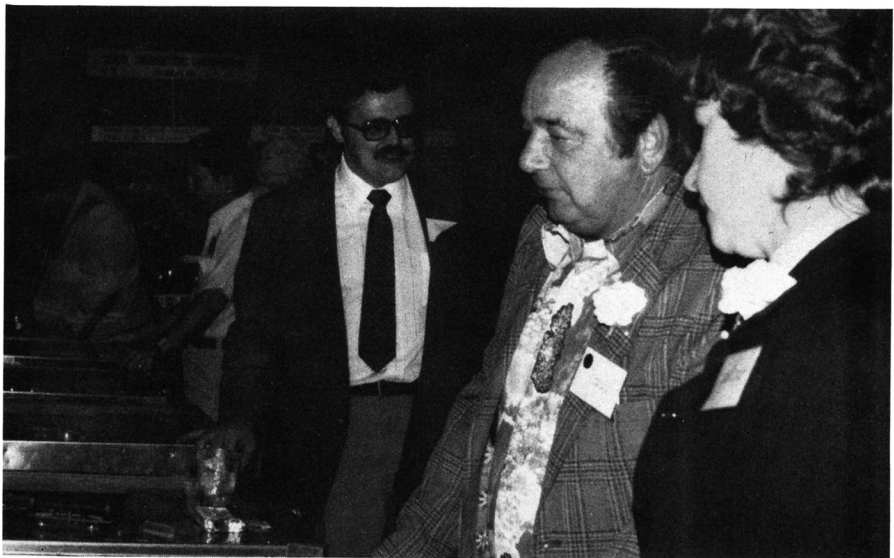
Other video games which had been shown before elsewhere were *Rip Off* from Cinematronics; *Galaxian* (both in cocktail and upright configurations) and *Extra Bases* from Midway; *Astro Fighter* from Data East in the cocktail version and from Gremlin in the upright version; Universal's *Cosmic Guerilla* (both in cocktail and upright versions) and *Cosmic Alien*; *Lunar Rescue* from Taito; Atari's *Asteroids* in the cocktail configuration and upright *Monte Carlo*; and Sega's



William J. Brown, Ohio's attorney general and a one-time opponent of the coin-operated amusement industry, tries his hand with Universal's *Cosmic Alien*.



From left, Debbie Spears, Tom Stroud, Susan Joyce, Barb Towalski, and David Stroud get together in front of Cinematronics' *Rip Off* in the Monroe Distributing booth.



The pinballs drew a lot of attention at the OMAA show. That's Irving Kaye's Bill Currier in the center, checking out the action.

upright *Monaco GP*.

NSM's phonograph line was represented in two distributor booths this year—Royal Distributing and Cleveland Coin (CleCoin was a Seeburg distributor until that company went bankrupt a short time ago).

Shaffer exhibited the Rowe phonograph and coin changer lines and held a promotion where buyers of phonographs could get free television sets. And Monroe Distributing showed off its *480 Techna* and *477 Max* models from Rock-Ola. Monroe also showed off the Irving Kaye pool table line.

Seminars the second day of the show were preceded by a short talk from Greg Sabin of Elum Music in Massillon, Ohio, who outlined the OMAA's newest service, a mini-school for technicians and servicemen. Sabin said the school, which would be open only to member operators would consist of five two-day seminar programs spaced about two weeks apart. The five two-day schools would deal with the

following topics: Fundamentals of Electronics, Pinball Troubleshooting, Digital Electronics I, Digital Electronics II, and Phonograph Installation and Maintenance. The first two-day session, he said, would probably take place in the northeast part of the state during the last week in July.

"We're not trying to take the place of the manufacturers' schools," he told the audience of operators. "We want to do this so that those who attend the manufacturers' schools will know what's happening and are prepared." He said the OMAA may still need space to hold some of the schools, and it is looking for operators or distributors who could allow the schools to take place on their premises.

Sabin also said Kurz Kasch had donated all its correspondence course material for the program. The Kurz Kasch correspondence course, which has been endorsed by the AMOA, was donated by Kurz Kasch's Jim Sneed, who is a member

of the Ohio state association's education committee.

Two seminars presented at the Saturday session were delivered by Roy Cederlund of Kimco, with a technical seminar on "High Reliability Component Removal and Board Repair," and John Estridge, a Tennessee operator who spoke on "Increased Profits by Analysis and Control."

Estridge's talk centered on the importance of delegating authority and assigning responsibility. Using the example of a route he acquired several years ago, Estridge showed how the company was able to improve its profit picture by dropping locations that were too far away to service and by assigning routemen certain machines which were their own specific responsibilities. By making these changes, Estridge pointed out, he had been able to cut his number of employees from 11 to five. [Estridge was featured as PLAY METER's Coinman of the Month in May, 1979 with an interview on the

Pinball (marathon) goes to college

By LEE SHEARER

Giving your money away may not seem too bright, but under the right circumstances, charity can be good for business.

If you believe in advertising, you might consider getting involved in the kind of charity benefit an Athens, Georgia amusement coin machine operator did.

Bill Chambers of Chambers Music Company provided the machines, a University of Georgia fraternity provided the manpower and promotion, and a local restaurant and tavern owner provided the space—for a pinball marathon, designed to raise money for the American Heart Association and win a pinball machine for the fraternity in a fundraising contest sponsored by the Stern Electronics Company, the National Lampoon Magazine, and the American Heart Association.

The end result was a lot of tired fraternity brothers, \$432 for research, and the kind of publicity for the operator and for the pinball business that money usually can't buy.

According to John Myers of the Zeta Beta Tau fraternity, when he saw the advertising for the contest in National Lampoon, his mind immediately went to two things: pinball machines—since fraternity brothers love to play pinball and the contest

was sponsored by a pinball machine manufacturer — and marathons, since he had just heard about a dance marathon sponsored by the Rutgers University chapter of ZBT.

Myers drew up some preliminary rules for the marathon, then took them to the campus coordinator for the Heart Association and the university's advisor to fraternities for approval and advice.

Time was short—Myers hadn't seen the ad until the last day of March—but with frat brothers helping on the legwork, they contacted Chambers, the restaurant owner (Harry Downs, the owner of "Papa Joe's" pizza and beer establishment), and local public officials.

According to Myers, he and ZBT were particularly sensitive to local official approval, since pinball machines were illegal in Athens just eight months ago.

"We got in touch with the mayor and the police to investigate about if we'd run afoul of any city ordinances or anything that would stop us from having it in a bar or staying open 24 hours," Myers said.

They found out they couldn't offer prizes, because that would have been considered gambling. Several months before, the university had planned a pinball tournament but had to cancel it because of that city ordinance. To get around that, the marathon seemed the only choice,

Myers said. "The possibility of setting a world record was enough to work for rather than first prize in a contest. That also got us around the illegality of gambling," he explained.

Finally, at 6 p.m. on Thursday, April 10, four pinball machines started up. They didn't stop until the following Saturday at midnight. Myers himself stayed up from 7 a.m. the Wednesday the marathon began until an hour after it ended, stopping only long enough to eat, go to class, and take one four-hour nap during the 66-hour period.

Another ZBT brother, Rick Sjoblom, played pinball for 36 hours and 31 minutes straight. Sjoblom also set local records for the most points on one ball—650,000 on a Stern *Meteor*. Another ZBT member, Jim Mitchell had the honor, but no prize, of the top game score—1,275,370 on the *Meteor*.

Fifty-five people took part in the marathon, Myers said. Most of them were ZBT members, but a goodly number were members of other fraternities and sororities at the university or people who just heard about the marathon and came in off the street. Many more came to watch. Each one paid a 50-cent door charge and \$2.50 an hour to play the pinball machines, all of which went to the Heart Association.

Chambers and Downs lost only the revenues from the machines for

subject of employee accountability and how that affects an operator's profit picture.]

Following Estridge, Don R. Kraus, a field engineer for SOHIO's Sales Technical Division, delivered a short seminar for convention-goers on "Is Your Automotive Fleet at Peak Efficiency?"

The President's Luncheon featured talks by AMOA Executive Director Fred Granger and AMOA President Bob Nims. Granger noted the AMOA is considering opening a contact office overseas to offer assistance for foreign visitors to the AMOA Show. He also said that eventually the AMOA may even require a district office elsewhere in the United States.

Nims then told the audience of well over 100 people that the AMOA is presently fighting the copyright battle on four fronts— (1) the Danielson Bill (H.R. 997), first reported by PLAY METER in July, 1979 [page 55], which would give performers the right to collect

royalties also; (2) the court case on the matter of the location list requirement by the Copyright Royalty Tribunal, which is pending before the U.S. Court of Appeals; (3) the mechanical royalty assessment by the Copyright Royalty Tribunal matter, which finds the record companies (which are against the operators and on the side of the performing rights societies in the Danielson Bill matter) siding in this case with the operators; and (4) the per-box assessment, which the performing rights societies want increased.

According to Nims, the AMOA is not arguing for a reduction of the per-box fee but rather is arguing that the fee be kept at \$8 per box.

Nims told the audience that BMI wants the per-box assessment raised to \$30 and is basing its claim on an assessment it supported back in 1958 which said the fee should have been \$19.70. BMI settled on the figure of \$30, Nims said, by applying the consumer price index to that sum.

ASCAP, according to Nims,

paraded economists whose testimony before the CRT said the fee should be set at \$140 per jukebox. "They said, though, that they would settle for \$70," said Nims.

Nims said BMI and ASCAP (in this case, the third performing rights society, SESAC, has joined with ASCAP in its case against the operators), are oftentimes quoting magazine articles out of context in making their cases.

Newly elected OMAA officers are as follows: President, Jim Hayes of Gem Music in Dayton; First Vice President, Richard E. George of George Music in Painesville; Second Vice President, Larry Van Brackel of Van Brackel and Sons of Defiance; Treasurer, Clarence Neargardner of Celina Music in Celina; Secretary, Jim Schlarb of J&V Coin, Newcomers Town; and Chairman, Maynard C. Hopkins of Hopkins Music in Galion.

The OMAA also elected seven new members to its 16-member board of directors.

—and operators learn a business idea

two and a half days, but this is what they gained: mention in all three local newspapers, including a front-page photograph in the morning daily paper while the event was still underway, and frequent spots on a local radio station during the marathon. Each time the marathon was mentioned, Papa Joe's and pinball machines were also mentioned, along with the American Heart Association, a very respectable charity.

That kind of publicity probably won't give Chambers Music a whole lot of direct benefit, but it does directly benefit Papa Joe's, one of his operators, and it can't help but improve the image of the pinball industry in general.

Chambers said the publicity "might have done him a little good," but admits to having been lending pinball machines and jukeboxes to charities for years. Recently, he donated a machine to a local school, which auctioned it off to raise money for the school.

According to Ted Shierling, manager of Papa Joe's, the marathon helped business at least to some extent. What revenues were given up from the machines were regained in beer and food sales, he said. Over the long term, the marathon could help Papa Joe's even more, of course, since, because of the publicity, many people who'd never heard

of Papa Joe's now know where it is.

And then there's next year. Myers thinks "If we jump on this thing early we could have television coverage, radio coverage, newspaper and magazine coverage."

Whether or not Stern sponsors

another contest, Zeta Beta Tau will have another pinball marathon, Myers said. "I'd really like to go over \$1,000 with this thing next year. I'd really like to see this thing become a big tradition here at the university," he explained. It well might.



University of Georgia frats were happy, participating in a charity-fundraising pinball marathon—and so were the proprietors of 'Papa Joe's,' where the event was held, and the Athens operator got good public relations, too. Stern Electronics sponsored the drive.

Kimco donates \$1000 equipment to OMAA show

Kimco, a national supplier of electronic tooling equipment, celebrated its first anniversary in the coin-operated amusement industry by donating \$1,000 worth of electronic repair equipment as door prizes at the Ohio Music and Amusement Association's annual two-day convention and trade show.

The company, which supplies rework and repair tooling for electronics, made its debut in the coin-op industry at last year's Ohio show and has, since then, exhibited at two national trade shows in the industry—the AMOA Show in Chicago in November and the Amusement Operators Expo in New Orleans in March.

The donation included a \$400 desoldering system which was awarded as one of about twenty door prizes from Kimco. Kimco also supplies anti-static products, hard tools, test accessories, ultra-sonic cleaning equipment, chemicals, and epoxies. And many of these items were included among the door prizes.

Hal Lohse, president of the firm, told *PLAY METER*, "We did it because the operators of Ohio have been especially helpful in getting us started as a prime supplier of electronic production and repair equipment within the vending and amusement industry."

He noted that, "We got our start a year ago at the Ohio show and have

enjoyed since then a very satisfying relationship with distributors and operators, not only in this state, but throughout the industry. We wanted to express our appreciation in this way and thought that making this donation to the organization which helped us get our start was the best way to do that."

The \$400 desoldering system was won by David George of Bell Music Company in Akron, Ohio. Two other grand prizes, donated by Stern Electronics and Bally Manufacturing, were also among the Ohio show's big giveaways.

Winning a Stern *Ali* pingame was Entertainment Unlimited of Westchester, Ohio. Maynard Hopkins of Hopkins Music in Galion, Ohio won a Bally *Groundshaker* pinball.

A large banner announcing Kimco's \$1,000 giveaway draped across the door to the exhibit floor.

Additionally, Kimco's Roy Cederlund delivered a Saturday morning seminar session for Ohio operators and technicians on "High Reliability Component Removal and Board Repair."

Lohse also informed *PLAY METER* that Kimco, which is headquartered in Mentor, Ohio, is opening a second office in Fort Lauderdale, Florida in June. Steve Young will manage Kimco's southeast operations out of that office. Further details on the new office's opening were not available at presstime.

Distributing



Davidson

Lowen-America tags 12 former Seeburg distribbers

Lowen-America, Inc. has announced its connection with twelve new distributors for NSM phonographs and accessory products at fourteen U.S. distribution points.

Bert B. Davidson, president of Lowen-America, said the location of these handlers "is a great improvement in our distribution organization. These are well-established and proven distributors."

The new NSM distribbers are: Advance Automatic Sales, San Francisco; Atlas Music, Pittsburgh; Circle International, Los Angeles; Cleveland Coin, Cleveland and Columbus, Ohio; Continental Divide Distributing, Denver; Eastern Distributing, Winston-Salem; L & R Distributing, St. Louis; S.L. London, Milwaukee; James Vending, Louisville, Kentucky; Modern Vending, Indianapolis; Southwest Vending Sales, Oklahoma City and San Antonio; and World Wide Distributing, Chicago.


As Davidson explained, distributors are most often exclusive handlers of one jukebox line. The twelve new distributors for the NSM line were formerly handlers of phonos made by Seeburg Corp., which has bowed out of jukebox manufacturing.

The additions bring Lowen-America's network up to a total of 24 distributors at 26 distribution points, said Davidson. The new handlers are presently performing service on NSM machines.

SOME COROLLARIES TO VARIOUS LAWS

If it works right the first time, you've obviously missed something. (Herman)

Auditors are the people who go in after the war is lost and bayonet the wounded. (Rubin)



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PSI®

Exclusive Canada distribs picked by A.D.I./Pool

A.D.I., The Pool Table Company has appointed the WIKO Corporation of Canada for exclusive marketing privileges in Canada.

Located in Montreal, Quebec, WIKO is now in the process of appointing a network of distributors throughout that country. Although it is only handling the *Seville* model coin-operated pool tables, negotiations were soon to take place for WIKO to obtain exclusive rights for the home tables and other accessories marketed through the recently introduced, Jendee Sales and Marketing office, a division of A.D.I.

A.D.I. also announced that on May 1, 1980, A.D.I. and its affiliate

Jendee Sales and Marketing will open a new branch office in New York. Harold Goldman, originally affiliated with the Barkley Group Banks has been appointed head of the New York office.

"This action will provide a more convenient and profitable manner for distributors to obtain and market all the products presently manufactured in the main corporate facilities located in Clearwater, Florida," said Rick Carr, chief operating officer of A.D.I. in an announcement.

"We hope to have many years of good and respectful relationships with the principles of the Canadian WIKO Corporation," said Carr.

Poland Mfg. enters new N.C. plant

Poland Manufacturing Corp. of North Carolina has moved to expanded production facilities to meet increased orders for its pool table service devices.

The new, 26,000 square feet complex will be located at a new Poland Manufacturing address: Clemmons Shopping Center, Clemmons & Lewisville Road, Clemmons, North Carolina 27012.

Bill Hauser, president of Poland Manufacturing, told *PLAY METER* of the building change near press time. He said, "Business has been

booming. We're coming out with the Eazy Leveler (pool table leveling device) and we've got about 50 orders a day on those."

Poland, which also produces Easy Mover for pool tables, was acquired by Hauser in November of 1979. A meeting of corporate officers was held in January, and the firm began shipping equipment on January 10th.

Hauser said his firm has changed distribution methods, now relying on sales from ads and trade shows. This led to increased sales, he said.

Rock-Ola expands in Tenn., Ark.

Rock-Ola has expanded the area served by Sanders Distributing Company to include Western Tennessee and the eastern portion of Arkansas, according to an announcement by senior vice president Dr. David R. Rockola.

Sanders Distributing Company, of 612 Eighth Avenue in Nashville, is now the authorized Rock-Ola phonograph distributor for all Tennessee counties except Marion, Hamilton, and Bradley.

Under the new agreement, Sanders will also represent Rock-Ola in the eastern portion of Arkansas, bounded by and including Randolph, Lawrence, Craighead, Poinsett, Cross, St. Francis, Monroe, Arkan-

sas, and Phillips counties.

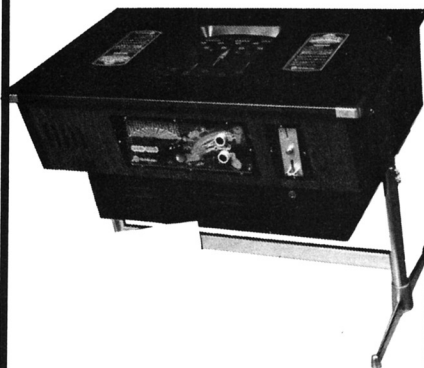
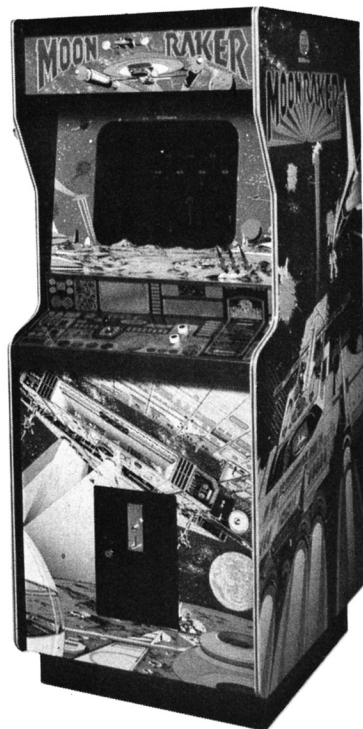
To facilitate sales and service to operators in the newly assigned area of Western Tennessee and Eastern Arkansas, Sanders has named Dennis Rhodes Enterprises, 669 Madison Street, Memphis, as a sub-distributor. Dennis Rhodes Enterprises will inventory the complete line of Rock-Ola phonographs plus all accessories and parts.

Operators in the above areas can obtain information regarding Rock-Ola products by contacting Dennis Rhodes Enterprises in Memphis at 901/529-1075; or Edwin J. (Jack) Williams, Sanders Distributing Company, 612 Eighth Avenue, South, Nashville, Tennessee, 37293; telephone: 615/249-4263.

MOON RAKER



Nichibutsu



A one- or two-player game where players shoot down bombs coming from the UFO by operating a firing button.

Features include a bonus fighter-plane if player scores over 3,000 points. Also shows a high score to date.

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Weinberg to parent company; Gottlieb, Bloom move up

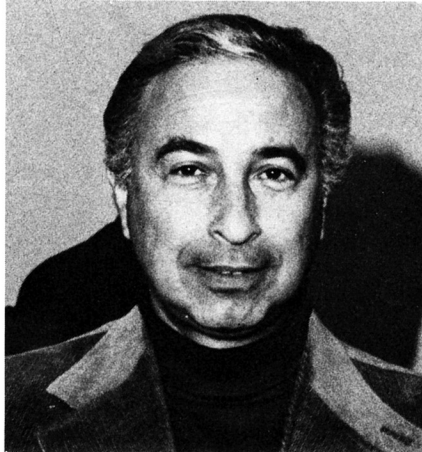
Judd A. Weinberg, Board Chairman and President of D. Gottlieb & Co., is leaving the company on June 30th to become Senior Consultant to the management of Columbia Pictures, the pinball manufacturer's parent company.

With this change, it was announced, Alvin J. Gottlieb becomes chairman of the board and Robert W. Bloom assumes the post of president and chief executive officer.

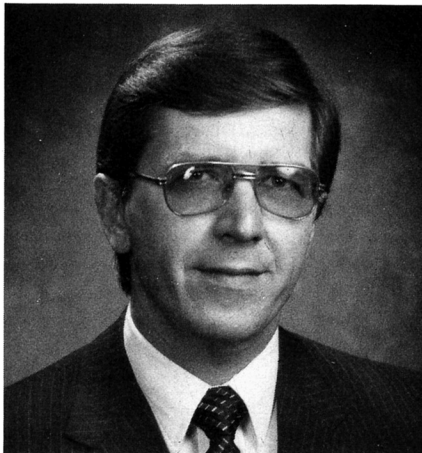
The announcement was made to company employees at the Gottlieb Service Recognition dinner on April 26th, a traditional company affair honoring 25-year employees.

Mr. Weinberg joined Gottlieb in 1952. He became an officer of the company during that decade and was elected chairman and president in 1970. He was a key executive with the 53-year-old firm during much of the period now identified as the "Golden Age of Pinball," an era during which D. Gottlieb & Co. sustained its most dynamic worldwide growth.

At the dinner in his address to the company staff, Weinberg voiced pride in his years with Gottlieb and in the industry as well as his new association with Gottlieb's parent company. "It has been a great pleasure and privilege to have worked in this dynamic industry alongside our fine distributors and their valued operator customers," he



Gottlieb



Bloom

said. "And it is particularly satisfying to leave the company at a time when it has never been stronger or more vigorous and is postured for its greatest prosperity and growth ever. Alvin Gottlieb and Bob Bloom will be backed by a wonderful team, a blend of both long-term and new people," he concluded.

Alvin Gottlieb, the new board chairman, is the former executive vice president and son of the company's founder, the late David Gottlieb. He joined the company in the late 1940s after military service and college and has been with Gottlieb continuously since then. Aside from his contributions to the company and industry in the areas of management and product innovation, he has spent significant amounts of time representing the legal position of the industry in Washington and in state and municipal governments.

Robert W. Bloom, who becomes the new president and CEO of D. Gottlieb & Co., joined the manufacturer in 1977. At the time of Mr. Bloom's appointment in January as senior vice president, Mr. Weinberg commented that "Bob Bloom's aptitude and affinity for the games business were evident from the day he started at Gottlieb and his interest and involvement in the area of product development has been an unexpected plus to the corporation."

Pennies appear 'short,' but no profit in hoarding

U.S. Mint officials say there is a shortage of pennies across the nation and that there is no reason for the hoarding.

Francis Frere, assistant director of the Mint, said there is evidence of hoarding (at mid-May). But he would not specify areas where shortages had developed, saying that information could lead to more hoarding.

According to the Associated Press, the Washington-Baltimore area was

an affected area. Some 120 supermarkets in that region had asked shoppers to pay with correct change and customers at one Baltimore bank could get a coupon for a free hamburger just for trading in \$5 worth of pennies.

But there was no obvious advantage to hoarding of the lowly copper cent. Frere said, "The price of copper would have to get to \$1.50 a pound even to match the value of the

copper in one cent. It would probably have to get to \$2 a pound to be valuable to people holding the pennies for speculation purposes."

The copper market at mid May paid 86.3 cents for a pound.

Some experts said a number of banks may be holding pennies in their vaults as part of the money reserves the government requires them to maintain, the AP reported.

TOLL-FREE SERVICE NUMBERS

Bally 800-323-3555

Cinematronics 800-854-6577

Exidy 408/734-9410

XCOR profits rise 8 % in first quarter 1980

XCOR International, Inc. reported that for its first quarter, ended March 31, 1980, its net income was \$1,611,000, or 56 cents per share, an increase of 8 percent over net income of \$1,520,000 or 52 cents per share in the same quarter last year. Revenues in the first quarter of 1980 were \$42,950,000 compared with \$31,766,000 in the first three months of 1979.

Earnings in the first quarter of 1980 benefited from a \$675,000 or 23 cents per share extraordinary item, the utilization of a tax loss carry forward. In the first quarter last year there was an extraordinary gain of \$640,000 or 22 cents from a similar tax loss carry forward.

Commenting on the improved first quarter results, XCOR President James J. Hughes stated: "Net income was affected by higher borrowing levels and interest rates, approximately \$800,000, and the continuing effects of the tornado at the plant of its subsidiary, Choice Vend, Inc., in Windsor Locks,

Connecticut, producer of vending machines for bottled and canned soft drinks and fruit juices. Choice Vend resumed production on January 14, 1980 after the plant had been closed since October 3, 1979, as the result of severe wind and water damage and did not return to full capacity until the end of February.

"Our Williams Electronics subsidiary continued to expand its market share of pinball amusement games with its exciting new micro-processor controlled game *Gorgar* that 'talks' to the players.

"King Musical Instruments, Inc. and Qualitone, Inc., our hearing aid subsidiary, both posted solid first quarter results," said Hughes.

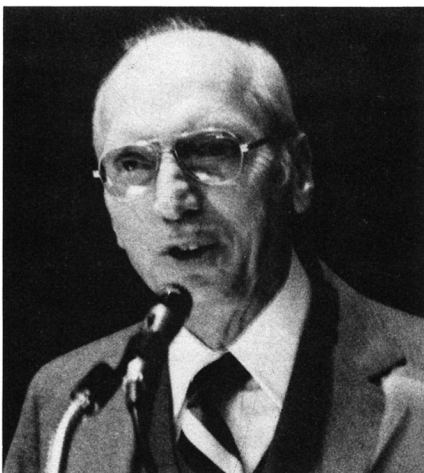
According to XCOR's 1979 annual report, sales growth, profitability and product innovation characterized Williams' record setting operations during 1979.

In February, 1979 the company acquired Menasha Controls which currently provides microprocessor assembly and testing to Williams.

Rieck retires at Rock-Ola

Lester C. Rieck, Rock-Ola phonograph sales manager for the past 25 years and a veteran of over 40 years in the coin-operated machine industry, retired recently, according to an announcement by Executive Vice President Edward G. Doris.

"Over the years at Rock-Ola, Les



Rieck

became well known and respected by distributors, operators and fellow employees for his affable, efficient manner. His contributions to the sales, growth, and success of Rock-Ola phonographs were many and we will certainly miss his knowledge and expertise," Doris commented.

A native of Chicago, Rieck began his sales career in the coin-operated phonograph industry at Mills Industries, Inc. where he advanced to sales manager. Immediately prior to joining Rock-Ola in 1955, Rieck was associated with H.C. Evans & Co., Chicago.

During his association with the industry Rieck saw coin-operated phonographs grow from a simple electro-mechanical record player into a highly sophisticated and successful music merchandiser that utilizes microprocessors, computers, memory banks and optic sensor beams.

Lester and his wife, June, continue to live in Chicago where they are both active in church, social, and charitable activities.

MOON ALIEN



Nichibutsu



A one- or two-player game where players shoot down bombs coming from the MONSTERS by operating a firing button.

If a player scores over 5,000 points, he can enter his score and name.

I.J.S.
HEADQUARTERS
16910 DALLAS PARKWAY
SUITE 212
DALLAS, TEXAS 75248
214-233-8318

Rich Custom has new cue making quarters in N.J.

Rich Custom Cue Mfg. announced that it is moving to new and larger quarters in Carlstadt, New Jersey. The move has been necessitated by the increasing demand for lines of professional billiard cues manufactured by Rich.

This billiard cue manufacturing concern was acquired by H. Betti Industries in 1978 and is now a division of that company. Since the acquisition Rich's emphasis has been on providing the industry with top quality, American-made billiard cues, a standard set by founder in 1912.

Besides its regular line of cues, Rich is currently producing "The Baltimore Bullet" jointed cues for which it has exclusive rights. Additionally it is also in production of "Lou-Machine Gun-Butera" pro-line of cues.

During the past year Rich also introduced its XL-100 one-piece cue. The acceptance of the XL-100, which has qualities of a two-piece cue, has far exceeded management's expectations and is now planning to increase its production for the coming season.

Ike Algaze, the former owner of Rich, is plant manager. He is assisted by Joseph Vivirito; and Mike Quinn is plant foreman. Rich Cues are marketed by Imperial Billiard Industries, which has sales offices and warehouses in Sun Valley, California and Carlstadt, New Jersey.

Imperial Billiards will also market a line of "The Baltimore Bullet" billiard accessories and lamps. John Rafer is marketing manager for Imperial Billiards and is headquartered in the Carlstadt offices; his assistants are Michael DiMotta, Jerry Kushner, and Thea Burke. The Sun Valley, California office is headed by Nancy Henderson and Chick Frankel, assisted by Mike Bathalter, Charles Curtis and Charlotte Robles.

For information call toll free 800-526-6261 (N.J.) or 800-423-2753 (California).

Directory Update

Certain personnel changes and new addresses have been logged since the February, 1980 PLAY METER Directory Issue was mailed. In other cases, information arrived at PLAY METER's editorial offices too late for inclusion in that issue. Here is an update on some Directory listings.

Associated Leisure Sales, Ltd.

Phonographic House, The Vale, London NW11 England.
Managing Director (Sales): Nigel Booth; National Sales Director: Alan Wilson; Commercial Director: Brian Marks.

Cherry Leisure (U.K.) Ltd.

387 High Road, Willesden, London NW10JR. (Telex 269623)
Directors, A. Almerfors (Sweden), C. Arrhen; Financial Controller: G. Jardelow; Sales Manager: V. Leslie; Sales executives: Suzie Wilde, Tony Sussex; Operations Manager: Kurt Oppenheim.
Representing: Atari [main agents], Atari Europe, Bertolino, Cinematronics, Exidy/Vectorbeam.

Hazel Grove Music Company Ltd.

Bulkeley Road, Cheadle, Cheshire, England. (Texex 668017)
Directors: N.L. Rimmer, J.B. Denton, J.G. Dale; Sales Manager: S.W. McKenna.
Representing: Superleague Pool Tables, Rowe AMI Juke Boxes, Playmate Full View Wallbox, video games, pinballs.

London Coin Machines Ltd.

Bromells House, 22/24 Bromells Road, London SW4 OBQ. (Telex 896616-A/B)
Managing Director: J.C.M. Pryde; Marketing Director: S. Wallis; Sales Director: L.A. Bigg-Wither.
Representing (exclusively): Allied Leisure [of Miami], Data East, Eyerly Aircraft, Game Plan, Nintendo, Rock-Ola, Stern; also: Bell-Fruit, Brenco Equipment, Cinematronics, Exidy.

Music Hire Group Ltd.

Low Lane, Horsforth, Leeds LS18 LER, England.
Chairman: R.S. Smith; Joint Managing Directors: John Ferrand, John Townsend; Sales Manager: G.A. Rowan-Wilde.

Ruffler and Deith Ltd.

127 Wandsworth High Street, London SW18 4UB.
Managing Director: Bob Deith; Assistant Managing Director: John Holmes; Marketing Director: Don Holman; Sales Director: Colin Mallery; Stores Director: Dave Sines; Sales Manager: Simon Wall; Gen. Manager/Workshops: John Chidgey.
Representing: Allied Leisure, American, Atari, Bally, Bell-Fruit, Cinematronics, Alfred Crompton, Exidy, Gowerpoint, Hazel Grove, Hoei, JPM, Midway, R.G. Mitchell, Sam Moffat, Nichibutsu, Sardi, Satomi, Streets, Taito, United Billiards, Whittakers, Williams, Wurlitzer.

Star-Tech Journal

P.O. Box 1065, Merchantville, N.J. 08109.
Publisher: Jim Calore; Art Director: Paul Ehlinger.
A monthly technical publication for the automatic amusements industry.

Streets Automatic Machine Co. Ltd.

34 Lottbridge Drive, Eastbourne, East Sussex, England BN23 6PH. Phone: (0323) 20251
Chairman: Michael Field; Managing Director: Miss Jill Waker; Sales Director: Gerry Bowyer; Production Director: Terry Deekes; Service Manager: Ted Taftt.
Representing arcade games.

Taito Electronics Ltd.

274 Water Road, Wembley, Middlesex, England. Phone: 997-2522. (Telex: 24264 Taitel G)

Other changes were noted in a Directory update which appeared in the May, 1980 PLAY METER, page 75.

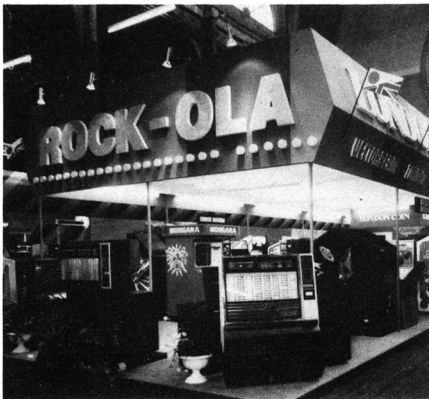
TOLL-FREE SERVICE NUMBERS

Game Plan 800-323-9425

Gottlieb 800-323-9121

Gremlin 714/277-8700

Rock-Ola shows new lines at Frankfurt, London



Rock-Ola's line of new microprocessor controlled phonographs were prominently displayed at major trade show exhibitions held recently in Frankfurt, Germany and in London, England, according to the firm's senior vice president, Dr. David R. Rockola.

At the International Amusement and Vending Trade Fair held in Frankfurt, Rock-Ola phonographs and venders occupied a prominent position in the Nova Apparate exhibit. "Reception to Rock-Ola's *Techna* and *Max* phonographs by visitors from Europe and the rest of the free world was excellent," Dr. Rockola said.

"Particularly encouraging was the consensus among operators that Rock-Ola's exclusive play stimulating features, like Bonus Play and the Top 3 Hit Display is enabling them to substantially improve the profitability of their jukebox operations."

Rock-Ola also introduced its new full-view "Musicenter" wallbox, which incorporates the same income-stimulating features that have made current model Rock-Ola phonographs popular.

Audio/visual service training program offered by Rock-Ola

A completely new audio/visual service training program for Rock-Ola microprocessor operated phonographs is suitable for use by groups or individuals and is now available for operator use, according to senior vice president Dr. David R. Rockola.

The new training program consists of 127 full-color 35mm slides coordinated with a taped audio discussion of each slide. A 132-page illustrated manual that duplicates the material covered by the slides and tape recording is provided to each student.

As with previous Rock-Ola service training programs, the new micro computer version can be used to instruct a group or one individual. When training a group, the instructor has the option of using the taped audio portion or he can personally provide the explanation of each slide. The program can be stopped at any point, backed up to any previous

slide, and then returned to the regular sequence.

The flexibility of Rock-Ola's service training program is aimed at making it useable by individual service trainees. They can proceed at their own pace, and can revert back to previous slides if needed.

All the new Rock-Ola microprocessor controlled features including the "Profit Setter," "Hit Tracker," Opto-Sensor Record Selector and the new play stimulators, are discussed in the new service training program. The standard mechanical and electrical components are also completely covered.

Details on the new Rock-Ola Audio/Visual Service Training Program are available from Rock-Ola distributors or directly from Rock-Ola Manufacturing Corporation, 800 North Kedzie Avenue, Chicago, Illinois 60651.

Tooling Supply Problems?

WE'RE YOUR ONE-STOP SUPPLIERS FOR TOOLS AND EQUIPMENT NECESSARY TO REPAIR THE PRINTED CIRCUIT BOARDS PROPERLY



IF WE DON'T HAVE IT, YOU PROBABLY DON'T REALLY NEED IT.



P. O. BOX 322
MENTOR, OHIO 44060
(216) 255-7757 in Ohio
OUTSIDE OHIO CALL
TOLL FREE 1-800-321-7056

Vanguard lists accessory supplies

The new Vanguard Accessory Supply catalog has been released, Mark Ruehl, manager of Vanguard Accessory Supply, Overland Park, Kansas announced. The low prices, product variety, and free freight are the three big features, Ruehl reported. Quality merchandise throughout the catalog is backed by a guarantee of satisfaction noted in each catalog. This expanded catalog serves the

vending, bottling, amusement and games, billiard, hotel, motel, and health care industries.

To meet the demands of the industries served, the catalog has increased in size by 70 pages and thousands of items, said Ruehl.

Vanguard is a division of The Vendo Company and is located at 10500 Barkley, Overland Park, Kansas.

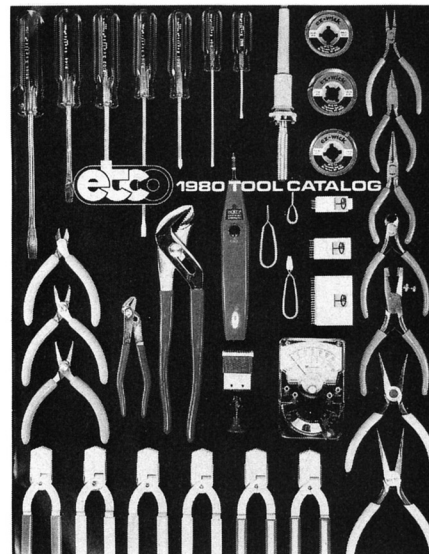
Wico catalog previews products

The 1981 Wico Catalog is now available, featuring a special electronic parts and supplies section, from the Niles Illinois distributor of supplies to the amusement and vending industries.

Over 800 items are listed in the 1981 catalog which includes a "new products preview." Frank Happ,

marketing director of Wico Corp., said a reduction of prices on Willard billiard balls and billiard/pool cloth is reflected in the catalog.

Wico can be contacted at seven toll-free numbers including the corporate headquarters' 800/323-4030, address: 6400 W. Gross Point Road, Niles, Illinois 60648.



Tool book comes from ETCO

A new, 145 page tool catalog illustrating and describing an extensive line of field service tool kits, test equipment, hand and power tools, in addition to hundreds of other related supplies, is now being issued by Electronic Tool Co., Thornwood, N.Y.

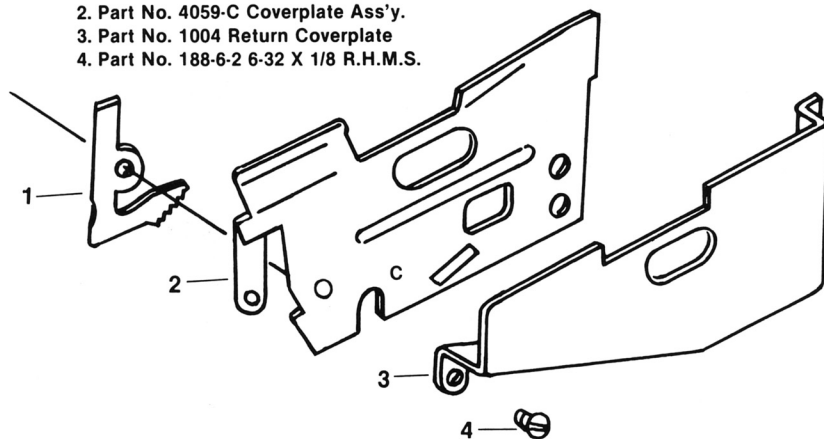
The new catalog is touted as a "supermarket" of tools and of particular interest to the electronic and electro-mechanical industries. Tools, tool kits, cases, and other supplies are featured for use in manufacturing, field service and quality control.

Many of the tools shown are unique and very specialized, often difficult to obtain from local sources. For that reason the ETCO tool catalog will prove helpful as a reference and buying guide.

A copy of the catalog may be obtained by writing Electronic Tool Co., Claremont Avenue, Thornwood, N.Y. 10594; telephone: 914/769-8070.

ANTI-CHEAT PENDULUM KIT NO. 5008

1. Part No. 1131 Pendulum
2. Part No. 4059-C Coverplate Ass'y.
3. Part No. 1004 Return Coverplate
4. Part No. 188-6-2 6-32 X 1/8 R.H.M.S.



The Anti-Cheat Pendulum Kit No 5008 is a security device developed by Coin Mechanisms Inc. and tested to achieve greater safety against "cheaters" as an optional part of the coin-op mechanism.

"With proper setting between switch wire and pendulum, tests have proven virtually 100 percent effective," according to product literature.

Aside from "stringing" protection, the "pendulum" acts as a dampener and deflector for smaller coins, such as pennies, from bypassing the switch wire.

Step 1—Remove return-coverplate (upper and lower coverplate).

Step 2—Assemble coverplate 2 and Pendulum 1 as shown in this diagram.

Step 3—Check Pendulum action assuring free motion.

Step 4—Check switch wire below Coin Mech for proper clearance; it should be approximately 3/4 inch minimum, below Pendulum, before contacts are closed—thus assuring greater safety of the mechanism.

The kit is available from Coin Mechanisms, 817 Industrial Drive, Elmhurst, Illinois 60126; telephone: 312/279-9150.

SOME COROLLARIES TO VARIOUS LAWS

When an engineer designs a simple workable system it is because he didn't know how to design a complex workable system. (Epperson)

Servicing is difficult because people look for failures where they aren't. (Miller)

The less a field engineer knows of the design of a system the better he will sleep before he has to service it. (Bismark)

music



programming

By Pat Matthews

Program/Music Director WQUE New Orleans

Movies moods make max marks

Welcome back to the fearless world of yours truly. Surely, I must have some fears. But it's never more than something a few beers can't cure. I find myself delving into the stacks of wax with a brew at my side and a song—make that several—on my mind. Before we go into the real business, just a note of congrats to Epic Records and their latest innovation, the Nu Disk. They are what used to be called "EPs" (extended play). They are smaller than lps, yet larger than singles, include four songs and sell for \$2.98 or \$3.98 suggested list price and they're a perfect vehicle to expose new talent at much more affordable prices.

ATOMIC—Blondie—Chrysalis
CHS-2410

Another rollicking, up-tempo disco-ish sure shot winner for a group that has been around for a while, but seems to have come out of nowhere. The single has been re-mixed and is different (and shorter) from the album cut. Another winner with biting Deborah Harry lyrics. Nine out

of ten or more.

EVERYTHING WORKS IF YOU LET IT—Cheap Tricks—Epic AE7-1206

Fast becoming one of America's favorite rock bands, Cheap Trick has joined forces with a producer of some note, one George Martin. This is a powerful rocker and Cheap Trick moves through this catchy one punchy and jumpin'. It's from the upcoming film "Roadie" and is a certain hit. Eight out of ten at least.

THIS TIME (I'M GIVING ALL I GOT)—France Joli—Prelude
PRL 8013

A good while back I reviewed this teenaged Canadian singing sensation's debut record "Come To Me." I predicted big things for her and she has gone on to make an impression on the American public, visually as well as with her voice. The first single was sort of a final fling on the disco train as it headed off into the sunset, so to speak. This time around, and much overdue at that, France (pronounced Frahnz) is shooting for more stardom with a straight-ahead,

beautiful ballad. The theme may be overworked, but the feeling is definitely there. Could make it. Mid-chart for sure—seven out of ten.

CLOUDS—Chaka Khan—Warner
Brothers WBS 49216

From the opening storm of the first presence of instrumentation throughout the song its Chaka Khan at her best on this Ashford & Simpson composition. It's funky, it's danceable, and the vocals are gutsy. Nothing cloudy about this lady's career. Could cross over to Pop and I give it an eight out of ten.

I'M ALIVE—Electric Light Orchestra—MCA 41246

Here's the first of two this time around from a movie. The movie is "Xanadu" and this tune has all the ELO ingredients: up-lifting harmonies, excellent precise instrumentation and that classical-rock feel. Very dramatic in parts. Whoever heard of a stiff release from ELO, anyway? Should do well on its own; however, release of the movie

The records are rated as follows: 10 out of 10 = Top 10 peak; 9 out of 10 = Top 20 peak; 8 out of 10 = Top 30 peak; 7 out of 10 = Top 40 peak; 5 or 6 out of 10 = Somewhere in Top 100; 4 or less = Forget it, loser, break in half.

PLAY METER HOT STUFF

THE BIGGEST PART OF ME—AMBROSIA—Warner Brothers
IT'S STILL ROCK N' ROLL TO ME—BILLY JOEL—Columbia
WE LIVE FOR LOVE—PAT BENATAR—Chrysalis***
LITTLE JEANNIE—ELTON JOHN—MCA***
LET ME LOVE YOU TONIGHT—
PURE PRAIRIE LEAGUE—Casablanca***
CARS—GARY NUMAN—Atco
BRASS IN POCKET (I'M SPECIAL)—THE PRETENDERS—Sire***
FUNKY TOWN—LIPPS, INC.—Casablanca
SHE'S OUT OF MY LIFE—MICHAEL JACKSON—Epic***
HURTS SO BAD—LINDA RONSTADT—Asylum
TWO PLACES AT THE SAME TIME—RAY PARKER, JR. &
RAYDIO—Arista***
STEAL AWAY—ROBBIE DUPREE—Elektra***
LET'S GET SERIOUS—JERMAINE JACKSON—Motown***
DON'T FALL IN LOVE WITH A DREAMER—KENNY ROGERS &
KIM CARNES—United Artists***
HEADED FOR A FALL—FIREFALL—Atlantic***
HEART HOTELS—DAN FOGELBERG—Full Moon***
AGAINST THE WIND—BOB SEGER &
THE SILVER BULLET BAND—Capitol
TRAIN IN VAIN (STAND BY ME)—THE CLASH—Epic***
STOMP!—THE BROTHERS JOHNSON—A&M
COMING UP—PAUL MCCARTNEY—Columbia***
LADY—THE WHISPERS—Solar
THE ROSE—BETTE MIDLER—Atlantic***
SHOULD'VE NEVER LET YOU GO—NEIL &
DARA SEDA—Elektra***
WONDERING WHERE THE LIONS ARE—
BRUCE COCKBURN—Millenium
BREAKDOWN DEAD AHEAD—BOZ SCAGGS—Columbia***
I DON'T WANT TO WALK WITHOUT YOU—
BARRY MANILOW—Arista***

PLAY METER PICKIN' & GRINNIN'

FRIDAY NIGHT BLUES—JOHN CONLEE—MCA
MIDNIGHT RIDER—WILLIE NELSON—Columbia
THE WAY I AM—MERLE HAGGARD—MCA
DON'T FALL IN LOVE WITH A DREAMER—KENNY ROGERS &
KIM CARNES—United Artists***
LUCKY ME—ANNE MURRAY—Capitol***
HE STOPPED LOVING HER TODAY—GEORGE JONES—Epic
I'M ALREADY BLUE—THE KENDALLS—Ovation
MY HEART—RONNIE MILSAP—RCA
BAR ROOM BUDDIES—MERLE HAGGARD &
CLINT EASTWOOD—Elektra***
IT'S HARD TO BE HUMBLE—MAC DAVIS—Casablanca
STARTING OVER AGAIN—DOLLY PARTON—RCA***
ONE DAY AT A TIME—CRISTY LANE—United Artists

PLAY METER FUNKIFIED

FUNKY TOWN—LIPPS, INC.—Casablanca
LET'S GET SERIOUS—JERMAINE JACKSON—Motown***
LET ME BE THE CLOCK—SMOKEY ROBINSON—Tamla***
POWER—THE TEMPTATIONS—Gordy
TWO PLACES AT THE SAME TIME—RAY PARKER, JR. &
RAYDIO—Arista***
INSIDE OF YOU—RAY, GOODMAN & BROWN—Polydor***
LANDLORD—GLADYS KNIGHT & THE PIPS—Columbia
DON'T SAY GOODNIGHT—THE ISLEY BROTHERS—T Neck***
YOU AND ME—ROCKIE ROBBINS—A&M
GOT TO BE ENOUGH—CON FUNK SHUN—Mercury
GOTTA GET MY HANDS ON SOME MONEY—
FATBACK BAND—Spring/Polydor
LADY—THE WHISPERS—Solar

***denotes records reviewed previously by PLAY METER

will help sales and familiarity. Nine out of ten, no sweat.

MAGIC—Olivia Newton-John—MCA 41247

Olivia not only sings in the movie, she stars in it. This lady can do no wrong and she has already re-signed with MCA, *though* there was speculation that she wouldn't. So, that means you can expect her company to be fulfilling a lot of promises to the lovely lady by pushing this record with great pressure. From this end, I would say they (their record promoter) could ease up and let this one sell itself, because it can. It's only a little different from what you've heard from the lady, but you still know it's her and it's written by the man who has penned many successful tunes for Olivia—John Farrar. Nine out of ten or better.

TIRED OF TOEIN' THE LINE—Rocky Burnette—EMI America P-8043

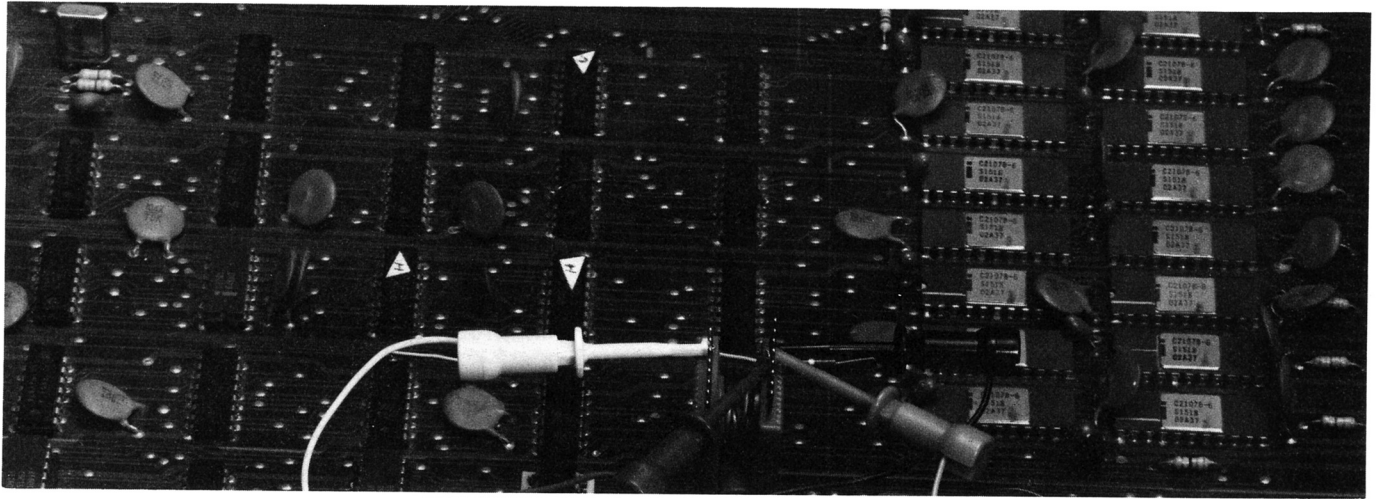
It's acoustic, it's electric, it's rock n' roll, it's good! After a few listens I can safely say, this is one of those records that just sneaks up on you, and you find yourself singin' it even when nobody else knows the tune. Everyone will know it real soon, though. It features a catchy tune and some nice guitar work. It's great that music is getting good again. Nine out of ten.

CUPID/I'VE LOVED YOU FOR A LONG TIME—The Spinners—Atlantic 3664

I tell you what. The lead vocals sound so much like Sam Cooke, it's scary. It's another mid-tempo breezy arrangement by this very talented group that is proving that perseverance is always rewarded. It's good and just sounds like summer. Another re-make, but who cares. It's familiar and that's a head start for the Spinners, who are headed straight for the top...again: ten out of ten.

CLONES (WE'RE ALL)—Alice Cooper—Warner Brothers WBS 49204

With a new look that would even frighten the mascaraed creature he portrayed back in the Sixties and early Seventies—Alice is back and very much in the thick of music things with a new sound. Taking cues from the Cars and several other contemporary successes and adding his own creative genius, it could be a hit and another brick in the come-back trial for good ole Vince. Eight out of ten or better.



Hands-on problems of repair

By Roy A. Cederlund

*Sales Engineer
Kimco
Mentor, Ohio*

The demands made on the skill and knowledge requirements of the repair technicians have grown at a phenomenal rate over the past ten years. With the advent of more sophisticated electronic equipment, repair procedures are no longer a screwdriver/plier type of job. Repair people must become re-educated to a completely new way of performing their functional skills.

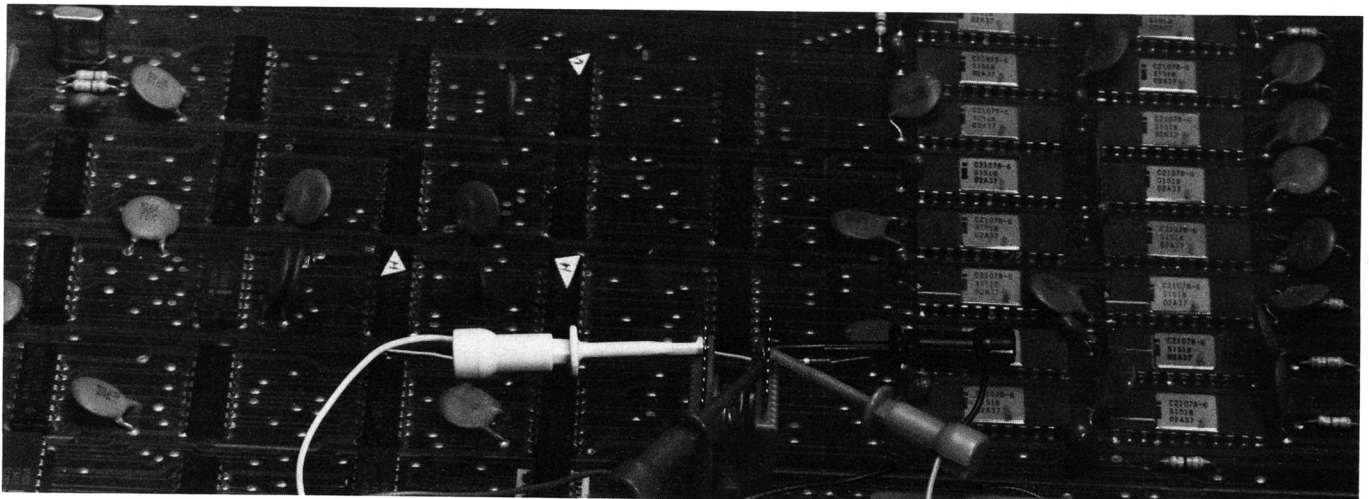
Miniaturization, more stringent operational requirements, and

equipment complexity have placed an increased demand on personnel who must perform electronic repair. New variations in methods and techniques of manufacturing the electronic and printed circuit boards employed by thousands of equipment and component producers has added even more demands on technicians to perform highly reliable electronic and printed circuit board repair.

Static electricity has become a

problem with people in electronics. This is an example of how extremely sensitive and complex our world has become. Static charges which cause clothing to cling or shock us when we touch a metal object or door knob are small irritations to our everyday life. However, static has become a million dollar headache to the electronics industry.

It was not until a spark from something or someone initiated the power system in one of our space



capsules, and three astronauts were killed by accident, that we started to take a closer insight into static discharge.

The problems encountered in today's logistics are numerous. Fortunately, there are several easy methods of dealing with these. Exactly what is *repair*? Usually we think of repair as replacing a damaged component, circuit pad, or track, or taking other action on a printed circuit that will return the unit to its functional capability.

For most electronic equipment the concept that repair is simply part replacement is very far from the truth. From the technicians' standpoint, repair work is a *de-manufacturing, re-manufacturing* procedure requiring precise skill. Repair work can be defined as "the re-establishment of the unit's original functional and reliability character within certain practical limits." These limits are directly related to the level of proficiency and capability of the *individual* performing the repairs.

In the industry of amusement games, jukeboxes, and vending machines, highly reliable board repair must be done in several areas. In manufacturing, the damage cost of replacing a bad component at the incoming inspection level is about \$3. If the fault is not discovered until the

board reaches Board Test, the cost of repair escalates to \$30.

Should the board fail in the field, damage can cost up to \$300 to repair. Therefore, the need for high reliability repair in both manufacturing and field service is in demand.

This information is not unfamiliar to technicians. The technicians who perform the repair in the field or in the service area are required to duplicate with limited facilities all of these tasks which were originally accomplished in a modern factory with extensive personnel, automatic production equipment, advance technical training, and extensive process controls. The maintenance cost of electronic equipment during its operational lifetime may run as high as five to ten times its original acquisition cost.

How are these tasks performed and what factors must be considered when repairing printed circuit boards? For doing high reliability board repair, many types of equipment and methods are available. Some considerations that should be noted in equipment selection are as follows.

On multi-layered boards with plated-through holes, solder extraction systems must have variable temperature control. To reliably remove components without damag-

ing the component, pad, or tracks—extractors should be able to heat the lead of the joint, obtain a melt, and remove the solder in less than 3 seconds. With boards of different thicknesses, some having internal ground planes, it is necessary to control the heat at the joint. Too much heat (750° +) may possibly scorch the board. Not enough heat, and your dwell time on each connection may increase. If so, you will run the risk of breaking down the bond adhesive between the pad and board. *

Self-contained and air pressure operated, continuous vacuum solder extractors should be able to apply vacuum (high velocity air flow) for a duration of at least 1.5 seconds. This sustained air flow will not only remove the solder but also cool the lead in the plated-through hole so it does not resweat—therefore making component removal easy. Wicking, solder sucking with bulb suckers and pulse vacuum, hand operated extractors, works effectively in appli-

For a discussion of the problems in manufacture and repair of Integrated Circuits, see three-part article, "Semiconductor Device Technology," in PLAY METER UPDATE beginning with the May 1, 1980 issue — editor.

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cations on single sided boards and where component salvage is not critical. Heated extractors should have variable tips of different inner and outer diameters. The tip on these extractors should not exceed the parameter of the pad or it could force heat into the board. The size of tip and heat control are major considerations in high reliability component removal.

Systems are now available to repair lifted pads and damaged runs. Kits with pretined frames of 2 ounce copper that have variable sized pads and tracks, assorted eyelets, funnels, and setting tools do an adequate job of repairing damage.

Whether you are involved with initial assembly, working in a narrow skill range and highly repetitive manner, or in repair which requires a broader skill range with lower repetition, tools are of the essence. No matter what method you choose for soldering, desoldering, static protection, heat sinks, electronic tooling, or wrist straps, they are all essentially inanimate objects of potential capability.

The potential is not realized until the person using them employs the skill and comprehension necessary to make them perform properly. All the devices, aids, and tools are meaningless unless the user has the skills and

knowledge to apply them. This is especially true in electronic repair, since most of your procedures are of a highly skilled nature rather than screwdriver/plier / hammer/chisel operations.

Whether you are a repair technician or employed in a manufacturing facility, only your practice, desire, and understanding of the job at hand can produce highly reliable work. There are systems and solutions to all your component removal and board repair requirements.

STATIC CHARGE

Static electricity from the point of delivery, inspection, and shipping, often degrades MOS/FET and C-MOS components. Field service technicians must be aware of the critical sensitivity of MOS/FET, C-MOS, bi-polar transistors, film resistors, and diodes. In the fabrication of boards, damage occurs from three sources: production malfunction, production damage, and dust and lint. People are the largest generators of static. A person walking across a tile floor generates 4 to 13 KV. An operator at a work station may create 500 to 3,000 volts. While walking across a carpet floor, this creates 12 to 39 KV of static.

To put this all into perspective, a MOS chip is susceptible to damage at

1 to 200 volts. A discharge of 2 to 3,000 volts is needed to hear static; 3 to 4,000 volts to feel a discharge; and 5,000 volts to see a spark.

Static damage occurs in two proportions: (1) catastrophic damage in which the component or circuit is immediately destroyed; (2) a degradation effect where board life may be lessened considerably but up to a certain point still be reliable—for example, instead of lasting 200 hours in service, intermittent failure may occur very early and cessation of functions may terminate in 10, 25, or 50 hours.

Where does static start and how do we deal with it? Briefly stated, static is generated whenever two surfaces come into contact and are separated. All surfaces have a different affinity for electrons, so one will take from the other. Surfaces taking electrons assume a negative charge and those losing electrons become positive.

Two surfaces with the same affinity for electrons repel each other, whereas two unlike surfaces attract. This attraction is what makes clothing cling and dust attract to objects of different potentials. Two key factors that affect the amount of static charge are intimacy of contact and speed of separation. Once static is generated, the key to retention of that charge is

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the conductivity of the material holding that specific static charge. Conductive materials dissipate their charge evenly over their surfaces.

If grounded, conductive materials will never accumulate a static charge, which is drained rapidly. A discharge time of less than one second is acceptable for static-safe work areas. Any discharge rate of less than one second will protect current-sensitive and voltage-sensitive components which have been confirmed by several reliable test methods.

How do we dissipate this charge that we as technicians accumulate? Several products are available to

accomplish this. A primary tool used is the conductive wrist strap. Remember, only highly conductive materials can provide a drain quickly enough to prevent damage. A conductive wrist strap must be worn in contact with the skin and must be attached to a ground. It is up to the technician to know what a good ground is. Machinery that has a 3-wire power cord, provides a good ground.

Wrist straps should have a 1 megohm resistor inline to isolate the operator from direct ground. Conductive table tops that have a strap attaching them to a ground source

are essential in static-safe work areas.

In areas of heavy traffic, conductive floor mats should also be used. These should have a grounding cord and should be impregnated with some type of highly conductive material such as carbon. While working on your static-sensitive components and boards, damage will not occur if you abide by the following simple procedures:

When approaching the work station, first put on your wrist strap. Then attach it to a ground source. Work on boards on conductive table mats. Now you and the work area are at the same potential, and no discharge will occur.

When transporting boards, be sure to carry them in protective conductive containers or in bags which will shield sensitive components from static discharge. Some products are anti-static; this is, they do not generate any static. They do not effectively dissipate static quickly enough to prevent damage. For optimum protection, use a bag or container which is conductive, static-shielding in nature.

Occasionally when wrist straps, conductive floor mats, and bench tops are used, there are other sources of static which can be damaging. Coffee cups, sandwich bags, vinyl purses, nylon fabric, and clothing can generate and hold a static charge up to two weeks. Be certain that precautions against these items are taken into consideration when working on boards with static sensitive devices.

Tools are a great source of static. Soldering irons, solder extraction equipment, and any other electric tools have three-wire grounded power cords. Soldering irons should have a ground isolated tip, no magnetic switching, non-inductive windings, and zero voltage switching. They should not create radio frequency interference. Hand cocked solder extraction tools should have a metallized conductive barrel and low-static tip. All cutters and pliers used should have conductive handles if possible when wrist straps or table mats are not in use.

Most importantly, identify your board. Know if there are static-sensitive components on it. These components can be just as easily damaged in circuits as when not mounted on a board.

If you are unsure, take the above mentioned precautions. Play it safe. The old adage of "an ounce of prevention is worth a pound of cure" certainly applies.

The considerations and ideas presented here are offered to help you in repairing your equipment needs for your specific type of repair.

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Employees handbook

Answers in black and white can head off problems with locations

By David Pierson

Of course, today's operator is a professional.

It's evident when you look at his service area. With all the sophisticated pieces of machinery he's operating today, he's had to surround himself with a lot of electronic wizardry to keep everything running.

It's evident he's a professional when you consider the economic forces he's had to deal with. He's had to balance the high cost of money on the one hand against the constant need to buy new equipment on the other. Along those lines, banks and distributors are not as lenient or forgiving as they once were. But the operator couldn't hold up because of it; the public is fickle and constantly demanding new games. So the operator has become a good money manager to survive. Those who couldn't are operating washerterias today.

It's also evident today's operator has had to become a professional when one considers the fuel crisis has taken a deeper bite into his business than it has into most other enterprises. So, to stay in business, an operator has had to do a lot of re-examining, seeing where fuel costs could be cut without hurting profitability. Those who failed to make this re-assessment are now operating machines from Maytag, Whirlpool, and Kenmore—instead of machines from Williams, Atari, and Midway.

It's a moot question—whether the times have forced operators to become professionals or whether the times weeded out the hip pocket operators. But the sophisticated equipment, high cost of money, and gasoline crunch have certainly played a role in shaping today's operator into a professional.

What has not been re-shaped, however, is a consensus attitude among location owners and government officers toward this industry. The government mind-set is something that will take quite some time to remedy, but it appears operators have been remiss in conveying their professionalism to their clients, the location owners.

One has to remember most location owners will never see the inside of an operator's place of business. They do not see the sophisticated testing equipment. They don't think about the stresses associated with operating all that machinery profitably. They've got their own worries.

To them, an operation is only as professional as the employee one operator sends through their doors on company business.

So it would be wise for an operator

to keep in mind that his employees can influence, both favorably and unfavorably, the locations' attitudes toward his business. One's employees can create or avoid a lot of the problems that befall operators—both on the short-term and long-term basis.

On the short term, they can create problems for the operator by instigating location demands which cannot or should not be met. The problem here is that quite often the employee doesn't even know he's creating a problem.

For instance, a well-meaning new employee, who wants to show his enthusiasm for his new job, may think it's wise to rave about a new game to a location he's servicing. The employee believes he's creating a good rapport with this location; but, in fact, he's creating a big problem. No sooner is the employee out the door when the location owner calls the operator and asks why he doesn't have that new pinball game that makes all the money. The employee has created a problem here by making a pseudo-expert out of the location owner.

On the long term, little skirmishes like this can lead to dissatisfied locations, ripe for the picking by a competitor. It can also lead to locations which balk at every proposal the operator makes. They balk at a higher pricing arrangement. And they won't even listen to talk about improved commission splits for the operator. Problems like this could be avoided if the operator's employees all presented the same company stance.

One Tennessee operator, John Estridge, deals with this problem in a company manual to all his employees. Among other things, it coaches employees in how to handle themselves around locations. It may sound trite, but Estridge feels it has eliminated a lot of his problems. He determined many of his location headaches were employee-instigated (either consciously or unconsciously) and a guide was needed to combat this problem.

He included a list of frequently asked questions which was prefaced in the manual with this: "In our dealing with customers, we are often asked questions that, depending on the answer you give, can have a significant influence on our success and profitability. So our new employees will not be caught flat-footed, I have enclosed a list of questions asked."

Here is his complete list:

Q: How much does a pinball cost?

A. "I don't know, but they are

'We are often asked questions that, depending on the answer you give, can influence our success and profitability.'

expensive."

Q. How much does a jukebox cost?

A.: "I don't know, but they are expensive."

Q.: Where do you buy machines?

A. "Chicago."

Q.: How much does So and So's machine take in?

A.: "I don't know, but I think it does fairly well."

Q. Can I get another machine?

A.: "I don't have anything to do with that, but I will mention it to your routeman and have him discuss it with you."

Q.: When are we going to get the new machine that we have been promised?

A.: "I will check with your routeman, and he will let you know."

Q Put some free games on the machine so I can play it.

A.: "We are not allowed to do that."

Q.: We would like to have such-and-such record on the jukebox.

A.: Write down the name of the record, artist, name of the location, date of the request, and tell the location that you will give the request to the routeman. Then bring in the request and put it on the secretary's desk.

Q.: I would like to have a machine in my place. What kind of deal can I get?

A.: Tell him you will have a routeman contact him. Get his name, location name and address, also his business and home telephone numbers.

Q.: So-and-so just worked on that machine, and he didn't fix it.

A.: Say nothing to imply the other man didn't know what he was doing, that he must have been in a

hurry, etc. If you say anything, compliment the other repairman.

Q.: How do I win on these machines?

A.: Show how the machine works.

Obviously, there are other questions which could be added to this list, but it does go a long way toward remedying a long-standing problem in the industry—that of employees unconsciously creating problems with location owners. It's worth it for an operator to make his own list of frequently-asked questions and to distribute it to his employees.

Employees who are well-coached on these points can help cut down unwarranted location demands and will go a long way toward insuring that the operation of the route is done according to the plans of the operator, rather than according to the whimsical demands of locations that do not have a view of the whole picture.

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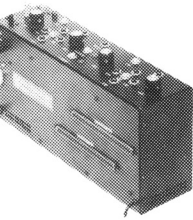
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Service, please!

By J.W. Sedlak

**A special plea
for keeping
the equipment
in good condition:
it will help you
and help keep
a small boy
named Bob
out of trouble...**

Bob was a little nervous. After all, he was only ten years old and his parents had left him alone in this room filled with all manner of strange equipment. The flashing lights, the activity of the operators, the eerie sounds emanating from the machines, and the insistent background music all combined to flood his senses and make him uneasy.

As he wandered around the perimeter of this futuristic game room, his eye was caught by some movement that shouldn't have been there. He stepped closer to the monitor and noticed that there were strange people slowly advancing on the command post. Apparently, none of the operators had noticed what was happening and, as he tried to hail them, he found that they were all too busy with their own problems to be of any help.

Obviously, then, it was up to Bob. If anyone was going to stop this rapidly advancing force, it would have to be him.

With a determination beyond his years, he pulled himself up to his full 4-foot-1-inch height and made his way to the controls of the laser gun. He had watched his father use this same device many times, and he had always admired his father's obvious quickness and perception. No matter how many times the enemy advanced, Bob's father had always beaten them off. But his father was not here now. So...Bob carefully reviewed the worn instructions printed on the equipment and familiarized himself with the two sets of control buttons which would become so familiar to him over the next few hours. One set of buttons controlled the direction of firing, while the other was used to actually fire the weapon.

Bob tentatively tried the direction controls and found that they were working properly. He then tried five fast shots to check out the firing mechanism. It seemed to him that the weapon had hesitated between the third and fourth shots, but he had no time to check that out as he could

see the enemy start to advance. With his heart pounding, he waited until they came within range and he tried to remember his father's strategy.

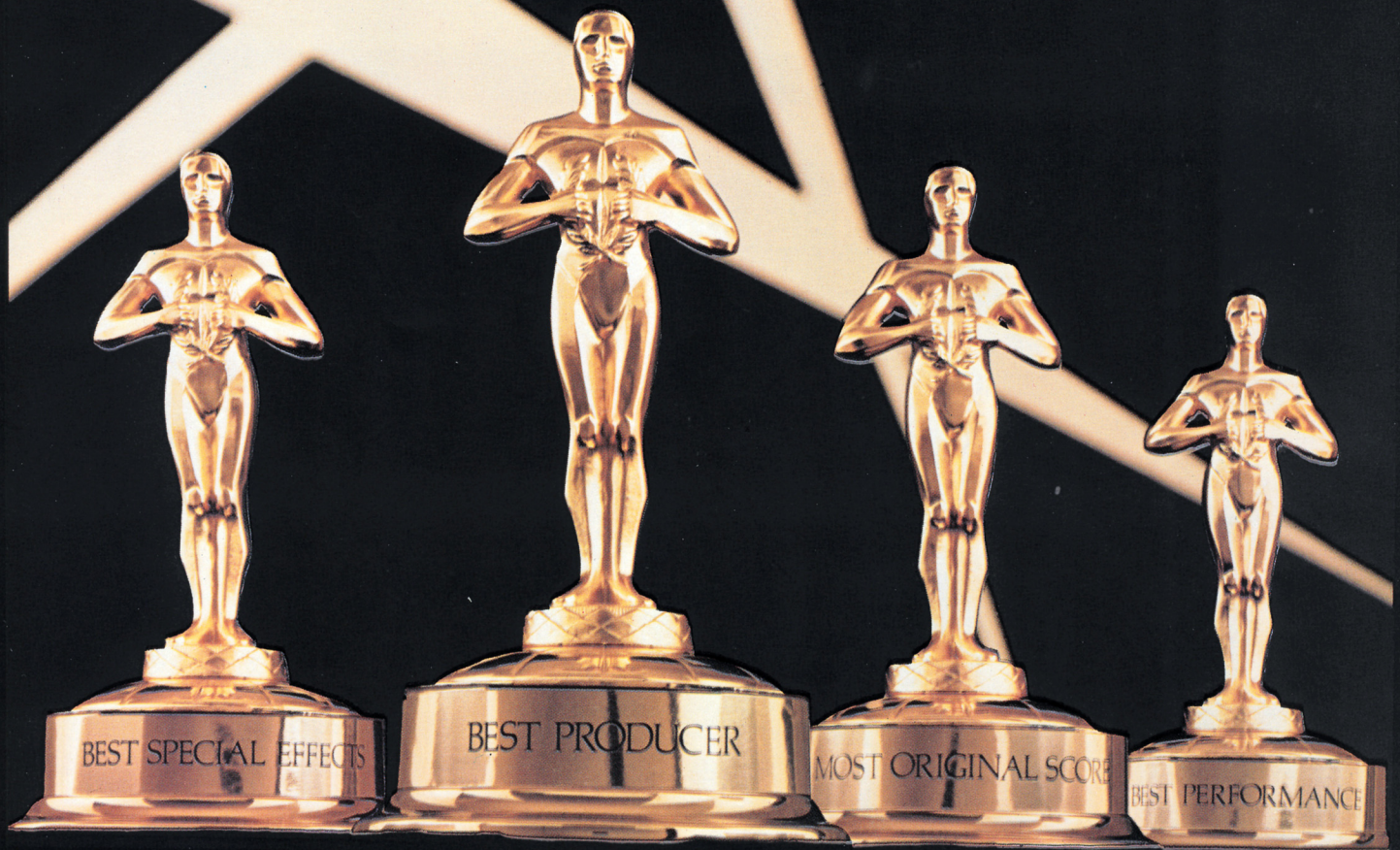
"Shoot the ones on the extreme left and extreme right first," his father had said. "That way you don't have to worry about them getting around you." With these words echoing in his mind, Bob took up a position on the left and began to fire on the advancing hoard. One by one the enemy started to fall. Then they started to return fire and Bob found himself ducking the incoming rounds while trying to get off his own shots. Four of the enemy were down and Bob had the fifth in his sights when he pushed the trigger...and nothing happened!! The gun had jammed! A shot came in and Bob was hit in the right shoulder! After a moment's pause, he fired again—and this time the weapon worked and sent a shot of death into the enemy.

But there was no time for joy. The enemy was still advancing and now he had to move to the right to protect that flank. He moved deftly and began pouring rounds into the soldiers on the right. Five fist shots and five quick hits. Now all that was left were the middle ranks.

The fight had been fierce and Bob could hear almost every beat of his young heart. Again he fired. Again a soldier fell. Then a shot from nowhere hit him on the right side. He felt the pain and took a moment to recover. But this kid was no quitter. He was not about to give up. With an even stronger determination, he began to shoot back.

Again and again Bob hit the firing button. Again and again the weapon responded with a retort as it sent the deadly ray towards the enemy. Again and again Bob was rewarded as he saw the enemy fall and their ranks grow smaller. Soon there were just two of them. With his heart beating ever faster, Bob lined up for the final kill. He easily pushed the trigger button *and nothing happened!*

Bob panicked, he repeatedly hit



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the button...nothing. He kicked the machine...nothing. The enemy came closer, the incoming rounds grew intense. His gun was silent. His heart was in his throat. He beat the firing button for all he was worth...he kicked and kicked at the machine... *nothing happened*...he was failing as he saw the final shot leave the enemy's weapon and head straight for him he let out a blood curdling scream...

Bob felt a strong hand on his shoulder and turned around. He was surprised to see his father standing there. His father and mother had finished shopping and had returned just as the arcade operator was yelling at him to stop abusing the *Space Invaders* video game.

His father quieted down the arcade operator and promised not to leave his son unsupervised in the arcade again. Bob tried to explain that it wasn't his fault. That the machine didn't operate properly. That he was just frustrated, not insane. No one seemed to understand.

‡ ‡ ‡

Admittedly, the foregoing story is a little exaggerated. But we in the coin machine business deal in fantasy. We build and operate these machines to capture the imagination. Can we really be surprised when our customers attest to how we have done our jobs so well that they get wrapped up in the games and react emotionally when things don't work right?

I am an arcade nut. I will travel out of my way to play the latest games and will spend a great deal of money in arcades—even though I could play all the games I want in my own place for nothing.

The one thing that really gets me, and a lot of other players, upset is a game that doesn't work right. If I go to a new arcade and the first two games I play don't work properly, I'll leave. And so will a lot of others.

All the tremendous design work in the world will go for nothing if you, the operator, don't take the time to make sure your games work properly.

There is really no excuse for the pinball that doesn't score properly, the shooting game that's out of alignment, or the Air Hockey whose puck won't slide. If you will keep these minor things in repair, your machines will be treated better and you will make more money.

This is the Service Issue of **PLAY METER**. If you don't want to be responsible for getting little Bob into trouble, read it carefully. Use the tips and techniques described to keep those games in tip-top shape. If not for yourself, do it for Bob! Please!?



No, I didn't check it out first myself to see what might be wrong — YOU'RE the expert on electronics!

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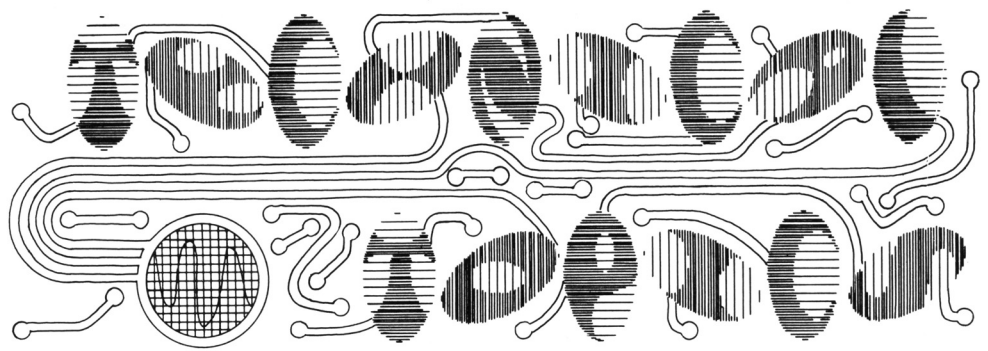
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By Randy Fromm

Zener diode failures

Do you have a Motorola M5000/7000 monitor with any of the following symptoms? Picture jitters, extremely poor vertical linearity combined with excessive height, insufficient height, or complete loss of vertical deflection....

All of these symptoms can be attributed to the different types of failures of the same component: Zener Diode D21. This 12-volt Zener Diode regulates the power supply for the vertical oscillator and driver section of the monitor. (See Figures 1 and 2)

The first symptom is caused by intermittent operation of the Zener. If you look carefully at the "jittery" picture, you will see that it is actually stretching and shrinking a bit, and not jumping up and down as it appears at first glance. It looks as if the height potentiometer might be dirty or defective, but the jitter remains even if the pot is cleaned or replaced.

In this case, the bad Zener is allowing the 12-volt power supply voltage to jump around. An increase of just a few tenths of a volt in this supply will produce a noticeable increase in the height of the picture.

A digital volt meter or an oscilloscope can be used to confirm a fluctuating supply. You can watch the power supply voltage jump at the same time the picture does. (An analog meter may not be able to respond fast enough to the rapid fluctuation and such a small change in voltage.)

The voltage at test point one should be around 13 volts. These Zeners are notoriously inaccurate, however, and with age you can expect a 10 to 20 percent voltage deviation in a properly working monitor. If the voltage is out of tolerance or unstable, change the Zener.

If the Zener Diode fails to regulate properly and allows the 12-volt power supply to increase its voltage output, the picture will be stretched out and have extremely poor vertical linearity.

Zener Diodes are affected by temperature changes, so this symptom will often show up when the monitor has been on for a few hours in the heated environment of a video game cabinet. If the voltage at test point one exceeds 14 volts, the Zener is way out of tolerance and should be replaced.

That's not all, kids! The Zener Diode can also become "leaky" or short completely. In both cases the 12-volt power supply will be way below normal.

In most cases, the Diode shorts and causes the 12-volt power supply to drop to around 2 volts. Since this is insufficient voltage for the vertical drive circuits, the display will show only a thin, horizontal line.

The Zener Diode can be checked with an ohmmeter for a short circuit. A good Zener will test the same as a conventional diode. A leaky Zener will have a poor front-to-back ratio, showing some resistance in both directions.

If you're in the field and have a monitor with a bad Zener Diode, you'll be happy to know that you can pick one up at Radio Shack. Ask for a 276-563. They come in packages of two, so you'll have a spare.

Be sure to observe the polarity of the Diode when you replace it. The schematic symbol should be silk-screened on top of the board to show you the proper orientation of the Diode. Remember, the Zener Diode installs in the opposite direction of conventional Diode D23, with their cathodes tied together.

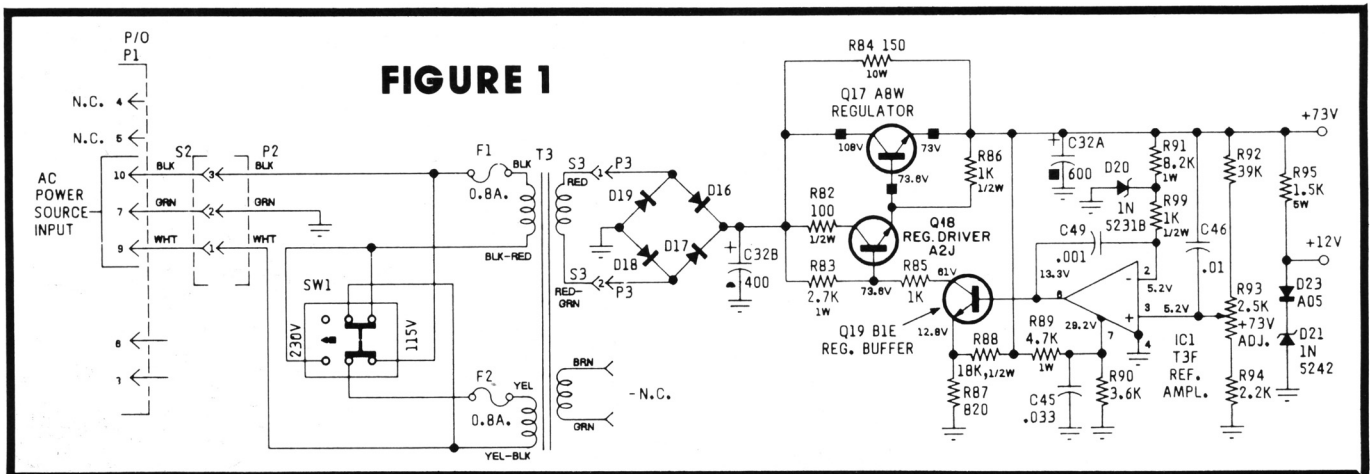


FIGURE 2

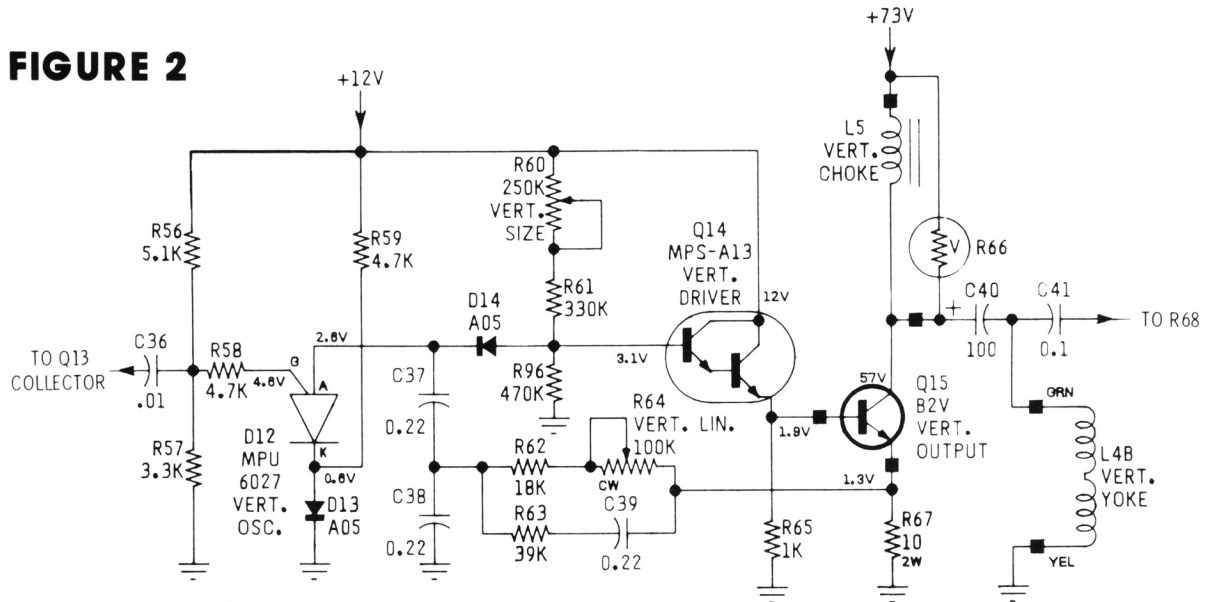
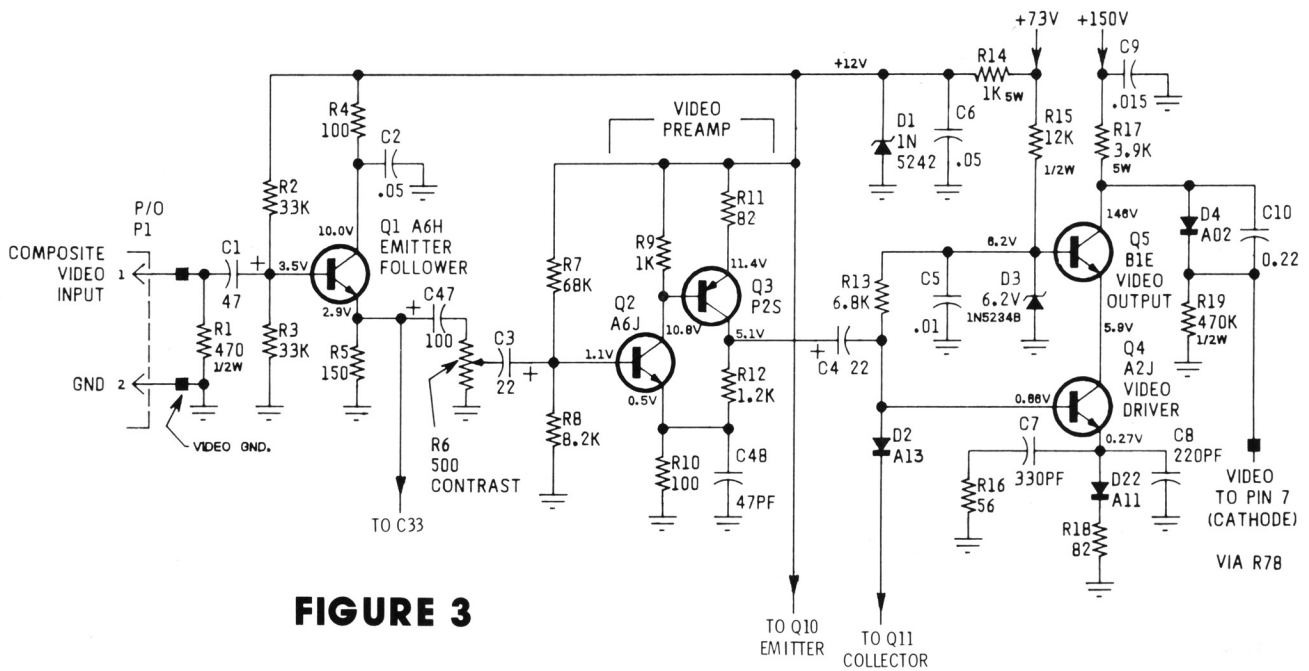


FIGURE 3



LOSS OF VIDEO ON MOTOROLA M5000/7000 MONITOR

It's strange how things seem to come in pairs. If you have seen two identical failures in a short period of time, you can bet other mechanics are seeing the same thing! These two *Space Invaders* monitor chassis were suffering from a loss of video, but the raster scan lines were visible when the brightness was turned up.

This symptom is often caused by a shorted 12-volt Zener Diode D1. This is the same type of diode as D21, discussed above. D1 regulates a 12-volt power supply for the video pre-amplifier stages. (See Figure 3)

When the Zener shorts, the power supply voltage is dropped across R15, through the shorted diode, to

ground. This causes the pre-amp stages to become inoperative.

In both of these monitors, however, the Zener Diode checked out OK. The voltage across D1 was well within tolerance on both monitors. Subsequent voltage checks, starting with the video output section, showed the problem right away.

The base voltage in this circuit is derived and pegged at a fixed 6.2 volts by resistor R15 and yet another Zener Diode, D3. (There are four Zener diodes in this monitor!)

This one is rated at 6.2 volts, 500 milliwatts. Two commonly possible things can cause the base voltage of Q5 to drop so low. In most cases a shorted Zener Diode would be expected to be the cause of the

problem.

As discussed earlier, Zener Diodes in this type of power supply often short, dragging the voltage down. In these monitors, however, R15 had opened, preventing the flow of current to the Zener Diode, and the base of Q5.

R15 is a 12 kohm, 1/2 watt resistor. Motorola uses a carbon film type of resistor in this circuit. In a carbon film resistor, a thin spiral of carbon film is deposited on the outside of a ceramic body. Replace R15 with a 12 kohm, 1/2 watt, carbon composition type resistor. The carbon composition resistor has a solid core of material and is more suitable for use in circuits like this, where the resistor serves a voltage dropping function.

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Technician's reading list:

A listing of what technical instruction books are available has proven a continually popular feature of PLAY METER's Service Issue. Here we again present the list for ready reference.

Electronics related publications are profuse and one can find printed material on just about any electronic component or system on the market. Our list is composed of some of these books and service manuals. We have added a few more selections not included in the previous list. Some publications (e.g. Data Books) are not always available, nor are some of the manuals supplied at manufacturers seminars.

Introduction to Flipper Games,
Introduction to Slots,
Instruction and Troubleshooting Manuals,
Electronic Pinball Games—Theory of Operation, Service Bulletins.

All of these manuals are printed by Bally and are available free of charge through your Bally distributor, or on written request from Bally Manufacturing Company, 2640 West Belmont Avenue, Chicago, Illinois 60618.

Williams Electronics is putting together a package of their latest models service manuals, schematics and services bulletins. Contact Ron Crouse, Marketing Director, by phone or mail, at Williams Electronics, Inc., 3401 North California Avenue, Chicago, Illinois 60618.

Gottlieb Solid State Service Manual is printed by Gottlieb and is available free of charge through written request to D. Gottlieb and Company, 165 West Lake Street, Northlake, Illinois 60164.

Rockwell PPS-4/2 Series 11660 Micro Computer Manual by Rockwell International is available upon written request from Rockwell Micro Electronic Devices, P.O. Box 3669, Anaheim, California 92803.

Technical Repair Manual—Solid State Monitor by Motorola Display Products, Part number 68P65130A74 is available upon request, free of charge, through Motorola Display Products Parts Department at 1155 Harvester Road, Chicago, Illinois 60185.

General Information and Troubleshooting Procedures, Microprocessor Video Games—Standard Repair Procedures for Midway Processor Boards by Midway available through Midway service schools or Andy Ducay at Midway Manufacturing Company, 10750 West Grand Avenue, Franklin Park, Illinois 60131.

**(Source materials for
solid state—
where to find them,
how much they cost)**

Electronic Pinball Electronics for Pinball Mechanics, Volume I and II by Robert A. Hornick, published by Laserscope LTD, is available through Wico Corporation and Amusement Supply, at the price of \$19.95.

Microcomputer Primer by Michel Waite and Michael Pardee—\$7.95.

The TTL and CMOS Cookbooks by Don Lancaster—\$8.95 and \$9.95 respectively.

The 8080 Bug Book by Peter R. Rony, David G. Lanrsen and Jonathan A. Titus—\$9.95.

Using the 6800 Microprocessor by Elmer Poe—\$6.95.

All of these books are published by Howard W. Sams and Company, Inc. at 4300 West 62nd Street, Indianapolis, Indiana 46268 and are available through Electronic Parts stores all over the U.S.

The Textbook of Video Game Logic by Kush & Stuff Amusement Electronics is available at Peach State Distributing, 1040 Boulevard, South East, Atlanta, Georgia 30312—Price \$19.95.

The Complete Motorola Microcomputer Data Library by Motorola Technical Information Center—Available through Electronic Parts Stores carrying the Motorola Semi-conductor lines. Ask for other Motorola Data Books—Price \$4.50.

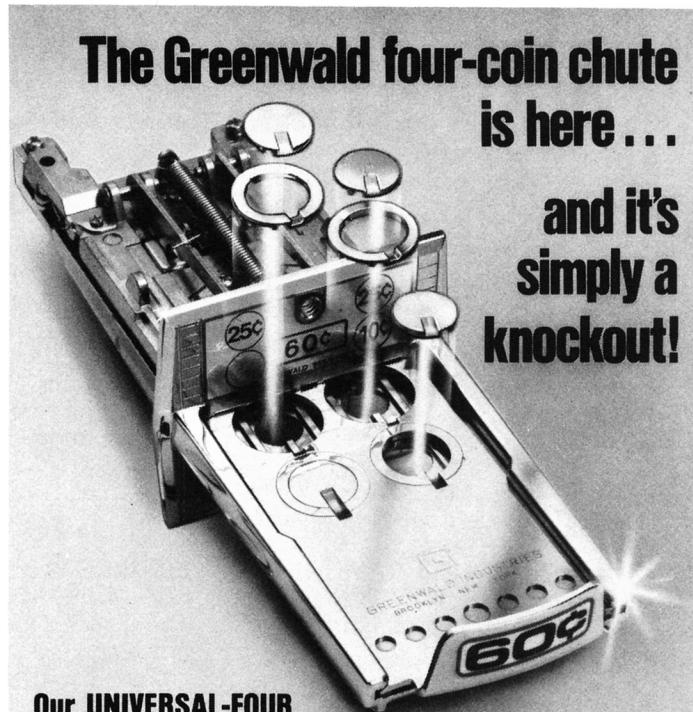
Troubleshooting Solid State Electronic Power Supplies by Ben W. Gaddis, published by TAB Books, Blue Ridge Summit, Pennsylvania 17214—Price \$4.95.

Fairchild Data Books—Published by Fairchild, 464 Ellis Street, Mountain View, California 94042—Available through Fairchild Distributors—Price range from \$2.50 to \$5.00.

National Semiconductor Data Books by National Semiconductor Corporation, 2980 Semiconductor Drive, Santa Clara, California 95051—Price range \$5.00 to \$7.00.

Transient Voltage Suppression Manual-Optoelectronics by W.H. Sahn, published by General Electric Company, Electronic Park, Syracuse, New York 13201—Available through your G.E. Parts Representative—Priced around \$5.00.

Tilt, The Pinball Book by Candice Ford Tolbert & Jim Alan Tolbert—Published by Creative Arts Books Company—Available through Wico Corporation—Price \$4.50.



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Troubleshooting Clinic

By Zac Oliver

Here are a few troubleshooting hints from Midway on the color video game *Galaxians*.

1. Check +5VDC at CPU and ROMs.
2. 6MHz clock frequency at Pin #5 and 3MHz at Pin #6 of CPU.
3. Reset line Pin #26 of CPU normally high and goes low with reset.
4. Check RAM and RAM test for bad RAM or ROM. If TV shows a bad ROM, make sure program card is seated properly.
5. ROM test will *not* test the character ROMs at L-1 and H-1 (replace).
6. When character ROMs are removed, the TV screen will show horizontal bars.
7. Remove program PC plugged in the middle of the board and TV screen should have multiple zeros with reset light pulsing.
8. Check all address and data lines color ROM G-L.
9. Check all address and data lines CPU (Z80).
10. Check all address and data lines L-1 and H-1.
11. Game will play without character RAMs and ROMs with loss of visual effect.
12. Proceed to interface circuits.

Galaxians screen display when game is placed on test through the switch in the front door:

Game Board Test — If game board is good, this information will be displayed on the screen:

OK

Coin Adjustment Setting

Bonus Adjustment Setting

No. of Galaxip Per Game Setting.

RAM/ROM Test — If any of the RAMs or ROMs are faulty, the following will be displayed on the screen:

"Bad Ram 1" — indicates bad RAM at location 7N or 7P.

"Bad Ram 2" — indicates bad RAM at location 3F or 3H.

"Bad Ram 3" — indicates bad RAM at location 4FH or 5FH.

"Bad Rom" — indicates bad ROM on memory board.

Note: Early models were not equipped with memory boards. In these models, "Bad Rom" indicates bad ROM at location 7F or 7H.

Control Panel and Coin Switch Test
To verify operations of any switch, close switch in question. If the switch is operating properly, a game sound will emit when closure is made.

Caution: Be sure to return test switch to game mode when all tests are completed.

SERVICE BULLETIN: SPACE INVADER II

The *Space Invader II* game micro-processor system has been programmed to detect a defective RAM, PROM and/ ROM. To utilize the test, proceed as follows:

1. Set switch #8 to on position.
2. Activate coin door tilt switch.
3. The RAM test sequence will scan and vertical lines will appear.
4. When all RAMs are good, the scan will be continuous and then will stop.
5. When a RAM is defective, dark vertical columns will appear.
6. When RAM test is completed and all RAMs are good, the TV screen will blank out to indicate a bad PROM or ROM by displaying letters locating it.
7. When PROMs and ROMs are good, the RAM scan will be continuous and then will stop.
8. Return switch #8 to off position.
9. The RAM scan will stop and the game will return to normal when the tilt switch is activated.

Note: RAMS must be good before PROM and RAM test can be made.

SERVICE BULLETIN: GORGAR

This is an excerpt of a service bulletin put out by Williams Electronics recommending wiring changes on several of their recent games. If you wish a copy of the bulletin, contact your distributor or Williams for one.

Special adjustment for GORGAR games that intermittently blow the 2.5A solenoid fuse.

Magnet switch contact bounce or repeated activation of the switch by the ball can cause the 2.5A solenoid fuse to blow. The gapping and adjustment of the magnet switch is critical to activate this possibility.

1. Contacts should be adjusted for approximately 1/8 inch gap and 1/16 inch followthrough.

2. The outside backup blade for

the shorter blade should be adjusted to produce a slight pressure against it.

3. The inside backup blade for the shorter blade should be adjusted parallel to and just barely in contact with it.

SERVICE BULLETIN: Gottlieb

1. Some games may "black out" during play. The displays will either go blank or one digit may be brightly lit. A programming fault can cause this condition, and the game PROMs in all sample games should be replaced with corrected PROMs, which are available at no charge from distributors.

2. The same symptoms described in 1, above can be caused by a dirty potentiometer on the power supply. The potentiometer may be cleaned by spraying a non-residue contact cleaner directly into the opening on the potentiometer while rotating the shaft back and forth. Continue rotating the shaft for at least 10 seconds after stopping the spray to thoroughly clean the wiper as it dries. **Caution:** Perform this cleaning with power off.

The potentiometer must be readjusted after cleaning to provide a +5 VDC output.

3. The same symptoms described in 1, above, can be caused by a short to ground on one of the coin chute switches. Make sure the coin lockout wire forms are not contacting the coin chute switches.

4. Some games may *slam* for no apparent reason. This will appear as a *Game Over* indication if it occurs during play. The front door slam switch requires considerable contact tension to prevent this and should be carefully inspected, cleaned, and adjusted. Also make sure the ball roll slam switch has adequate contact tension.

Notes: Problems #1 and #2 have been corrected for production games. Problem #3 is possible any time a coin rejector is re-installed. Make sure there is maximum clearance between the coin lockout wire form and the coin chute switch. Problem #4 is possible if the *slam* switches are not properly adjusted. Production games will have heavier switch blades and adjustment will not be as critical.

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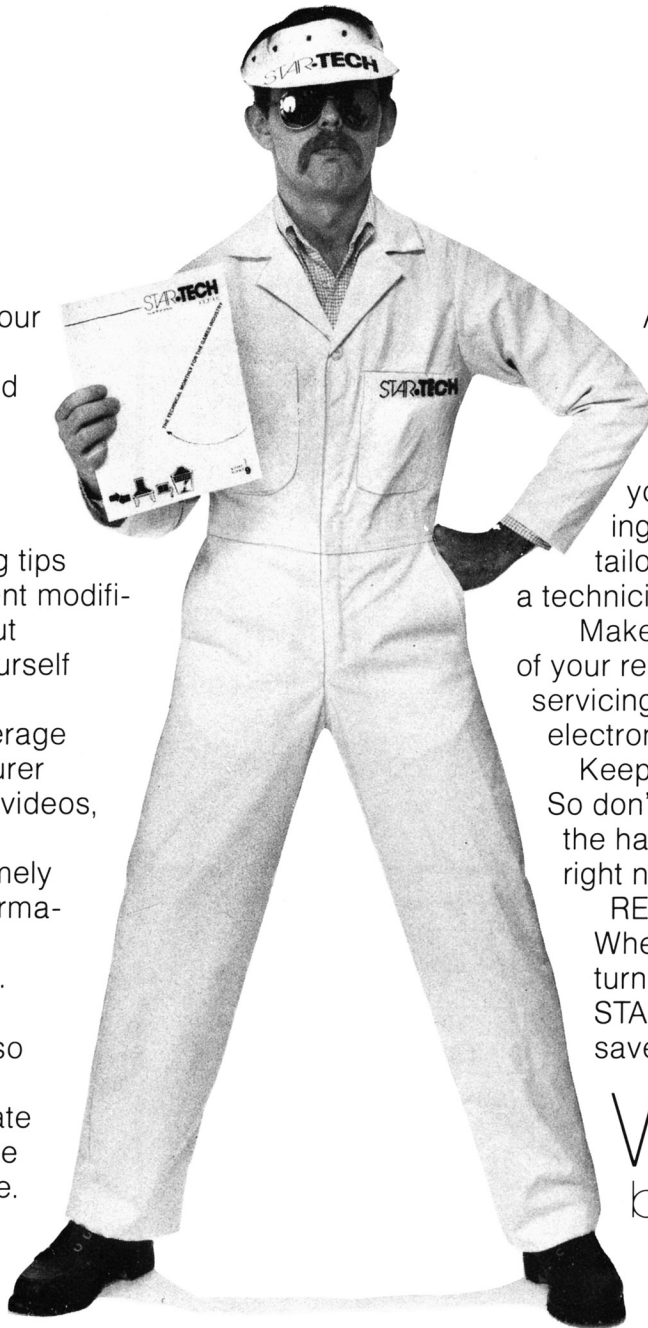
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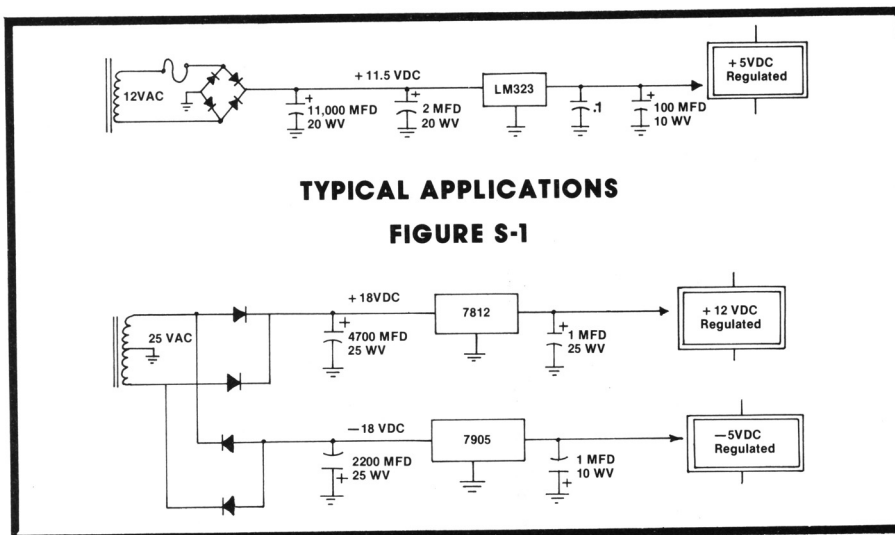
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I.C. power supply voltage regulator problems



Since most computer controlled games employ I.C. voltage regulators, a working knowledge of these devices is necessary.

One of the first steps in isolating a problem in the electronic game is to check for proper supply voltages.

Failing voltage supply circuits produce a number of symptoms ranging from no or intermittent operation in pin games—to “hum bars” (moving dark areas) or distorted images on video games.

Troubleshooting regulator circuits consists of these three initial checks: *Input* — must be a DC voltage within the minimum and maximum specifications of the device (Table 1), with very little AC or ripple present.

Output — a steady regulated DC voltage within 5 percent of the specified device.

Common — must have a good electrical connection to ground and isolated from the input and output pins.

Referring to Figure S-1 (typical applications), an open or leaky input filter capacitor will result in an unsteady or fluctuating output. A shorted or open diode in the bridge rectifier circuit will result in a decreased DC input voltage, also affecting the output. If the input voltage checks out correctly, the fault lies in the regulator IC itself or the output filter capacitor.

These package I.C. regulator devices contain current limiting as well as thermal shutdown circuitry to protect the I.C. from overheating. A malfunction in this internal circuitry will cause the regulator to shut down permanently. This type of breakdown can be isolated using “freeze spray” directly on the device. If cooling the regulator returns it to normal operation, the regulator is faulty and should be replaced, providing the current requirement of the load is within the device’s capabilities. This method of troubleshooting I.C. power supplies can be utilized on any electronic system.

TABLE 1

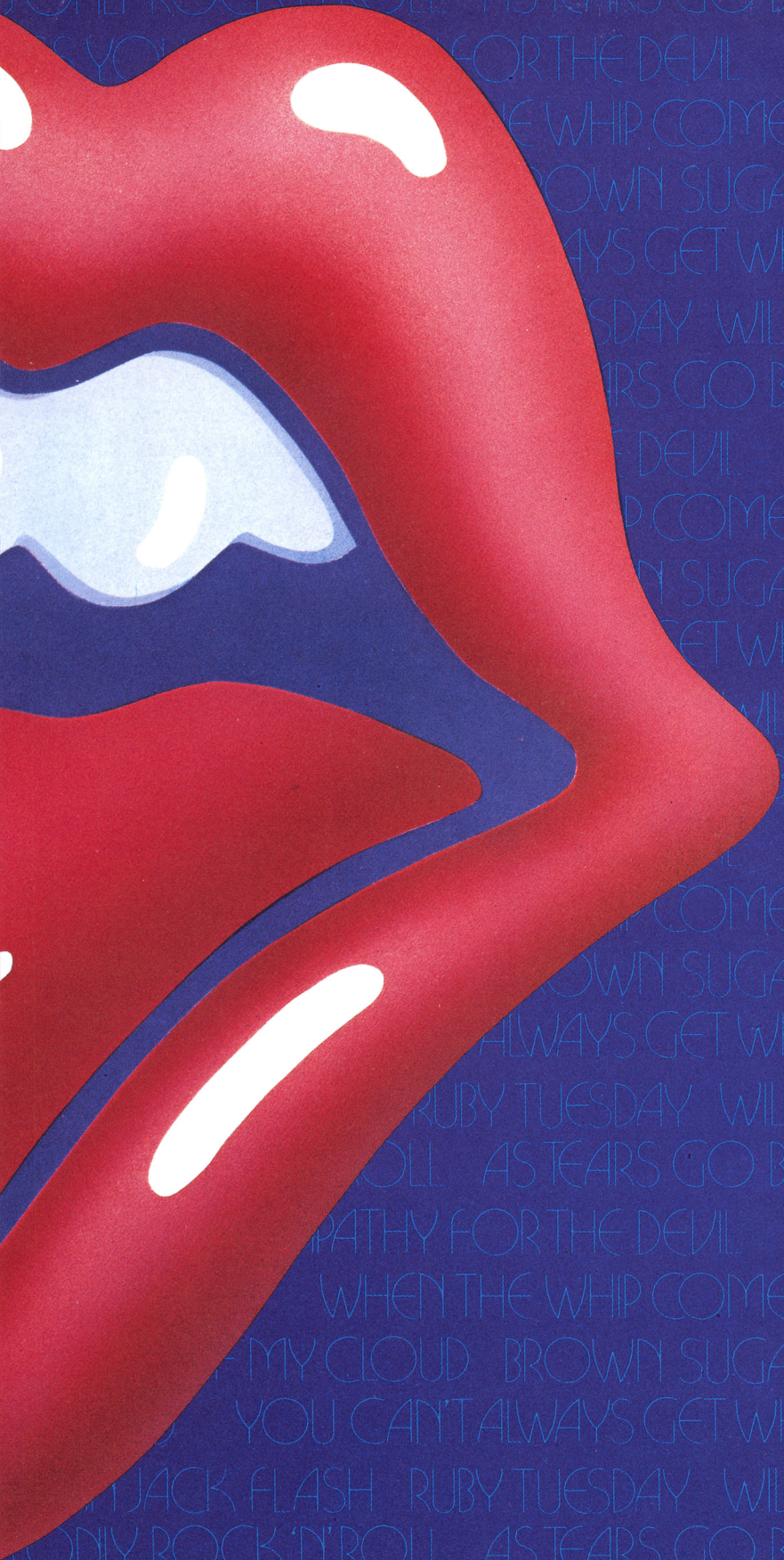
DEVICE	INPUT VOLTAGE		OUTPUT CURRENT	OUTPUT VOLTAGE
	MIN	MAX		
LM 323	7.5	20	3A	+ 5V
7805	7	25	1.5A	+ 5v
7905	-7	-25	1.5A	-5V
7812	14.5	30	1.5A	+ 12V
7912	-14.5	-30	1.5A	-12V
7815	17.5	30	1.5A	+ 15V
7915	-17.5	-30	1.5A	-15V
7818	21	33	1.5A	+ 18V
7918	-21	-33	1.5A	-18V
7824	27	38	1.5A	+ 24V
7924	-27	-38	1.5A	-24V

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GOING OFFSTAGE IN THE SIDE HOOPS CAN HAVE BIG BENEFITS

On either side of the playfield are hoops with rollover buttons that score the lit value and advance the bonus and the lit value up to 10,000 points and 5 bonus advances, including a special. These can be tied together or operate independently. And for the 1st time ever, there is a mini-post in each hoop that scores 50 points!

DROP TARGETS FEATURE WITH MEMORY CLIMBS TO THE TOP OF THE PLAY LIST

Another unique new hit feature from Bally is the 4 memory drop targets with increasing point values that score the lit value at the time the last target is dropped. From 5,000 to 25,000 points and special are possible. In addition, each individual drop scores 500 points.

MUSIC-MUSIC-MUSIC

Rolling Stones' hits, SATISFACTION, JUMPIN' JACK FLASH, MISS YOU and WHEN THE WHIP COMES DOWN, echo throughout the games' play. Bally's other great new sounds combine with an exciting background sound that increases its intensity with the play of the game to further attract players.

GREAT NEW FLIPPER ASSEMBLY

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ANOTHER GREAT HIT FROM BALLY AND THE ROLLING STONES

SATISFACTION GUARANTEED WITH TARGET, SAUCER FEATURE

Knocking down the Satisfaction Target scores 3 bonus advances and exposes the saucer which scores the value of the current bonus. The second saucer entry scores the bonus plus an extra ball, which can be adjusted for memory.

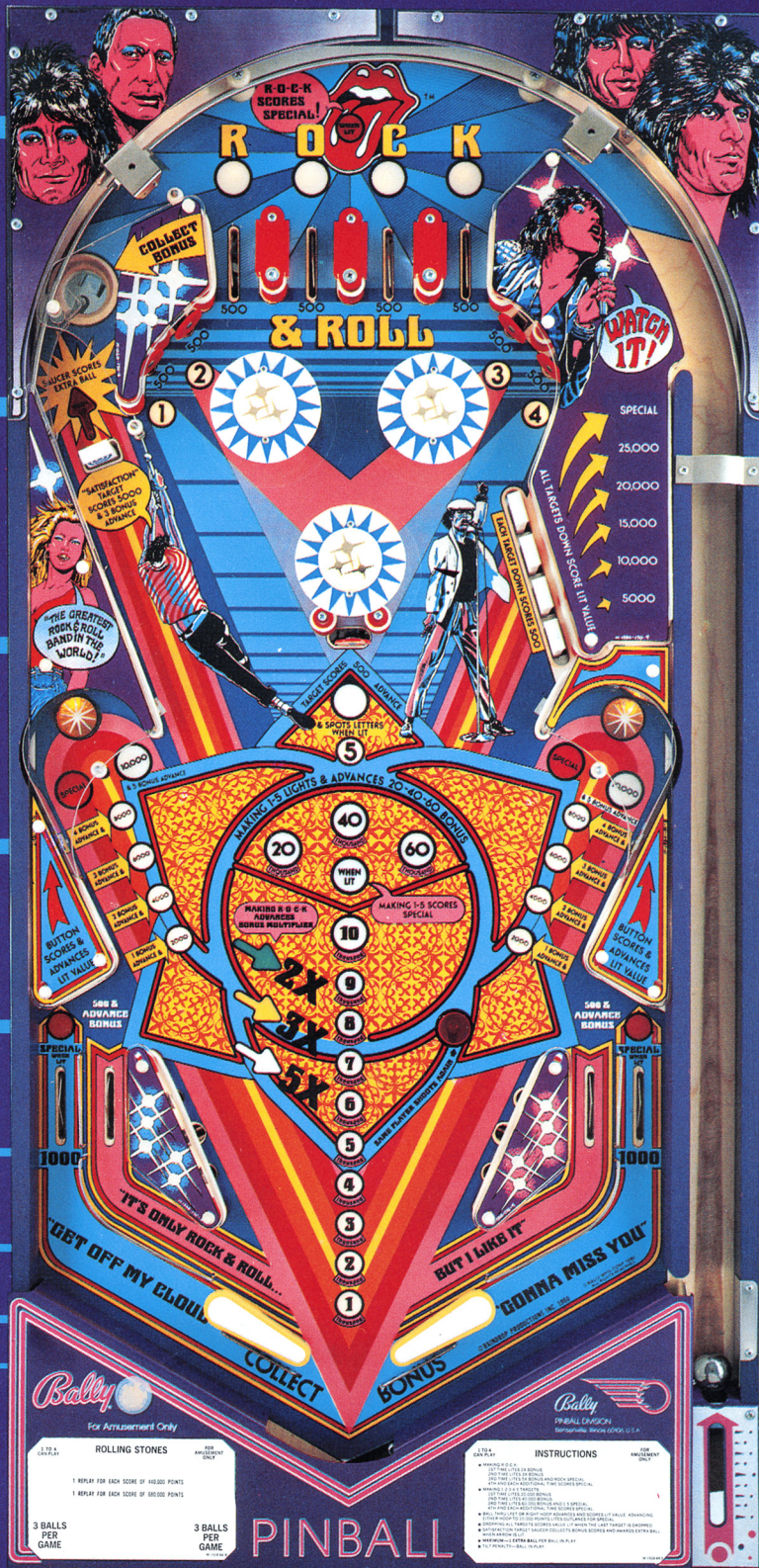
RECORD BIG BONUS POINTS WITH 5 TARGETS

Completing the 1 to 5 target sequence lights the way to big bonus points. The 1st completion lights the 20,000 light; 2nd the 40,000 light; 3rd the 60,000 light and the 4th special. These are adjustable for memory.

R-O-C-K PRODUCES MULTIPLIER HITS

Each completion of the R-O-C-K lanes advances the bonus multiplier from 2x to 3x to 5x and special.

Front Door Programming



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Video test cable: aid to diagnosis

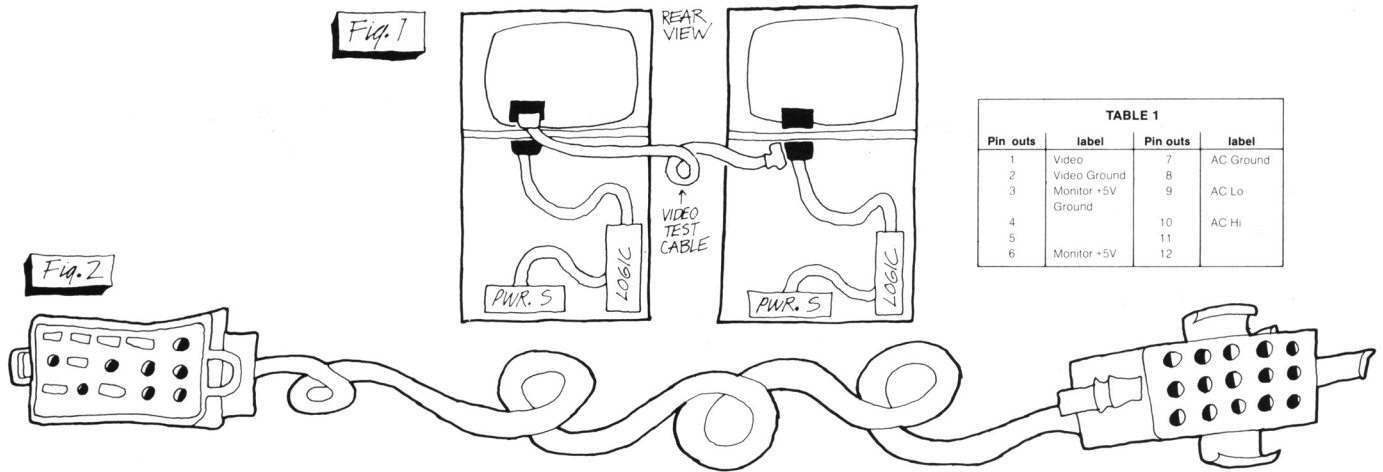


TABLE 1

Pin outs	label	Pin outs	label
1	Video	7	AC Ground
2	Video Ground	8	
3	Monitor +5V	9	AC Lo
4		10	AC Hi
5		11	
6	Monitor +5V	12	

Problem: Video game blank screen. Who's the culprit? Is it the TV monitor, power supply or logic board?

Here's a troubleshooting tool and an easy method to determine which unit has failed.

Procedure: Most locations and repair shops have more than one video game on hand. If this is the case, isolating the problem using the video test cable is a snap. Simply unplug the monitor of the failed unit and plug in the test cable to the TV, run the other end to a working game's unplugged monitor connection harness. [See Figure 1]

Turn on power to the known good game and its video will be on the suspect monitor if it is working.

Reversing the connections will test the suspect logic board, presenting its video on the good machine's TV.

Construction: After stripping each wire of the 10 conductor cables at both ends, approximately 1/4 inch, crimp 10 male pins to one end and 10 female pins to the other. For best results and long life, strengthen these crimps with a small amount of solder, being careful not to place too much heat on the wire as to melt the insulation.

Next, snap into the appropriate locations the male pins into the female connector. [See Table 1]

Now install the female pins into the male connector [see Figure 2] observing the same pattern as at the other end [i.e., pin 1 to pin 1, pin 10 to pin 10, etc.]

If your cable carries two heavy gauge wires and eight lighter gauge wires, use the heavier ones for pins 9 and 10. Your video test cable is now complete.

Parts list:

12 feet 10 conductor cable (such as used for music wallbox installation
12 pin connector, female: Motorola part No. 15-10183A69

12 pin connector, male: Motorola part No. 15-10183A70

10 Female pins: Motorola part No. 39-10184A64

10 Male pins: Motorola part No. 39-184A63

This test cable will fit all Motorola, TEC, and Wells-Gardner monitors.

TV monitors which contain a +5V power supply for the logic board must be tested between like machines; e.g., Exidy *Robot Bowl* and *Circus*

This material supplied courtesy of Star Tech Journal, Merchantville, New Jersey.

We'll all be metricized

Before 1990, the United States will join most of the world in converting to the metric system of measurement. Feet, inches, miles, and gallons will be things of the past—meters, centimeters, kilometers, and liters will be standard. (Presently, you may use 35 mm film, take medicine measured in milligrams, or ride on metrically measured tires.)

Here are the rules for the metric system:

Length: The basic unit is the meter, about 1.1 yards. Other common length units are the millimeter (.04 inch); the centimeter (.4

inch); and the kilometer (.62 mile). If your arcade is 23 miles from home, you'll be driving about 37.0 kilometers to get to the location. At 50 miles per hour (or 80.4 kilometers) the same driving time will apply. Your speedometer won't show miles from 0—120; it may show kilometers from 0—190.

Weight: The gram (about the weight of a paper clip) is the basic unit. Multiples are the kilogram (about 2.2 pounds) and the metric ton (about 2,205 pounds). Instead of keeping your tires at 28 pounds per square inch, you would keep them inflated at 193 kilopascals (one

pound per square inch equals 6.895 kilopascals.)

Liquid measure: The basic unit is the liter. There will be no more pints, quarts, or gallons. Instead of 5 gallons of gasoline, you'll buy 19 liters; instead of 10 gallons, 38 liters; and to fill your standard 20 gallon tank, you'll get 76 liters. Instead of 4 quarts of motor oil, you would get 3.8 liters—since one quart equals .946 liters.

The key thing to remember is that multiples step up by a factor of ten: 10 millimeters equal one centimeter, and so forth.

Happy metric measuring!

La Jolla arcade uses techniques of 'the new breed'

By Randy Fromm



Employees such as manager Don Erickson and assistant manager Melodie Black (right photo) are credited by owner Mark Madura with keeping clean performance on 'The Yellow Brick Road,' an arcade at a location north of San Diego, California. In the above photo, the game room is busy with activity.

Amusement arcades are a different breed these days. The dingy-back-room connotation of game-rooms, held by the public for many years, is rapidly disappearing.

To a great extent, the appearance of arcades in large shopping malls is responsible for this change in the public attitude toward games in general. By presenting coin-operated games in a plush, family environment, today's arcade operator has done much to bring pinball into the public favor.

A case in point is the Yellow Brick Road arcade in La Jolla's University Towne Centre. La Jolla means "The Jewel" in Spanish—surely an apt description of this family-oriented arcade located about 12 miles north of downtown San Diego, California. The arcade occupies an area of approximately 4,000 square feet, perched high above a large, indoor skating rink. Visitors to the mall can enjoy playing a few games of pinball or any of the sixty or so different games on the floor, while they shop or snack at the myriad of stores and restaurants in the mall.

Owner Mark Madura smiles with pride when you talk to him about his "baby."

"Every effort is made to make our customers feel comfortable here," commented Madura.

"In addition to keeping a good variety of the latest games, we provide a well-lit, family atmosphere and a number of neatly uniformed



employees," Mark went on to say. "The employees are constantly moving throughout the arcade to provide assistance when needed. If a customer loses his coin, or has some other difficulty operating a game, an attendant is always within easy reach," said Madura.

"Every game on the floor is kept in top operating condition," Mark told PLAY METER. "I am fortunate to have a very competent mechanic working for me. I feel very strongly that the service end of the games is the heart of any operation," he continued.

"With a high volume arcade like Yellow Brick Road, any game that's down means loss of income. Manager/mechanic Don Erickson does an excellent job of keeping everything up and running. In addition to performing the repairs and finding second and third sources for replacement parts, he trains my other employees to do some of the minor jobs, such as the repair and adjustment of coin mechanisms and player controls," Madura explained.

"He also delegates certain responsibilities to my other employees. For instance, assistant manager Melodie Black is responsible for the routine maintenance and cleaning of the games. She follows a schedule that includes weekly pinball playfield cleaning and maintenance, and bi-weekly cleaning of the video game picture tubes. Of course, the outside of all the games are cleaned daily to



remove fingerprints from the glass, and other 'player induced grime.'

"In addition to our pinball machines and video games, we also have five *Boom Balls* on a specially constructed platform that we call the 'Boom Deck,' " Mark said, pointing to the corner of the arcade.

"Don has been able to do an amazing job in second sourcing the pneumatic valves and other parts necessary to keep this system running.

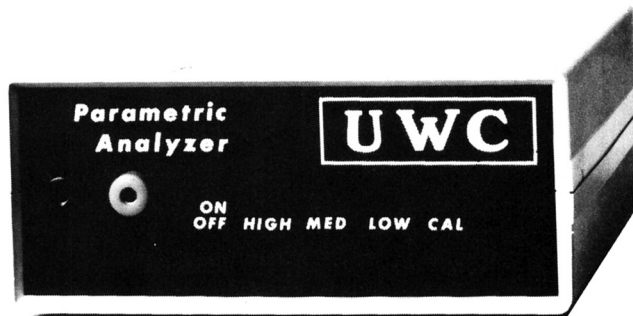
"Promotion plays an important part in our operation," Mark told *PLAY METER*. "We offer the players an incentive to beat the pinball machines and achieve high scores on *Boom Ball* by offering 'plush' prizes for certain scores. By beating the high score on three of the pinball machines, the player can win a small stuffed animal. Beating four games earns a larger 'plush,' and beating five games wins a 'Pinball Wizard' tee shirt.

"The *Boom Ball* prizes are much the same, with scores of 4500, 5500, and 7000 earning small, medium, and large plush toys.

"In addition to the prizes, we have a *Fanky Malloon* helium balloon vendor that vends a Yellow Brick Road balloon for fifty cents. When kids walk around the mall with one of our balloons, we get some free advertising and we've made about thirty cents over the vending cost of approximately twenty cents," said the operator.



The appearances created by lighting and colorful tiles draw game players around the arcade to new interests in the latest games. A deck (photo above) spins off teenagers' fascination with a skating floor below.



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By David Snook

Milan joins the front ranks with coin-op show 1980

MILAN — Italy has joined the great video game rip-off. The major coin machine manufacturing nations of Europe are all currently in the throes of video fever and the big Italian show demonstrated that the Latins have been duly infected too.

The European exhibitions this year clearly demonstrated two things: The appeal of the current crop of space theme video games and the manufacturers' capacity for copying them.

Great Britain now has around 25 manufacturers of video games where 18 months ago it had three. Most of the games being produced are not licensed by the inventors and in many cases boards are pirated in from Japan where the process of copyright litigation is more tortuous than in most other countries.

Italy seems to be no different. At Milan Fair this year there were anywhere between fifteen and twenty "variations" of *Space Invaders*, *Asteroids*, and derivatives, mostly being manufactured without licenses. The Italians, even those paying legitimate royalties to the originators of the games, seemed remarkably resigned to the problem, far more so than in the British trade where Taito's British subsidiary is busily initiating legal action against rip-offs.

An expressive shrug was the most forceful comment PLAY METER found in Milan when testing reaction to the problem.

But Italy has other problems, just as immediate. Inflation has bitten deeply, and the Italian trade is working hard to try and uplift accepted play levels beyond the 100 lire that is commonplace at present. With 100 lire roughly equalling 15 cents, operators are finding it hard to keep up with the necessary reinvestment to preserve a modern business.

The new breed of highly sophisticated games that have arrived on the market over the past couple of years has helped, and now it has become possible in some Italian sites to

upgrade games to 200 lire.

Value Added Tax on new machines at 33 percent does not help either, but for all the problems the Italian manufacturing industry is buoyant, maintaining well its foot-

hold in international markets—principally with pinball but with a certain amount of influence in the European games market as well.

It is currently estimated that the Italians produce 400 to 500 pinballs a



Bally's Space Invaders flipper drew attention at Milan at the Domino stand. With the games are Guerrino Baldo and Miss Alessandra Fenati.



Model Racing's new Claybuster video shooting game highlighted the producer's display. Pictured with the machines above are Model Racing's Alberto Degani and Euro distributor Michael Barr (right).



Bertolino's Luciano Bertolino and his marketing manager, Mrs. Laura Costamagna show Galaxian, one of the more popular games on stand.



Zaccaria's big new sit-in arcade video game Sea Battle was one of the main new pieces of equipment launched at Milan Fair '80.

week with half of them going to other countries and about 1,000 video games a week with about 20 percent of these for the export market.

The manufacturing industry is dominated principally by Zaccaria, Model Racing, Nordamatic, and Bertolino, all kept strictly on their toes by a whole crop of small companies anxious to take over any slice of the market that may result from a faltering by one of the big companies.

Milan Fair is not the largest Italian coin machine show—Enada in Rome in October is perhaps the principal automatics exhibition in the Italian calendar—yet Milan's international influence is still quite strong despite the fact that it is traditionally held rather late in the year.

The 1980 show opened on April 13 and ran for ten days, which may seem long, yet Milan Fair covers a great deal more than coin machines. It is a huge general trade exhibition, taking up the whole of the city's permanent exhibition center, a series of large halls custom-built for the purpose. The coin machine show is held in one of the halls, on the top floor, which many of the exhibitors felt was a marked improvement on previous years'. Hitherto, the show had been on the ground floor and in order to get to the other products in the hall, visitors had to pass through the coin machine show. That led to criticisms that legitimate buyers could not get near the equipment nor could they conduct their business in comfort. This year's changes meant that on the opening day the coin machine exhibits saw comparatively few visitors and the trade benefitted as a result.

The stock in trade: Italian style

Video and pinball dominated, of course, but the long-suffering juke box had its place—although in Italy the music business is suffering just as it is in many other countries. The cocktail table video game was there, but principally for export as the idea has just not taken off in Italy at all. One company, Zaccaria had a cocktail table on show that was built specifically for Europeans, standing higher from the ground to accommodate western knees, but Switzerland was probably bound to be its biggest market. Wall-mounted videos are also high on the list of priorities for Italian manufacturers, eager to export to Germany, traditionally a country where wall-mounted equipment is popular. Pool and foosball were also on show, but both games have tended to level off in appeal now and while remaining a "standard," the expansion has gradually gone out of the market.



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"Recently my boss and I have been doing a great deal of studies on pinball with the use of a computer. We have compared the different features of a machine with the income it earns over a period of time. Also we have studied the playing habits of individuals and what they like in playing different pinball games. It is surprising how they correlate with your magazine. Keep up the good work."

Dan Dever
Helix Enterprises, Inc.
San Marcos, Texas

"Congratulations for the most useful *Technical Topics* section of what we consider "Our Magazine". We have subscribed to *Play Meter* since the first issue in 1974, and we consider it a "must" for every operator in the trade.

Ramon Rodriguez
President
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Gaynabo, Puerto Rico

Model Racing showed a new video shooting game, *Claybusters* with a skeet-shooting theme which had excellent sound effects—and Michael Barr, who distributes Model Racing games throughout Europe, said that its non-violent theme would enable the game to be accepted in practically any country.

Most of the games on show at the Milan Fair were copies of *Asteroids*—currently the most popular game in Italy—or Data East's *Astro Fighter* and Namco's *Galaxian*.

Bertolino showed the Atari and Namco ranges of equipment, some of which it produces under license, while around the corner Domino was giving a first European showing for Bally's *Space Invaders* pinball. Domino's Mr. Guerrino Baldo said

that *Space Invaders* had been very well received, and he confidently expected it to prove the biggest-selling pinball on the Italian market for a long time.

Zaccaria had probably the most impressive booth featuring strongly its two big lines, *Star God*, a four-player electronic pinball, and *Sea Battle*, a major arcade video game.

Star God featured the standard Zaccaria logic system and some imaginative new playfield ideas. There was a five-times bonus multiplier with eight dropping targets on the right-hand side of the field and another four on the left and a new dual spinning target as well. The art work included a new prismatic material which made the backflash very impressive.

Sea Battle was a sit-in game with a color monitor and a theme adequately described by its name. The player-manipulated controls fire torpedoes at passing ships and missiles at attacking aircraft with suitable sound effects—including a "Sailor's Hornpipe" tune for high scores.

Apart from perhaps half-a-dozen new pieces of equipment, Milan Fair this year was not overwhelmingly interesting. As an international meetingplace it was undoubtedly successful. As a showcase for new Italian products it yielded little, with the one or two notable exceptions mentioned above.

As an expression of current Italian trends, however, Milan Fair 1980 was quite an eye-opener.

Ireland debuts coin show, talks slot machine law

DUBLIN — Ireland experimented with a coin machine exhibition of its own from April 22 to 24, an experiment that proved very successful and which in turn acted as a platform for some not inconsequential politics by one of its two trade associations.

The fledgling Irish Amusement Trade Association, which was born last year from some differences in emphasis in the long-established Irish Amusement Caterers Association, sponsored the Coin Op '80 show, and unashamedly used it as a publicity medium to push its case for new laws on slots.

The show was opened by Mr. Raphael Burke, Irish minister of state at the Department of Industry, Commerce and Tourism. After the opening remarks, IATA Chairman Brendan Murphy lost no opportunity to express his association's feelings about Ireland's gaming laws in public and afterwards reported that the minister of state had offered to talk to the Association on the subject.

Ireland's trade differences are not as broad as they might seem. The IACA is predominantly of arcade character and as such is peopled mainly by the only part of the trade legally entitled to operate slots. Their main emphasis is on consolidating the current laws, clarifying the legal nuances of the Betting and Lotteries Act presently in force, and uplifting the input and payout regulations. The IATA was born from a nucleus of operators who place games and jukeboxes in individual sites such as

pubs and clubs and who wanted to see similar laws in Ireland to those in the United Kingdom. This would open up the pubs and clubs to limited gambling machines.

"The differences between us," said IACA Chairman Kevin O'Farrell, "are mainly of emphasis. But the IACA is quite prepared to go along with any new laws the Government may decide to introduce."

Brendan Murphy, however, noted his IATA is conducting an aggres-

sive policy of promoting with the Government the right to operate machines with payouts in clubs on a two-tier payout level basis, all supervised strictly by a Government Gaming Board. "It works out well in Great Britain, although it took them 18 years to hammer out the ideal method. We hope it won't take as long here, but we're determined to work towards it," he said.

Coin Op '80 provided the IATA with a great opportunity to plug its



Raphael Burke, Irish minister of state, opens Coin Op 80 in Dublin. With him are Sean Lemass, managing director of SDL Exhibitions, and (right) Brendan Murphy, chairman of I.A.T.A.



John Nusser of Irish Arcades shows the Viking—a new British model slot built by Bally/Ireland.



Standing for Arcade Amusements of Cavan at Dublin were (left to right) Adrian McGuigan, Oliver Malone, Bernadette McGovern, and Sean McGuigan.

case. S.D.L. Exhibitions Ltd., the commercial company promoting the show, freely admitted the exhibition was an experiment.

Managing Director Sean Lemass told PLAY METER that for four years the company has run Vintra, an exhibition designed for publicans (bar owners) and the licensed trade generally, displaying catering equipment and sundries for pubs, clubs, hotels, and restaurants. During each of those shows there had been a small number of participating coin machine operators.

At the request of the IATA it had been decided to change the emphasis and run Vintra in conjunction with a coin machine exhibition and companies in the automatics business in Ireland and the United Kingdom had been vigorously canvassed for support. Out of the 65 exhibitors at the joint exhibition, 26 were from the coin machine business. Mr. Lemass pronounced himself delighted with the response and credited the IATA for hard work in achieving it.

The venue was the Leopardstown Racecourse buildings just outside Dublin, a delightful setting, and the well-laid-out exhibition opened to a very limited response on the first day, but by the afternoon of April 23, the pace was hotting up and almost without exception the exhibitors pronounced themselves well satisfied and content to return next year.

Ireland's favorites

Like the rest of Europe, Ireland has gone in for video games in a big way, with the established games, Midway's *Space Invaders* and its successors and *Asteroids* from Atari doing exceedingly well. Inevitably, there were the copies as well but the Irish have their own manufacturing industry springing up.

It seems that video card games with features of 21 and blackjack are very popular in the Republic, perhaps a symptom of the public's frustration at the restrictive anti-gambling laws. This has led to a crop of small companies springing up, producing video card games in competition with similar games coming in from British companies such as Summit Coin (already into the Nevada market) and Sircoma Europe.

Some of the top Japanese and American makes were also on show although the absence of a booth for Atari Ireland was noticeable. Bally's subsidiary, Irish Arcades, headed by John Nusser, had a big display of current Midway and Bally games and Nusser pointed out that "it is the only booth here with a complete range for arcades." He lost no opportunity, however, of also displaying a range

of Bally Ireland slots, aimed at the British market.

Video Games Ireland, Brendan Murphy's own company, showed a range of Elcon equipment and Moran Sales from Portrush had a big display of many makes, but notably of the new Cinematronics *Rip Off*—a name perhaps with an ironic double-meaning?

Pinball in Ireland is extremely strong and therefore Irish Arcades' display of Bally's *Space Invaders* resulted in a fat order book and the comment from John Nusser that it will prove better than *Eight-Ball* in Ireland."

Pool has leveled off, as it seems to have done in most European countries and Tournament Soccer has a small, but significant and enthusiastic following in the Irish Republic.

But overshadowing everything was the pressure for changes in the Irish gambling laws to permit a more widespread, but controlled, use of slots. According to the current laws, only licensed arcades are permitted to operate slots, with 2p insert and 50p payout (5 cents and \$1.10 respectively). In the past this has been widely abused with slots finding their way unashamedly into all kinds of illegal sites, but the tardiness of the Garda (the Irish police) in prosecutions permitted the illegal operations for some considerable time. More recently, however, there has been a clamp-down and the examples of illegal operation are becoming more rare.

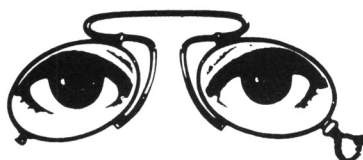
Even in legal sites—the arcades—there has been a tendency to operate illegal machines, i.e., equipment with higher input and payout than the law permits and there has just been a clamp-down on this too with some prosecutions in the pipeline.

For that reason there were few slots at the exhibition, and those that were there were either for export or were set on the legal input and payout limits. But the Irish trade is clearly dissatisfied with the situation as it stands and whichever association is involved, there is a pressure for either increased payouts or wider tolerance.

The rest of the Irish coin machine business is buoyant, within the bounds of an industry with about 350 operators of varying sizes and even at that level, per capita, it will continue to be an enthusiastic coin machine-playing country.

The Irish trade's experimental exhibition was undoubtedly a big success for a first time around and Coin Op '80 clearly established itself as a regular on the international exhibition route.

—by David Snook



Critic's Corner

By Roger C. Sharpe

Carter, Reagan, Gottlieb, and Bally

In less than three weeks the last of the major primaries will have taken place and all will know once and for all that Carter and Reagan are the ones (to coin a phrase), the hostages are still in Iran, the Cubans are flooding into Florida, in two days the world will know if the baseball season is over and here I sit contemplating what I can say about three pinball machines that are going to be out and about between now when I'm writing and when you'll be reading these words.

Projecting ahead of June, with the events occurring now, it's easy to see that this has been and will continue to be a summer of change. Equipment from all sources is making marks both in video and pinball lines. Rumbblings of fall blockbusters are in the news regarding some incredible developments for pinball and everyone is gearing up for the AMOA as usual. In looking at the year already, one must admit that pinball has supplied us with some pretty good offerings: Bally's *Space Invaders*, Gottlieb's *Spiderman* and its upcoming *Panthera*, Stern's *Big Game*, and Williams' utilization of speech on *Gorgar* and the innovative *Firepower*. All in all, it's been a relatively strong year and shows no sign of letting up.

This time around we take a look at a new release from Gottlieb which should have begun hitting the streets

in late May and early June, along with Game Plan's third effort and Bally's seemingly annual homage to rock 'n roll following last year's *Kiss* with its new *Rolling Stones*. And so, let's see how everything stacks up and whether the individual companies are indeed moving ahead in their pinball development, or standing still.

Gottlieb's CIRCUS

The first wide-body since this company began its Star Series 80 takes the center ring with the classic big top motif that seems to resurface from time to time.

PLAYFIELD: The top of the playfield is really divided into half with the right side offering four lanes (1-2-3-4) leading down to two thumper bumpers. Move over to the middle and there's a spinner which leads further to the left and a top roto-spin target as well as a side bulls-eye target. Move down a bit and the left offers two small flippers and a rollover wire in between as well as a left side lane, and a fronting bulls-eye at the right side of the flipper set-up.

Over at the right meanwhile is a set-up of four free-standing drop targets with open space in between each and a far right side lane. A bit down from this area is a small little gap for access back to the plunger while on the left is a recessed kick-out

hole for collecting bonus when lit. On the right is yet another bulls-eye and then a wide set of lanes for the flippers with one on the left and two full-size on the right.

ANALYSIS: If some of the play and even the setting of features looks remotely familiar then you're probably thinking of *Genie* since the similarities are rather deep. Much of the play is centered around the right side top lanes and the drop targets for gaining bonus multiplier values, while the blue lights on the lanes at either side means a lit spinner and the green lights of A-B-C found on the bulls-eyes light the extra ball value. But much of the action is centralized around the flippers with many of the gaping areas brought about by the spacing of features not only unto themselves but also in proximity to the flippers at straight as well as lateral angles. The roto-spin can mean specials and lit numbers for those drop targets, but the accessibility from the bottom is restricted and much depends on the smaller flippers and the left side working as a separate playfield within a playfield.

GRAPHICS: Never has the circus sparkled so much as on *Circus*. The backglass is a bright and colorful potpourri of clowns, animals, balloons, girls, and all the images that come to mind when one thinks of the big top. The playfield also picks up the motif and carries central charac-

Roger's Ratings At-A-Glance

Gottlieb's <i>CIRCUS</i>	## ¹ / ₄	Game Plan's <i>SUPER NOVA</i>	##
Bally's <i>ROLLING STONES</i>	###		

HIGH SCORES CAN MEAN LOW PROFITS

If players are keeping your *Asteroids* game tied up for excessively long periods of time on just one quarter, then you need Sparky Electronics' *Asteroids* modification kit. It's designed to improve game play—and increase profits.

This novel modification sells for under \$100 and keeps beginner play the same, while making it tougher for the good player to play for a long time on one game.

Operator adjustable, this newest modification kit from Sparky Electronics incorporates 5 different levels of speed so you can make the game tougher or easier at any given location.

Yes, I'm interested in the *Asteroids* modification kit from Sparky Electronics.

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COMPANY _____
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CITY _____
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SPARKY ELECTRONICS
95-26 42nd Avenue
Elmhurst, New York 11373

ters throughout for a very lively and family fun rendition keeping within the Gottlieb mode of things.

PLAY: The scoring on *Circus* isn't too bad considering the reasonably decent opportunity for bonus multiplier. Since almost everyone associates wide-body games with three-ball play, for extra ball areas on three-ball, try a 180,000 point start and follow it with 360,000 and 600,000 point levels. On free play you should be able to get away with 100,000 to 125,000 point increases to each limit depending upon the players and how they're hitting the game.

PROS & CONS: Well, as I have voiced in the past, my feelings about "squat bodies" are mostly negative not only from a playing standpoint but also in terms of design and some of the inherent problems therein. On *Circus* the major problem, everything else aside, is that the power from the tips of the flippers is just not there for the necessary long-sweeping shots that the designer undoubtedly visualized when he put in that far left side rollover lane which is probably supposed to sweep the ball back up and to the lanes: it doesn't happen, let me tell you.

And even the placement of other features and possible shots is lacking, such as a too-far-away, not-worth-enough-to-shoot-at spinner. With the bottom flippers, where the spacing on *Genie* worked given the layout, here the right side cuts down the reverse shots to the drop targets from the bottom flippers—which also loses some of its effectiveness—and even the top right flipper doesn't have a total sweep for good, strong reverses.

Even the power from the small flippers, although improved from *Genie*, are still not within the realm of what one needs on a game such as *Circus*. And once you take away the flippers, any game is going to suffer, as this one does from its placement of drop targets as well as the right and the spaces in between which allows for some very silent and dead rolls.

RATING: ##1/4

Game Plan's SUPER NOVA

The new kid on the block to pinball offers a contemporary theme and some other differences from their previous two efforts.

PLAYFIELD: Red star rollovers start the top with one arc (S-U-P-E-R) a thumper bumper, another arc (N-O-V-A) and then two thumper bumpers. A long rubber at the right of this along with a lower target is the basic

"beginning" area and is flanked on the left by the primary feature of the game. There are four square bulls-eye targets dotting the bottom area of the old "chuck-a-luck" as some people call it. Here it's called the Space Lab and the left side target spins it, the next one advances lit bonus and also offers extra ball when lit, the next spins the lab and the far right advances the Ursa bonus, one of two on the field for building up points.

Move down and over to center and a bulls-eye target with two posts offers specials and 50,000 points per pop when lit. At either side are two recessed kick-out holes and there's also a fairly steep spinner at the right for access back to the top, with the bottom being a conventional wire lane and flipper Gottlieb bottom.

ANALYSIS: *Super Nova* has a lot of this and a lot of that, with the top rollovers similar to Williams' *Pokerino*, but not as effective, although here it controls the bonus multiplier values, which are only held over when there's an extra ball and not from ball to ball—a step backward technologically from what Game Plan has done in the past with memory and recall. The Space Lab is something the company had great success with on its first sit-down cocktail pin, *Foxy Lady*, but on a full size game the emphasis is too great and stiltifying for modern games. On the old Williams *Fantastic* it worked, as well as on Gottlieb's old *Super Score* and others, but not this time around.

Everything is really predicated upon hitting the "spin" and having it land on something such as an extra ball, special or 50,000 and then sitting back and trying to hit the center target all day or that extra ball target. Collecting some count-down bonus is okay from the kick-out holes, but the rest of the game doesn't offer that much in the way of rewards for aiming and hitting something. Even the resurrecting of Williams' double bonus build-ups from *Grand Prix* doesn't quite make the grade even if they are dubbed "Orion" and "ursa."

GRAPHICS: Well, it's not the wild west or even an amusement park. This time around Game Plan has latched onto the space theme which has taken over the coin-machine business and we have a winged warrior taking off in the cosmos with sword in hand on a fairly colorful background that is deep and muddled in tone when carried over to the playfield. But this third game is a step in the right direction and bodes well for the next game down the line.

PLAY: With the frequency of landing on a 50,000 point value and then popping it repeatedly, the scoring can get rather high, although for the most part the points aren't really there in quantity on this machine. Even the million light that Game Plan brought to the electronic age of pinball is missing on this game, although the memory in the machine is such that it remembers scores beyond the six digits for high score to date. Anyway, try a 200,000 point start and follow it with 400,000 and 600,000 points for extra ball play and raise these levels by about 150,000 points for each free play.

PROS & CONS: When you take the total effect of the scoring and the alignment of the features on *Super Nova* the single reaction is a bit of a disappointment for a company that had come so far in such a relatively short period of time. Not only is the game left-side heavy, but the things to shoot for are primarily tied into a step up of shots, hitting something to hit something else, which under normal circumstances wouldn't be too bad—but here it fails because there's just not enough to go around for both flippers.

The top area dies out with the

parallel placement of the top two thumpers and the lateral action one needs is truly hard to provide. The loss of memory in the program, although there's not much to memorize, brings this effort back a step as does the basic tying in of features and scoring potentials. Ten years ago, *Super Nova* might have worked; today it doesn't, although I have seen a surprising number of people from location to location who really seem to like the game and its predictability of play. But then, almost every machine ever made has an audience out there, somewhere.

RATING: ##

Bally's ROLLING STONES

Every summer Bally drops a bombshell of a celebrity game and 1980 is no different with the addition of one of the most popular vocal groups of all time faithfully brought to life for the world of pinball.

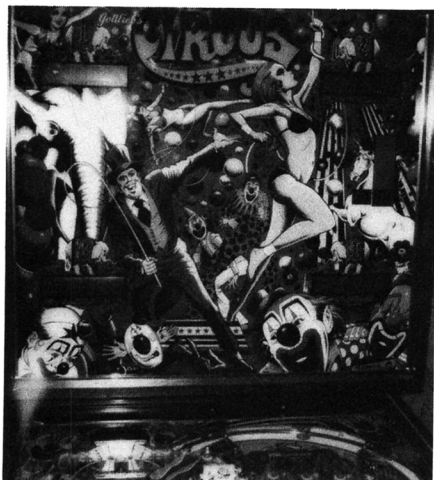
PLAYFIELD: The action starts with four lanes on top controlling the bonus multiplier (R-O-C-K) and leads down to two targets on the left (1-2) and two targets on the right (3-4) just before one reaches the center three thumper bumper area.

At the right of the thumpers is a four drop target bank while the left side offers a free-standing drop target and a kick-out hole as well as access back to the top.

Down toward mid-field on either side is an interesting use of loops with a rubber ringed post that offers some noise itself; the loops offer a star rollover and bonus point build-ups as well as specials when lit. The bottom is a conventional wire lane and flipper set finishing off the key layout of the *Rolling Stones*.

ANALYSIS: The field on *Rolling Stones* seems confined and very fast, which it is because of where everything is. There's not much let up from the time the ball falls through one of the top lanes. The top lanes control the multiplier as does the center target (5) when it's flashing for a max of 5X that's retained from ball to ball in the memory.

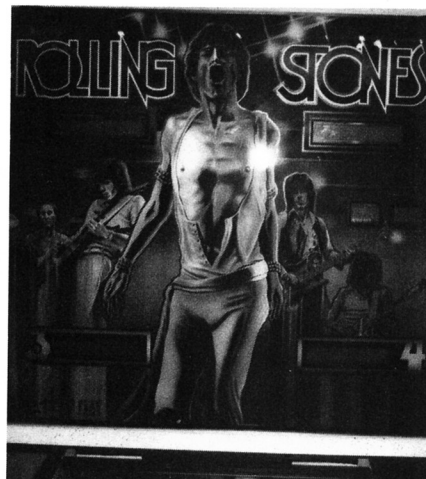
The drop targets at right are novel because J.P. has done something different with them by adding six different values that are possible when one completes the bank, from 5,000 points to special and every time the bank is complete the value received is stepped up so that the player will never get a lower value



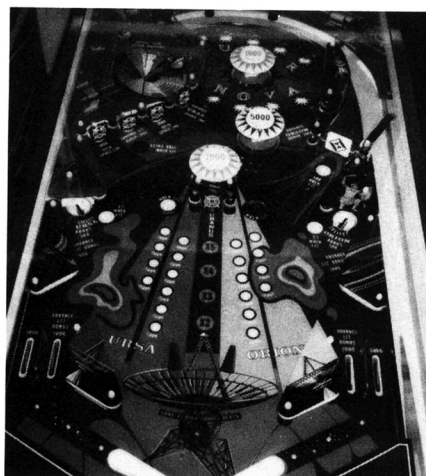
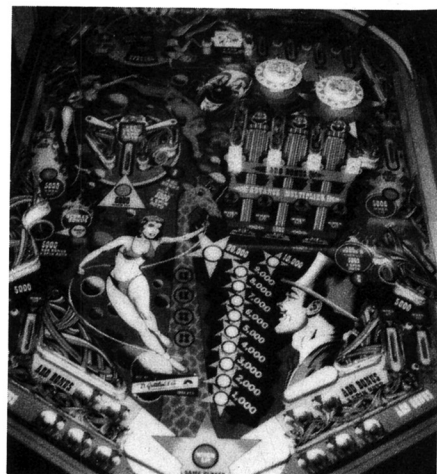
Gottlieb's CIRCUS



Game Plan's SUPER NOVA



Bally's ROLLING STONES



the next time around. In addition the knocking out of the five numbered targets means the building up of super bonus values of 20,000 to 60,000 points for some gonzo potentials if one has 5X.

In fact, the setting of *Rolling Stones* with memory, etc. and limits is going to be a chore for some places since the scoring can either be unbelievable or low depending upon whether one can get the hold-over and the top multiplier for it. Knowing that you have 300,000 points in the bank before you even pull back the plunger ain't too shabby. Lastly there's that left side target that leads to a kick-out hole which counts down bonus before kicking the ball up to the top and then relighting for extra ball the next time around.

GRAPHICS: They may not stand out and pop out like *Kiss* but *Rolling Stones* is true to its namesakes and doesn't gather any moss in reproducing those bad boys of rock 'n roll. It is yet another in the long line of truly realistic motifs that this company has managed to accomplish and the coup is that no one seems surprised that celebrities of this scope are now gracing pinball machines. It is a far cry from only five years ago when you probably couldn't get anyone of note to be a part of the steel ball crowd.

But with some deep and pastel hues, the effort stands apart from

some of the recent Bally issues (discounting "S.I.").

PLAY: Unless someone is turning off the memory totally, this Bally game could have been helped by an extra digit as witnessed by one location where the high is 99 million points. That's eight digits, but also indicative of what can happen with all the points on the board.

So be really careful to get the right mix for your location and players, test it to see if it's too liberal or conservative and read through the setting-up book in every game to see what you can do. For extra ball try a 260,000 start and follow it with 550,00 and 800,000 points. On free play you might want to go with a 360,000 beginning and then 700,000 and 980,000 points.

PROS & CONS: Good basic pinball pure and simple is what *Rolling Stones* offers. There are really no tricks or deviations from the norm on a board that offers some good access and reasonable shot selection to all parts of the board. It may prove somewhat redundant in the play, but for shot makers there's the opportunity to improvise and get even more from the board. The thumpers do much of the work at the top of the board while the flippers sustain the action further down. Reverses are nice to the loops.

What is nice is the sound effects and the start up which should warm

those *Stones'* fans who have come to know their hits. And the tie in with the musical renditions as well as the sounds of a picking guitar, etc., is a really good touch and continues the move that most sound should take with pinball by blending into the theme and adding to it, rather than being an arbitrary addition.

RATING: ###

And that's the games for this month. One thing that should be said, however, is that the summer looks to be strong as always. Rumbings aside, much is going on in the industry in terms of game development. Next month Gottlieb's newest, along with a Stern knockout that is proving to be another hit for them, and possibly a preview look at the latest from Game Plan plus other pinball happenings out and around.

Congratulations are in order for Gary Stern who enters into the world of the married for 1980. All the best from this corner for many, many years of bliss and happiness, etc.

Also next time around a look at some of things going on around the country with pinball machines—pricing and otherwise—and what the players are thinking about the developments of the games as they do battle with video for arcade supremacy. Until then, as always, be well and prosper.



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A chip with melody

A CMOS LSI "chip" that can be mask-programmed to generate a number of melodies and/or alarm audio outputs is now available from the Electronic Components Division of Panasonic Company.

Designated as "MN6221", the device consists of melody storage ROM, dual programmable counters for tone generation, tempo generator, note time setting, input control circuits, audio output circuit, and oscillator. It can be used to produce desired melodies in such devices as clocks, chimes, electronic music boxes, telephones, various toys and games, and others.

A typical chip can be programmed to contain up to seven different melodies. A complete melody-producing circuit built around the MN6221 will require a few external resistors and capacitors and a suitable speaker.

Operating only on 1.5-volt power supply, the MN6221 comes in an eighteen-pin plastic DIP (dual in-line package). Its user-oriented capabilities include two chords, four octaves, 28 kinds of tempos, 128 musical notes, and easy testing. Since then chip is mask-programmable by the user, an unlimited variety of melodies can be chosen.

Astro Fighter(s)

Astro Fighter is on the U.S. coin-op market through Gremlin's leasing of this Deco interstellar warfare video game, shown here in the Gremlin upright cabinet.

In the advanced play of the game, a super alien's body expands and contracts on the screen as it moves forward and back, firing terrible missiles. Here, the player must be careful to hit "the master" in the eye, as it cannot be killed otherwise. If the player can destroy the master before his own fuel is exhausted, a fuel pipe will appear on screen, and the player's rocket can be refueled for a return to the first of play. (However, the enemy's fire capability will be increased and the oncoming meteorites will be more numerous.

Data East, the U.S. arm of Japan's Deco, will market the cocktail configuration of *Astro Fighter*, also shown here.



Lasership ride

Lasership coin-op kiddie ride has been introduced by Waite Manufacturing Inc. of Brush, Colorado.

On the ride, movement and sound are controlled by the child. The steel cash box accepts from one to nine quarters (up to \$2.25) per ride. The ride cycle is adjustable from 10 seconds to 8 minutes.

Lasership's air cylinder drive motor is a continuous duty $\frac{3}{4}$ hp air compressor.

Other specifications—width: 44 inches; height: 104 inches; depth: 45 inches; weight: approximately 300 pounds. Electrical requirements are 120 volts/13 amps.

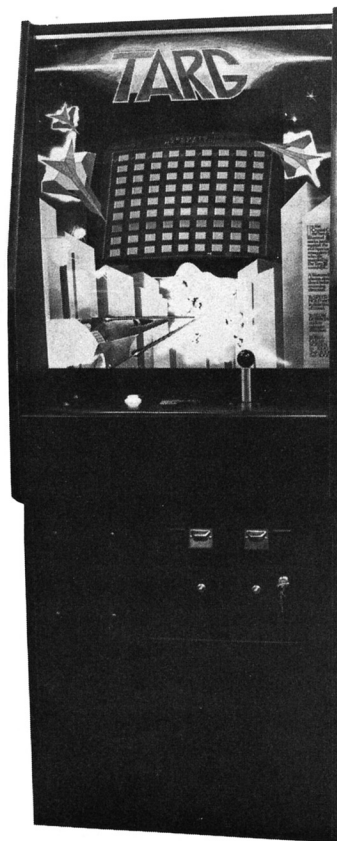


The Reds are coming!

Sigma's *Red Tank* has two versions, upright with 22-inch color monitor and table top version having a 13-inch Sony Trinitron color screen.

Red tank, the enemy, is computer controlled and approaches the player's tank to fire on him. The player tank extinguishes diamond dots on the screen, dodging the attack of the Red Tank. The player scores when the red tank is destroyed or all dots are extinguished.

Red Tank features advancing difficulty, two music themes, and seven kinds of sound. It has a self-check test function.



Backwards, it's "Grat"!

Exidy, Inc. has introduced *Targ*, a new video fantasy adventure now available in a one- or two-player, compact color-video upright cabinet with international graphics.

Targ puts player involvement in the new generation of video games, according to Exidy. "*Targ* features all the new rules, tactics, and advanced strategy that today's players seek," said the manufacturer.

"Any Wummel (player) can tell you, *Targ* is like no game you've played before!" Its ever-increasing challenge develops strategy in the green Wummel as he combats his way through the angry red *Targ* ramships, which defend the shrewd blue Spectar. A gleaming gold square emits Spectars at random times during the battle. The mission of the Spectar and the Targs is to destroy the gallant Wummel in his search for points.

A four-way joystick controls the Wummel's direction and speed, and the fire button provides enough ammunition to see the player through an adventurous mission.

Operator-controlled features are: type of coin (domestic or foreign), number of turns per game, and extended play for extra credit.

Legend of pinball

Gottlieb has released *Panthera*, the second in the company's Star Series 80 line.

"*Panthera's* contemporary backglass art supplies the backdrop for a really stimulating and challenging game," said Jack Mittel, vice president and general sales manager, describing the new pingame. "And its glittering playfield design is complemented by the buoyant blue coloring of the cabinet."

"*Panthera*," said Mittel, "utilizes Gottlieb's new System 80 electronics in two imaginative new ways. Total memory recall is at the heart of the game concept and is used to create absorbing new scoring patterns. The player will also be lured to the game through a combination of perpetual-attract lighting...plus Gottlieb's continuous background sounds which are carried to the player from the new ear-level speaker system," said Mittel.

Selective shooting to the tempting array of playfield targets rewards the player. Completing their yellow-blue-green rollovers lights the hole alternately for "special." Scoring the 1-2-3 sequence lights the "extra ball" target. The drop target value is 500 points or 5,000-plus bonus when lit. Completing three drop targets of the same color when lit advances the multiplier.



Slide, Charlie Brown, Slide!

"Take me out to the ball game," is the opening musical refrain in Midway's newest, exciting baseball game, *Extra Bases*. The play begins with the "home team" computer-action figures racing out of the dugout to take their positions on the field. If two players compete, one controls the Bat/Run button, and the other works the Pitch/Field controls.

A hit to an open field position starts the batter around the bases. The defending player must spin the field control "roller-ball" to move his outfielders in the direction of the hit ball. When a fielder reaches the ball, it is thrown to the proper base to beat the runner. The base runner stops when the Bat/Run button is released, or keeps running for "extra bases" when the button is held.

After three outs at the ball park, homers set off flashing lights and sounds. The screen displays score, innings, balls, strikes, and outs.



Nautical pinball

Stern Electronics has launched *Seawitch*, billed as the first standardized solid state pinball game which scores into the millions. The nautical-theme game was scheduled for distribution beginning in mid-May.

Seawitch allures players with a captivating light display, brilliantly colored backglass art and electronic sounds synchronized with special playing features, including eighteen ways to build bonus, three drop-target banks, four flippers, and a variable-value spinner.



Tailgating horror

Gremlin/Sega announced that its new *Car Hunt* video game is now being distributed.

Players get additional cars with each bonus score. Through Gremlin/Sega's exclusive MultiPhase concept, as a player's skill improves, the computer chase car following behind tailgates closer and closer.

The full-color game track is designed like a maze. Sound effects include high and low speed car sound, directional signal bonus, dot scoring sound, and the ominous collision sound. A built-in ranking display can stimulate players' competitive spirit.

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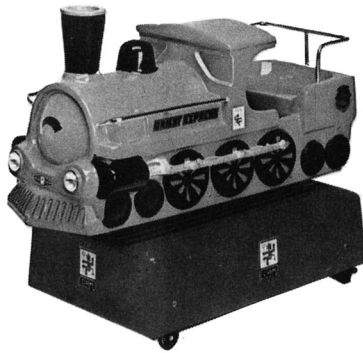
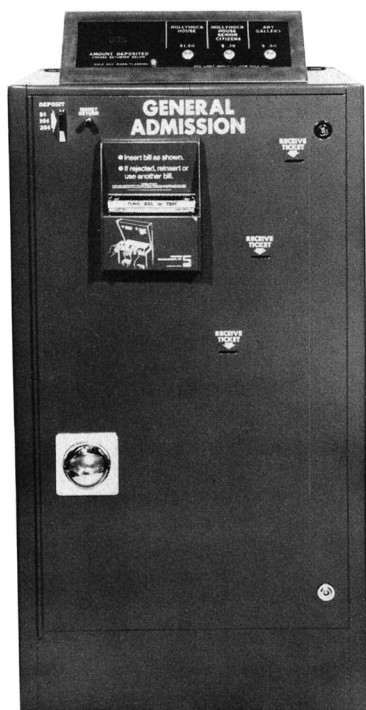


Cashier central

Cashier Central, a mini computer controlled automated cashier, introduced recently by Standard Change-Makers, Inc. of Indianapolis, accepts 5 cents to \$9.95 and vends as many as four different tokens, tickets, paperboard passes or plastic magnetic cards, products, and change.

Cashier Central can be adapted, for example, to vend a city transit system's magnetized cards or an amusement center's variable number of tokens on different days of the week.

The key component of *Cashier Central* is a mini-computer that can be programmed to control a wide variety of functions. Programs can be changed easily for custom requirements and plug-in boards make service easy and fast.



Ferrari kiddie ride

The *Ferrari* kiddie ride has horizontal movement, a fiberglass body in bright colors fused into the iron structure, according to product literature from the manufacturer, Zamperla Inc.

Ferrari has 24-volt electronic sound with acceleration; a single-phase engine of 110 volts with reducer, adjustable pendulum timer. Length—43 inches, height—32 inches, weight—123 pounds with a 25-cent coin device.

The *Little Train* kiddie ride with horizontal movement has a fiberglass body in bright colors, a 24-volt electronic sound system and a 110-volt single-phase engine like the *Ferrari*'s. Length—41 inches, height—40 inches, width—26 inches, weight—145 pounds with coin device.

Moonraker without 007

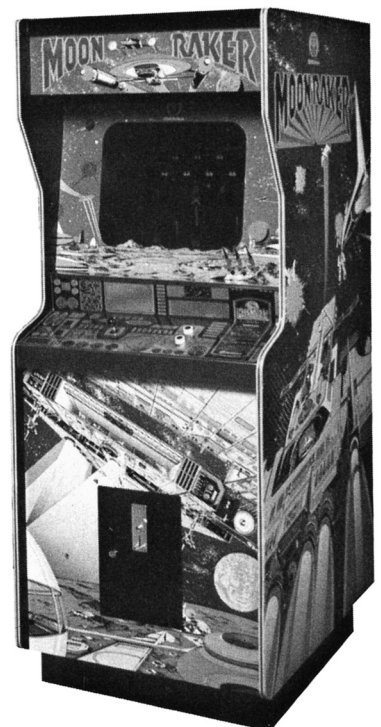
Moonraker is a space war game in which fighter craft are scrambled against the UFO which furiously drops bombs on home base.

The Nichibutsu game can be played by one or two players, with one coin deposited for a single, two for a doubles game.

Bombs are shot down by a fire button on the right side of the game machine. The fighter craft is defended from UFO attack by a lever on the left side. A high score will be given when a player shoots down a UFO low on the screen.

If a player scores over 3,000 points, he is given another fighter-plane to defend with. A bonus of 500 points is awarded for every game, according to the manufacturer's brochure. When all the fighter defenders are destroyed, the game is over.

Distributed by I.J.S. of Fort Worth, Texas, *Moonraker* is available in upright or table models.



because they want to get into the business.

PLAY METER: But the standards would still all be at the national level?

SEGLIN: Yes, the standards should be set at the national level. But the training should be at the state level.

PLAY METER: Who would do the screening procedure?

SEGLIN: That should be handled by a competent educational testing service. I've had nothing but good experience, for instance, with Princeton University which, fortunately for me, is right here in New Jersey. Princeton has quite a bit of experience doing tests like this. They can administer psychological tests, aptitude tests, and so on so that the students are adequately screened before the investment is made in them.

PLAY METER: Should there be programs to educate the other employees in the operation?

SEGLIN: Yes, there are a lot of things that can be taught besides the technical end. The routemen, for example, should be able to do minor repairs. They should be able to change lamps and clean out rejectors. These are things they have to be able to take care of because the cost of repair has skyrocketed so much that if you already have a man in that location, you should try to make sure he can handle minor repair problems to save your serviceman the cost of a trip out there.

I think there's a need for a continuing education program at every level in the operation—including bookkeeping, business practices, customer relations, everything. Things like this would upgrade the business.

And little things like cleaning edge connectors and so forth can really help cut costs. To my knowledge, we have never had any sort of education program for collectors, but today their jobs should entail more than just counting the money and a "Hi, how are you today." Efforts should be made to upgrade all your employees. A collector, for instance, should know just what's expected of him when he gets into a location. It's nice to say you've worked at something for thirty years, but have you been doing it the right way? To date, we have never really focused much attention on the collector. It's always been catch-as-catch-can. And the employer rarely has time to check up on him. Some sort of schooling—and I'm not talking here about a full-time school program, but rather something that could be handled in a few sessions—would probably yield great benefits.

PLAY METER: Moving off the subject of schooling, how long do you think it should take to handle a service call?

SEGLIN: In an urban area, you should try to keep that around thirty to forty minutes per location. In a rural area, because of the distance and you don't want another callback in that area, you should allow a little more time—maybe around an hour per location.

PLAY METER: What type of testing equipment should a serviceman have with him for these on-location calls?

SEGLIN: For on-the-road service, I think the man should be carrying a minimum amount of equipment with him. He could really get by with just a probe and a pulser in most cases, providing he knows how the game works. He also needs a volt meter as well.

PLAY METER: How much of his own repair should an operator be able to do in-house?

SEGLIN: The operator should be able to take care of everything short of the MPU board. That's where he needs the distributor. A larger operator, however, might find it worthwhile to invest in equipment for the MPU board as well.



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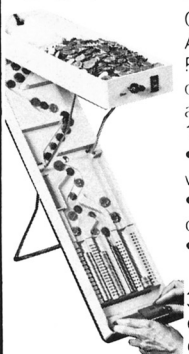
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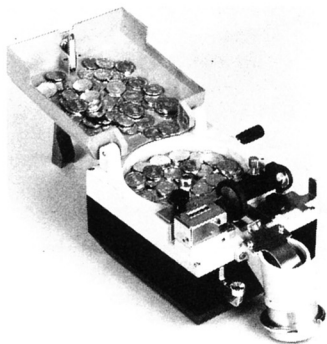
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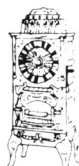
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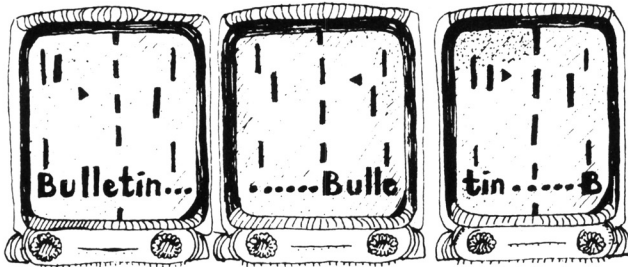
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NEWS BRIEFS

.....Stern Electronics, Inc. is reportedly in the middle of proceedings to buy Seeburg Corporation's name, equipment, and other assets except receivables for more than \$2 million. Attorneys and principals in the case expect the plan's approval by the creditors of Seeburg, which filed a petition of protection under the U.S. Bankruptcy Code's chapter eleven in November, 1979. If the purchase goes through, Stern projects production of Seeburg jukeboxes by next October, according to published reports. However, spokesmen for Stern and the Seeburg parent corporation, XCOR, declined comment pending court action by federal Bankruptcy Judge Lawrence Fisher and approval by a majority of Seeburg's present unsecured creditors. It is expected, however, that Stern Electronics will pay \$1.5 million for the acquisition, and XCOR would furnish several hundred thousand dollars to pay creditors, reports said. Last year, XCOR wrote off \$5.2 million to cover losses of Seeburg, producer of cigarette machines as well as phonographs. (Seeburg has continued to supply parts for its machines.)

.....Meanwhile, Stern Electronics has moved its design subsidiary, Universal Research Laboratories, Inc. of Elk Grove, Illinois to a new 42,000-square-foot facility formerly owned by Chase Corp. The move will triple the company's current production capabilities and size. URL, a solid-state electronics assembly plant formerly located at 2501 United Lane, occupied the new building, 700 Chase Avenue, Elk Grove, on May 15. According to URL President Edward Polanek, the new location will enable more extensive engineering hardware and software development.....

.....A gambling referendum lost a decisive 60 percent of the vote in May 6 balloting in the nation's Capital. Washington, D.C. voters in the presidential preference primary had the chance to bring legal gambling to that city. Political analysts there blamed the defeat on the wide-ranging question on the ballot—which asked if voters wanted legalization of games including lotteries, numbers games, bingo, pari-mutuel wagering on jai alai and dog races, and raffles.....

.....Stambouli Brothers has been carrying out a thorough search for an industry professional to take the position of general manager of the world-wide distrib's New York City office. Contact should be made to Elliott Stambouli, 102 Avenue Jean Jaures, 93500 Pantin, France.....

.....Bob Snow is no longer associated with IJS of Fort Worth as sales manager. Bob joins Video Games International Corporation as vice president. The coin-op veteran of more than 25 years remains general manager of Play-More Games Inc. of Fort Worth. Video Games is importing various video upright and cocktail games and will be ready to ship in the near future, said Snow. He visited Japan in June and contracted with several lines including Nichibutsu for importation by Video Games, based in Dallas.....



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