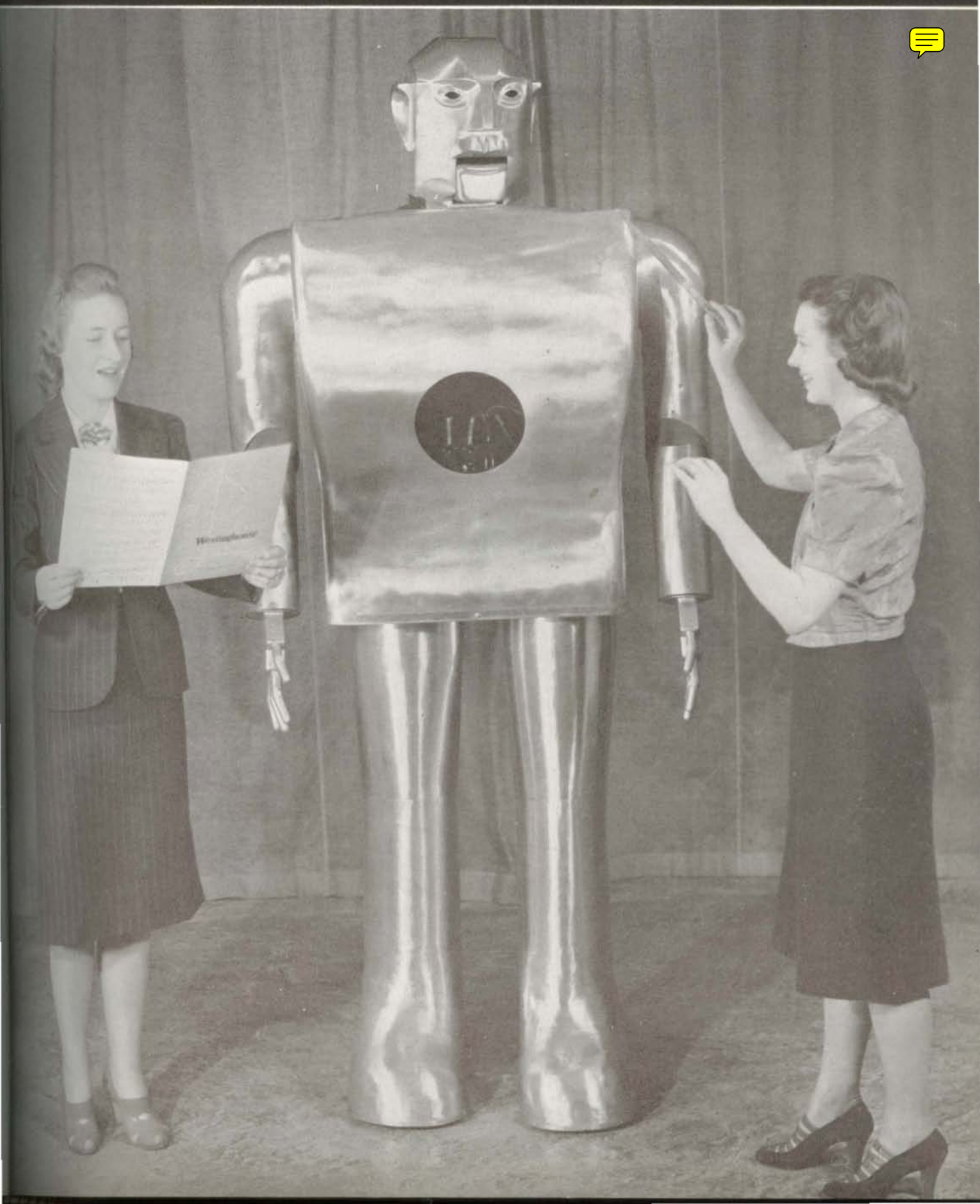


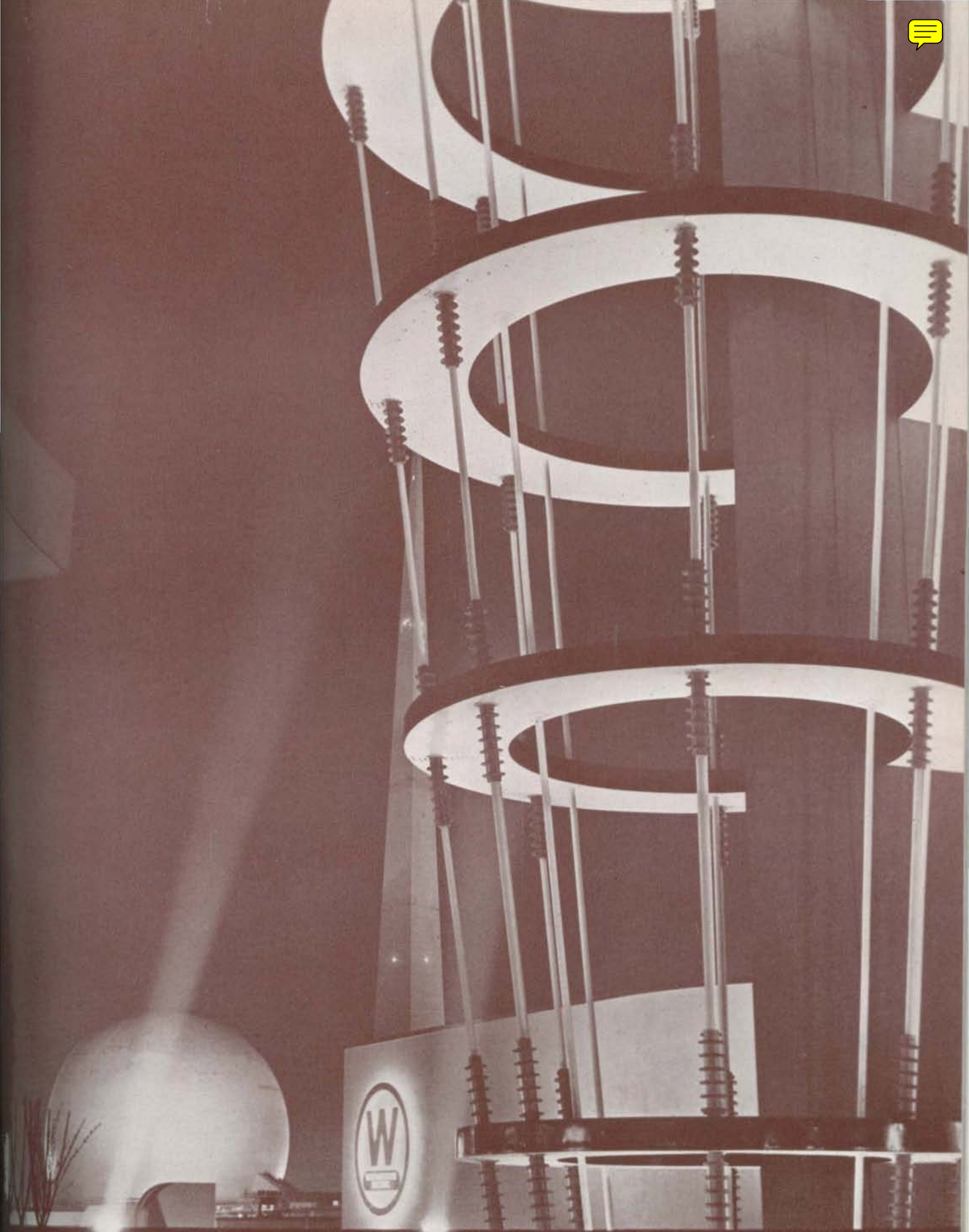
# WESTINGHOUSE MAGAZINE

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**WHAT YOU WON'T SEE AT THE WORLD'S FAIR**





Power for the greatest illumination spectacle ever devised by man, the Lagoon of Nations Fountain at the New York Fair, runs through this river of cables. R. C. Engle (left) Fair lighting consultant, is inspecting the cables with Harry M. Hayes, Westinghouse Lighting Engineer.

**A**LTHOUGH the New York World's Fair 1939 is only a few weeks old, its wonders have already been described and illustrated throughout the land. Reams of copy have been written and thousands of photographs have been reproduced to tell the story of this twentieth-century conception of the World of Tomorrow—of the magnificent buildings, engaging exhibits and attractive pageants which may be seen by the millions of people who this summer will make New York their Mecca. Meanwhile, the Company's Advertising Department is preparing a newspaper, in tabloid form, which will tell employees what they will see in the Westinghouse exhibit.

As a departure, the *MAGAZINE* looks at the Fair from a different angle—telling the story of what you *won't* see at the Fair—the tremendous array of electrical equipment, operating out of sight, which makes the Fair go.

This is a story which Westinghouse is best fitted to tell for more than \$1,400,000 worth of electrical equipment made by the Company has been installed by the Fair management and by exhibitors, in addition to that used in the million-dollar Westinghouse exhibit. The Company furnished 75 per cent of equipment bought by the Fair Corporation and 55 per cent of that bought by the Corporation and by exhibitors combined.

Back in the winter of 1936, months before "Trylon" and "Perisphere" became household words, Westinghouse flood lights were on duty from 14 to 18 hours a day during grading operations at Flushing Meadows. This was the first use of lighting equipment at the Fair, and since then Fair construction work has continuously tapped mechanical and scientific resources of the Westinghouse organization.

Practically all of the lighting equipment for the Lagoon of Nations

You won't see these 585 twin-projector lighting units, because they'll be almost entirely submerged under water in the Lagoon of Nations.





of Nations Fountain, master spectacle of the Fair, has been built by Westinghouse. Spectators will see water spurting 100 feet in the air, needlepoint nozzles spraying filmy billows of mist, and a full complement of flame, fireworks and sound. Every detail of the fountain display is synchronized with powerful sound projectors from which music will be broadcast. Colors glow and change in harmony with the musical selections.

Most of the equipment which makes this magnificent display possible rests almost entirely under water on a man-made island (see photograph on opposite page). A series of 585 twin-light-projector units comprise the major portion of the display equipment. Each unit contains a 400-watt, short-arc, mercury-type lamp and a 1,500-watt Mazda lamp. The mercury lamp, first to be developed beyond the laboratory stage, was built at the Bloomfield Plant, and the Fair installation marks its first commercial use.

Designed by R. C. Engleken, a lighting consultant for the Fair, the projector units were built at the Cleveland Works. They blend their beams with the water jets in a series of versatile color combinations. Each lamp has a hexagonal vari-colored glass filter revolving above it, continually changing the color of the beams. Each color wheel is rotated at a speed of one revolution a minute by a small, three-phase synchronous motor. From a master switchboard located atop a nearby building, the color frames can be made to rotate in either direction.

At the Theme Center of the Fair 30 special projector units, also designed by Mr. Engleken and built by Westinghouse, give a semblance of living light to the rotund Perisphere at night. Each projector contains a series of nine 400-watt, mercury lamps and is equipped with eight-inch Fresnel lenses, serving to envelope the Perisphere in a deep-blue color. In addition, another concealed battery of 40 Westinghouse narrow-beam projectors with Fresnel lenses, using five-kilowatt lamps, is directed upon the Perisphere. Red and amber color filters are used in these units.

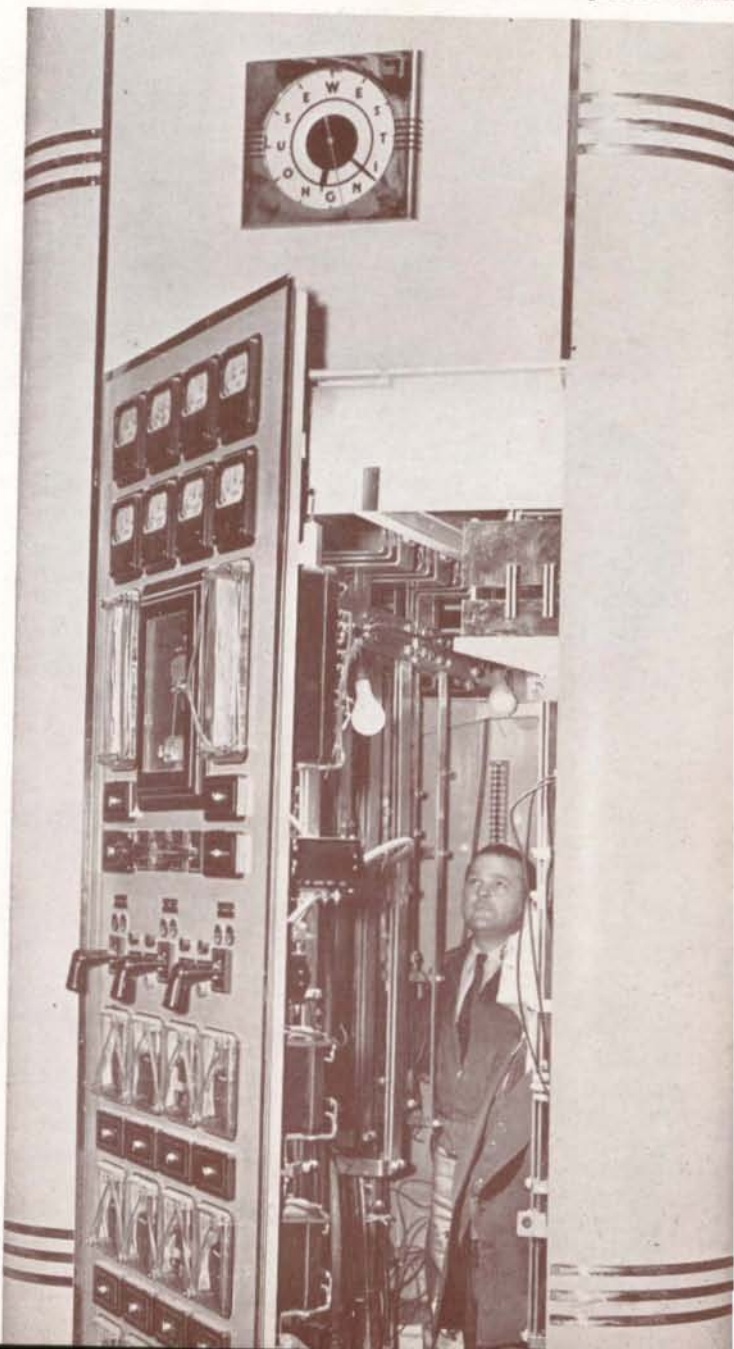
Atop the Hall of Nations 16 Westinghouse searchlights shoot high-intensity beams at an angle of 45 degrees to form a canopy of light over the Court of Peace, an area of 200,000 square feet. Each searchlight contains one of the new "baby sun" lamps which are making their commercial debut at the Fair. Harry M. Hays, Lighting Engineer, is shown above, right, with one of these 1,000-watt capillary mercury-lamps. Though the lamp is as small as a woman's little finger, it is one fifth as bright as the sun. It is so powerful that a gallon of water a minute must be used to cool it. Mr. Hays holds the lamp, left, and the water-jacket into which it is inserted, right.

A flush-ceiling fixture, manufactured at the Cleveland Works, illuminates the Fair building interiors. These lights are under patents obtained by the Fair management and their present use is confined to the Fair and exhibitors. Some 2,500 of these fixtures are in use at the Fair.

Few visitors strolling around the Fair grounds with a hot dog in one hand and a guide book in the other will give a thought to the hundreds of miles of electric wires and cables underlying the Fair and threading through the buildings. But engineers gave considerable thought to the problem of guarding against short circuits. Westinghouse devised a baric-acid fuse, capable of interrupting a current of 50,000 amperes, to solve this problem. The design incorporates a series of three fuses, with barriers where necessary, mounted in a weatherproof, insulated cabinet. Every 4,160-volt feeder and sub-feeder in the Fair grounds—200 in all—is protected by one of these units. They range from 100 to



(Above) Howard Wrigley (left), Lighting Division, places a lamp in one of the floodlights which light the Perisphere. Engineer Hayes (right) examines one of the minute 1,000-watt lamps (Below) Looking into the distribution control board which will operate 9,600 electrical devices in the Westinghouse exhibit





400 amperes in normal current-carrying capacity. You won't see them on your tour, but they'll be on the job.

Working with Fair officials, Westinghouse engineers have helped to plan the system of metering electricity for the Fair. Two metering systems were set up, one to serve the 75 individual buildings and large concessions, and the other to serve the smaller exhibitors in Fair Corporation buildings. Seventy per cent of all metering equipment was provided by Westinghouse.

Somewhere behind the scenes are a number of current regulators and control panels for the Fair's street-lighting system. All of these have been built by Westinghouse, as has been such feeder circuit breaker equipment as was purchased instead of rented.

One of the most novel applications of electrical power was engineered by Westinghouse for the General Motors Highways and Horizons exhibit. Here a remarkable carry-go-round, consisting of 600 comfortable chairs mounted on a 1,600-foot, continuous-moving platform which follows a serpentine path around the General Motors exhibit, is synchronized with a voice system capable of delivering 150 different descriptive talks at the same time.

The platform, moving at a rate of 100 feet a minute, simulates a trip

carrying 4,000 people an hour into the Perisphere. Westinghouse motor and control equipment likewise drives the spectator platforms which revolve within the Perisphere.

There's little doubt that visitors will appreciate (even if they do not see the equipment) the air-conditioning in several Fair buildings. Westinghouse has supplied equipment totaling 635 horsepower for the various units, including the American Tobacco Company exhibit, where Lucky Strike cigarettes will be manufactured in atmosphere controlled for temperature and humidity just as is done in the factories.

Other Westinghouse air-conditioning projects include the British Pavilion, the Czechoslovakian Building, the Rumanian Building, the Florida National exhibit, the Electric Utilities Building (with a 185-ton capacity) and, of course, the Westinghouse Building, whose air-conditioning units will be in full view of visitors.

At the Fountain Lake water display, Westinghouse transformers and pumping equipment are mounted below decks in the seven floating barges which independently spout water jets. At the Consolidated Edison Company's exhibit, Westinghouse motors are connected to Gould pumps for the water ballet.

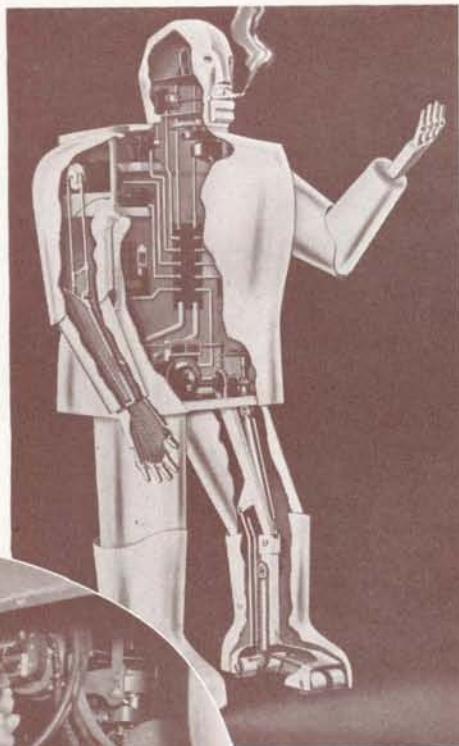
Everyone will flock to see Elektro, the 260-pound robot designed by Westinghouse engineers to dramatize the many applications of electrical energy to practical purposes. Few, however, will actually see the innards of the moto-man. Elektro is shown (left) stripped of all but the most essential of his 900 parts. The drawing shows how 11 motors, controlled by 48 relays, make Elektro walk, move his arms and fingers and smoke a cigarette.

The photoelectric tubes placed directly behind his eyes enable him to discern color, by means of filters. A filter in front of one tube admits only the relatively hot rays of red light through to the cell. A filter in front of the other tube permits only the relatively cool heat waves of green light to reach the tube. When the attendant in charge flashes lights of the proper color in front of Elektro's eyes, one or the other of these photoelectric cells energizes a relay to start a record revolving on a turntable to produce the word "red" or "green."

Elektro's walking is accomplished by means of the four rubber rollers under each foot. As shown by the drawing, the rollers are driven by chains and shafts connected to a motor in the middle of the automaton.

Nine motors are required to operate the fingers, arms, head and turntables for speaking. Another small motor, located directly behind Elektro's mouth, works the bellows for his smoking.

Elektro performs his 26 tricks at a spoken command, which is converted into electrical energy by the "electric eye" shown in the middle of his back, and then is dispatched to the relay



Elektro, stripped of most of his 900 parts, discloses how motors and relays cause him to work. (Oval) The robot's inventor, J. M. Barnett, tinkers with his heart.



across country in a low-flying plane. Given only the objective, the Westinghouse Elevator Company designed the entire equipment.

Synchronized with the speed of the platform, a loudspeaker beneath the passenger's seat describes each scene as it comes into view. The speaker system is constructed on a finely wrought steel drum, first of its size or kind, which Westinghouse technicians have made with such precision that there is a maximum variation of only one thousandth of an inch in its entire length. Eight feet in diameter, the drum rises 12 feet from a circular base which houses its motor.

Complete motor and control equipment made by the Elevator Company will drive a dozen Westinghouse electric stairways in various exhibits, including one with a travel of 120 feet, longest in the United States, which is capable of





# EASTERN EMPLOYEES *Come to the Fair*

**W**ESTINGHOUSE DAY at the New York World Fair (Sunday, May 28) attracted large delegations of employees from plants at East Pittsburgh, South Philadelphia, Jersey City, Newark, Bloomfield and Springfield.

Some of the Westinghouse guests are shown in the periscope and perisphere. (Top to bottom in perisphere) Mrs. J. Paul Jordan blows out an electric lamp with the breath relay in the Westinghouse Playground of Science; her husband is in the Motor Sales Section at East Pittsburgh. R. A. Robertson, test engineer, Baltimore Works, and Mrs. Robertson rest in the air-conditioned Lounge. Misses Alice Haney (left) and Betty Williamson, Accounting Department, East Pittsburgh, look at a guide book with Paul Kohler, Merchandising Sales, Boston Office. On the electric stairway are: (left to right) A. A. DePalma, Merchandising; Ken Smith, Industrial Relations; S. F. Bellers, Executive Department; O. W. Lindstrom, Elevator Company; his son, Robert; C. J. Fleming, Merchandising; Edwin Clark, Lamp Division. All but Mr. Lindstrom are from the New York Office. In the Lounge: (left to right) C. A. Butcher, Eastern District Service Manager; C. V. Holmes, Auditor; Mrs. Butcher; Mrs. Penglaze; Mr. Holmes; R. G. Penglaze, Merchandising Division.

(Above in perisphere) E. H. Sniffin extends greetings to members of the family of George Bacchus, Newark Service. Left to right: Roland, son; Mr. Bacchus; Joseph Vellana, son-in-law; Mrs. Joseph Vellana, daughter. (Below) O. M. Hull, Assistant Manager of the Westinghouse Club; O. W. Grosskopf, Director of the Male Chorus; J. Paul Jordan, President of the Chorus; Mrs. Jordan; Fred Waring, bandleader; and Ray Perkins, postmaster of ceremonies for the Westinghouse radio program "Letters Home."







Mrs. Davis as "Mrs. Modern"

LADIES and gentlemen:  
Introducing—in this  
corner—with 40 pieces of  
china, five glasses and 40  
pieces of silver—wearing a  
figured dress—Mrs. Modern;

and in the other corner—with 40 pieces of china, five  
glasses and 40 pieces of silver—wearing a polka-dot dress  
—Mrs. Drudge.

Thus might the announcer introduce two young house-  
wives as they compete in a battle for dishwashing honors  
at the Westinghouse exhibit at the New York World's  
Fair. Forty times a day this contest is repeated, to the  
great delight and edification of a consistently large crowd.

At the bell, Mrs. Drudge starts off with a rush, throwing  
right and left hands to "suds" the water in the traditional  
kitchen sink. A left hook sweeps in the dishes, and she  
follows up with a series of short jabs with her dishrag.

Mrs. Modern, meanwhile, has come out of her corner  
confidently and proceeds to stack the dishes, glasses and  
silver into an electric dishwasher. Then she nonchalantly  
back-pedals to her corner and sits down to read her favorite  
magazine. After that—even though Mrs. Drudge con-  
tinues to throw rights, lefts and soapsuds with windmill-  
like speed—the crowd is pretty much convinced that the  
struggle is "no contest." The referee finally stops the  
thing after 12 minutes when Mrs. Modern has completed  
her job, while Mrs. Drudge, game to the core, has finished  
only one third of her task.

During the World's Fair season, Mrs. Modern and Mrs.  
Drudge, played by seven alternating young women, will  
wash and dry dishes enough for 14,800 evening meals for  
a family of five.

During the demonstrations electricity and elbow grease  
together will wash and dry 592,000 pieces of china, 74,000  
glasses and 592,000 pieces of silver.

All dishes and silverware used in the demonstrations  
have been smeared beforehand with egg yolk, lard, catsup  
and milk, all of which have been dried on racks back-  
stage, where 12 complete sets of dirty dishes and silver are  
always ready for the show.

More than 300,000 quarts of water will be used—only  
about three eighths of it in the electric dishwasher. The  
hand dishwasher will use more than 1,100 pounds of soap  
chips or flakes, approximately two cups each performance,  
or 80 cups daily. The electric dishwasher will use only  
about 175 pounds of washing compound, about one table-  
spoonful each contest.

Using three dishtowels each demonstration, Mrs. Drudge  
will amass a total of more than 22,000 towels during the  
summer. On the basis of average dish breakage in the  
home by hand dishwashing, plus the extra effort exerted

in her attempt to keep up  
with the electric dishwash-  
er, she will break about  
7,400 dishes. The electric  
dishwasher dries its own  
dishes, and none are broken.

Helen Bennett as "Mrs. Drudge"

## IN THIS CORNER . . .





# DOUBLE FEATURE BY WESTINGHOUSE



Despite outward appearances, trouble is looming when sister-in-law Clara arrives for a visit with the Charlie Graysons.



Charlie is impressed by the Westinghouse model kitchen, but he doesn't intend to spend money just to modernize kitchens.



Clara and Charlie's wife concoct a few schemes, and the hilarious final scene shows a family raid on the new kitchen.

NO ONE was more astonished than J. Gil Baird, Manager of Merchandise Sales Promotion and co-director of the Merchandising Division's new motion picture "You Can Have Everything," when he learned that one of the featured players was the daughter of a Westinghouse employee. Little Joyce Arleen, who plays the part of Sue Grayson in the film, coincidentally made her Hollywood debut in a picture sponsored by the Company for whom her daddy had worked for 17 years. Just one month before the Westinghouse film was cast, Joseph Novotny had left his job at the Meter Division in Newark to move to California to protect his wife's health. Shortly after the family's arrival in California, a talent scout took note of their daughter, who had had some dramatic school experience, and it just happened that her first assignment was the Westinghouse production. Chosen purely on merit from a number of young movie hopefuls, Joyce's Westinghouse background did not come to light until the film was well along in production. To make the story all the more happy, the youngster turned in a grand performance in her first professional effort.

**You Can Have  
EVERYTHING  
•  
It has everything**

Little Joyce's fine work is consistent with efforts of the other members of the cast and the technical staff of Roland Reed Productions in making "You Can Have Everything" one of the standout commercial films to come from the Movie Capital. Photographed in technicolor, the picture not only tells the Westinghouse story, but also combines with its theme a host of scenes packed with comic situations and snappy dialogue, making the production at once instructive and entertaining. Muriel Evans, who played in "Mr. Deeds Goes to Town," heads a star cast which includes Betty Ross Clarke and Ralph Remley.

The plot begins when Clara, played by Muriel Evans, comes to visit her sister, Mrs. Grayson, is shocked by the appearance of the outmoded Grayson kitchen, and pledges herself to a campaign to get Charlie Grayson interested in modern kitchen equipment. Charlie, from past experience wary of his sister-in-law's ideas, is flabbergasted at the size of her latest project. Undaunted by Charlie's resistance, Clara calls an appliance company for a salesman and the campaign is on. When the salesman brings around a model kitchen by Westinghouse, Charlie is intrigued, but explodes when he finds out that the renovation program calls for a new range and a new refrigerator. Playing their trump card, Clara and Mrs. Grayson call on Charlie at his well-appointed office, compliment him on his modern equipment, and lead him to the appliance store where the salesman is ready to serve them dinner. By this time the importance of providing proper equipment for his wife's work in the kitchen is apparent to Charlie, and in jig time the Graysons are once more a happy family with a completely modernized kitchen.





WITH A ROMANTIC love story as a theme and the New York World's Fair as a background, the Westinghouse production "The Middleton Family at The World's Fair" bids fair to establish a new trend toward fictional treatment of industrial themes in the movies.

The feature-length technicolor film departs from the tradition of glorifying the business of the sponsor. Instead it tells a simple, appealing love story, with plenty of comedy scenes, some lively action and some suspense—qualities new in movies devoted to industrial topics.

A cast of well-known screen players enacts the adventures of the Middletons, who journey from their home in Indiana to witness the marvels of the World of Tomorrow. The love affairs of Babs (Marjorie Lord), the escapades of Bud (James Lydon, who may be well on his way to being another Mickey Rooney), and the maneuverings of Grandma Harrison (Adora Andrews) provide fast-moving entertainment through five reels of exciting plot.

Tom Middleton, Midwest business man, is concerned over the ways his children's lives seem to be drifting. Babs, his 17-year-old daughter, is turning down reliable Jim Treadway, a young electrical engineer, for an art teacher with a foreign accent. His son Bud, of junior high school age, is con-

vinced that the age of opportunity is over and that "W.P.A., Here We Come" is a pretty appropriate class motto.

Tom Middleton determines to take the family to the World's Fair, for their enjoyment, but with an underlying purpose of giving his children a new conception of American enterprise and opportunity. How he succeeds just when it begins to look as if two young lives were to be ruined, provides a toothsome family story and outlines a problem that exists in many American homes.

The play progresses on the most elaborate stage in America, the New York World's Fair, which provides a backdrop of constantly changing color and life. In the Westinghouse Building, spectators see the attractions which are familiar to Fair visitors—the Junior Hall of Science, the Time Capsule, the Playground of Science, the Hall of Electrical Living, Elektro, the mechanical man, and the Battle of the Centuries.

Here young Bud Middleton has a field day, appearing over the television hookup and manipulating all levers and switches in sight, and is impressed despite of himself with the fact that American engineers and scientists are opening up new Worlds of Tomorrow for youths with ambition.

As a climax to his visit to the Westinghouse Building, Bud writes a prize-winning letter for the "Letters Home" contest. He resolves to spend his prize money in constructing a radio set.

Just as a serious boyish idealism lies beneath Bud's fun, so in the story of the Middleton Family there is a purpose—a modest endeavor on the part of Westinghouse to point the way for American youth toward an attitude of enthusiasm and eagerness to participate in new achievements and opportunities in the age.

"The Middleton Family at the World's Fair" will be offered to motion-picture theaters and will be scheduled in schools, colleges, civic and community organization meetings throughout the country. It was produced by Audio Productions and will be distributed through Modern Talking Picture Service. The cast includes Marjorie Lord, as Barbara; Ruth Lee as Mrs. Middleton; Adora Andrews as Grandma Harrison; Harry Shannon as Tom Middleton; James Lydon as Bud; Douglas Stark as Jim Treadway; George Lewis as Nicholas Karoff and Georgette Harvey as Elvira. Ray Perkins and Helen Bennett are shown in their roles on the Westinghouse "Letters Home" radio program.

**The Middleton Family**  
at the  
**WORLD'S FAIR**  
•  
In Technicolor



Bud Middleton is convinced that the world holds no opportunities for a young fellow. Mr. Middleton is sympathetic, but worried.



Babs Middleton, Bud's sparring partner, is turning down a young electrical engineer for an art teacher with a foreign accent.



Mr. Middleton decides to take the family to the New York World's Fair to give the children some new ideas. The plan works.



WHEN millions upon millions of people rove around in a temple of amazing and wonderful exhibitions of electrical phenomena like those shown in the Westinghouse Building at the New York World's Fair, something funny is bound to happen. We were led in pursuit of such material after hearing a story of one Fair visitor who was intrigued by the Westinghouse phantocycle, a riderless bicycle pedaling merrily on its way by virtue of electric control. It was popularly termed the bicycle with a phantom rider.

Folks delighted in giving the cycle a hard shove, which dropped the bike into a cradle where it rests when not in operation. One day a guide went over to put the cycle back in motion



after one such impish shove and was amazed to find a neatly lettered sign dangling from the handlebars. It read: THE PHANTOM IS OUT TO LUNCH

ONE day the electrolysis of water display was dismantled for hasty repair work. Guides were astonished to note that the display continued to attract considerable patronage. Curious, one guide stepped over to investigate the situation.

Replacing the usual apparatus was a glass of water, no more. And visitors were reading the accompanying message about electrolysis and marveling as usual, apparently none the wiser.



FOR the first few days the Fair visitors gathered haphazardly around the crypt of the Time Capsule and awaited their turns to look down into the immortal well that will hold a treasure for 5,000 years. Crowds soon made it necessary to request the visitors to form in line. In orderly fashion each moved along to the built-up shaft, leaned over and took a leisurely look. One day a woman stepped to the end of an unusually long line and patiently waited her turn. She drew nearer and nearer, observing with evident satisfaction as one by one those before her went up, leaned over, and in a few seconds straightened up and went away. Eventually the person ahead of her finished peeking down at the Capsule and our heroine stepped up quickly, then stood stock still. "Why," she stammered, "why I thought it was a drinking fountain." Happily, reported the guide, she took



a look down at the Capsule anyway and smiled as she left, doubtless in search of a drinking fountain.

Another came up, took a look, and asked, "What is it?" "The Time Capsule," was the response. She looked again. "Why that's not right," she claimed, "it says 20 minutes after three." That one still has the boys stumped.

OUR favorite, however, is about the dear old soul who emerged from an exciting visit to the Playground of Science, where signs encouraged

visitors to push this button, snap this switch, pull this lever, turn this knob, and so forth.

In her path was a door leading to the Company's publicity office at the



Fair, appropriately labeled PRESS. Game to the core, the lady was found with her feet firmly braced, pressing with all her might.

FORMER guide Rudy Hellmund, now at the New York Office, and to whom we are indebted for most of these tales, tells one on himself.

One afternoon a woman came up to the Westinghouse Building and inquired, "Could you tell me where I can find *Merrie England*?" Rudy thought for a minute, but he admits it wasn't long enough. "I'm sorry," he replied, "but there is no one here by that name."