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POPULAR MECHANICS

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How Airplanes Will Create Artificial Clouds over Chicago's Century of Progress Exposition by Releasing Chemicals Which Will Be Illuminated—See Page 8

BUILDING with



Section of Travel and Transport Building Where Floating Lines and Angles Lead Themselves Readily to Illuminating Effects

By H. W. MAGEE

IT is night. A tower of sparkling jewels points to an indigo sky in which float green and crimson clouds that suddenly become pink and yellow. Trees and shrub-

One of the World's Fair Buildings Where Tower Will Shine with Lights



bery emit a luminous glow, while a bed of purple tulips changes to red and then to orange. Geysers in rainbow hues spout from a lagoon whose rippling waters dance with iridescent lights.

Down the horseshoe facade of a glittering palace cascades a miniature Niagara with foam and spray tinted in delicate pastel shades. The walls of near-by buildings shimmer like the reflection of the sun's rays on water or change gradually as one color merges into another. Overhead the powerful beams of giant searchlights criss-cross to pick out airplanes that stand for a moment in bold relief and then are lost in the night.

This is not a child's dream of fairyland, but the scene which will unfold itself before night visitors to Chicago's Century of Progress next summer. It represents the wizardry of the illuminating engineer who will build with beams of colored, moving lights a gorgeous city of flaming rainbows whose ever-changing hues are calculated to astonish and awe the beholder.

To transform this World's Fair by night

LIGHT

into a panorama of color, lighting engineers plan to utilize 10,500,000 candlepower. Translated into terms of electrical energy, this represents 13,500 horsepower or 10,000 kilowatts. In the course of one evening, the lighting effects for the fair will consume enough



Modernistic Lines of
Main Façade of Ad-
ministration Building

electricity to supply the normal needs of a city of 40,000 persons.

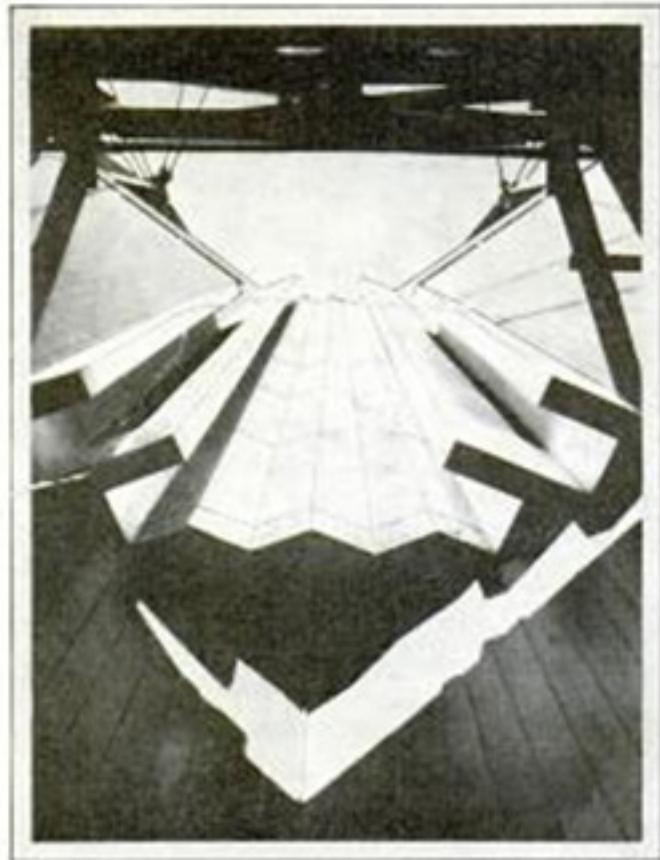
Edwin D. Tillson, illuminating engineer for the Fair, points out that the Chicago



Interior View of Exhibition Hall
Where Alabamas Has Been Used
Liberally for Ornamentation

exposition will be unique in that it has been built from the ground up with the illumination idea always paramount. No building is being constructed, and not even a tree or piece of statuary is being placed, until lighting experts have planned just how to illuminate it effectively. No item, not even a bit of shrubbery, is too small to lend itself to the lighting plan.

As a result, remarkable color effects are to be produced. Flood-lighting, as commonly conceived, will be conspicuous by its absence. Instead, virtually all exterior illumination will be in color, these being chosen to embellish the rich shades of paint that enhance these modernistic structures by day. One novelty will be shimmering effects on walls like those produced by the reflection of the sun's rays from water. These action patterns are



An unusual view of the Travel and Transport Building, looking straight up from the base; note the symmetry of lines.

to be produced by a light projector that plays on water as it is agitated to provide the fantastic moving colors on the walls.

Scintillators likewise are to be employed. These are nothing more than squares of polished metal trembling on delicate supports to flash dancing patterns over large areas of frosted glass. This is one of the few effects that can be utilized by day when the sun's rays will be allowed to penetrate the glass at many points, the rays being reflected back by the metal squares like the heliograph used by the army for signal purposes.

The sky above will likewise lend itself to decoration. Because fogs are usually absent in Chicago in summer, illuminating engineers will create their own vapor by releasing chemicals from airplanes at an altitude of 1,000 feet. As the clouds settle

earthward they will be illuminated by searchlights in a manner like that used at Niagara falls where clouds of water vapor are tinted.

A high light of the Fair will be the tower of the Hall of Science which will be ablaze with electric jewels. These jewels, studded solidly about the top, are only small and inexpensive projectors, each throwing a high-candlepower beam emanating from a comparatively weak source of light. At a distance of 300 yards or more, these jewels merge into a blaze of light and color, easily visible for many miles.

Another brilliant effect is to be obtained in a manner equally simple. Large areas of bright, corrugated metal cover the walls, and these are to be illuminated by concealed sources. Towers, thus lighted, seem to be composed of hundreds of bright, horizontal color lines, one hue alternating with another.

A high light of the night display will be a flaming ladder arc, using a potential of 33,000 volts, which will form the axis of the circular court of the electrical building. The base is a huge outdoor transformer. Rising from it will be two electrodes, thirty feet high. A flaming arc starts from the bottom of these electrodes and travels upward. As the intense flame dissipates at the top, another automatically forms at the bottom, so there is a succession of these fiery bridges or rungs from which the spectacle takes its name. As these arcs with their circular halos move upward, dry chemical salts are injected by compressed air to impart beautiful changing colors to the arc stream.

As a background for this display, there will be a spectacular series of cascades flowing down the semicircular facade of



Proposed Design for a Tower of Water as High as a Skyscraper; Water Would Flow over Decorative Basins of Glass and Concrete, Rich in Color, and Would Be Illuminated by Night.

the great court. Seven of these cascades drop from one ledge to another, giving the appearance of a miniature Niagara, and as the water falls, it is to be illuminated in rainbow colors by concealed lights.

Trees and shrubbery will be illuminated in autumnal colors by means of lamps concealed in flowerpots and fastened to the bases or among the branches. Inserted in the pots will be trailing vines to create a more natural appearance. Flowerbeds likewise will be treated with serpentine patterns in light, close to the ground. Fluorescence will be used to strike a mystic note. Many objects, such as flowers, foliage and statuary, are to be treated with fluorescent materials and under the so-called invisible light will appear in startling contrast to their surroundings.

Daytime visitors will observe what appear to be floating islands in the lagoons, covered with water reeds and foliage. These are decoys and will conceal powerful electric pumps, jets and lighting pro-

jectors. At night, these innocent-appearing islands will form the basis of tremendous geysers, beautifully tinted with changing colors, to produce foed and twisting patterns and form buttresses, arches, columns and spirals. By altering the locations of these islands, the over-all aspect of the display can be changed overnight. Fluorescent fountains, which emit a mysterious glow to the water under invisible light, will also form a part of the water display.

Interior illumination of buildings will be almost as unusual as the exterior effects. These modernistic structures are virtually without windows and will be lighted both day and night by electricity. Like the buildings themselves, the lighting fixtures are temporary, and display booths will be illuminated with units that clip to the ceiling in a few seconds and can be removed as quickly.

The great halls, rotundas and galleries will be embellished with large luminous



Tower of Hall of Science, Which Will Be Studied with Jeweled Lights at Night; Curtains Will Sound from the Top

jewels of colored fabric, glass and reflecting metal. As a result, there will be few lighting fixtures, as the term is generally understood. Some rooms will be illuminated from sources entirely concealed. The light will come from tiny openings in walls and ceilings because it has been found possible to force a tremendous amount of light through even a pinhole.

Neon lighting is to be liberally employed, but not in the rather garish man-

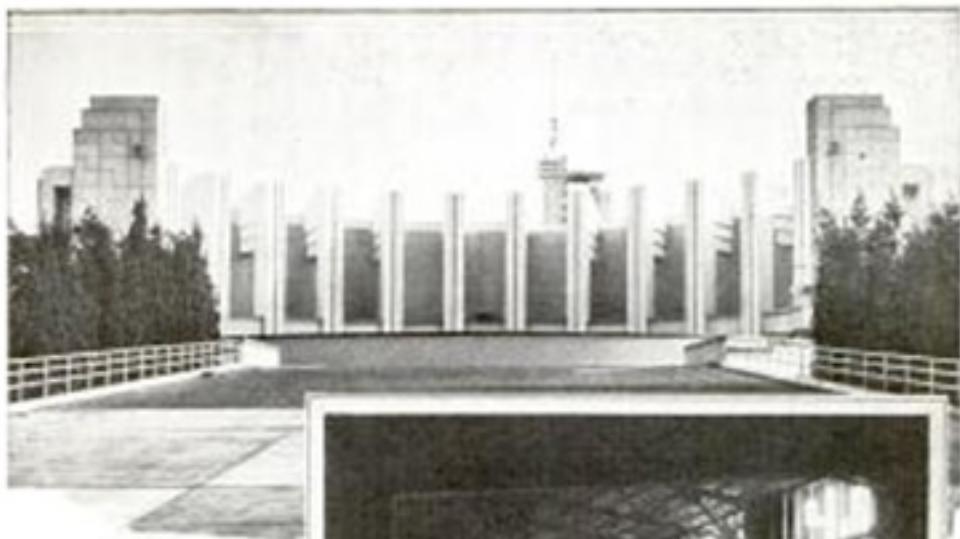
ner associated with such a display. The tubes will be concealed behind grills and metallic planes, to give the rich glow of this type of light without the sharp, raw effects. In other cases, overlapping silhouettes or grills will be used to heighten the illusion of texture and depth.

For instance, the great hall of one building will be lighted with metallic jewels strung along the underside of radiating ceiling beams. Concealed behind a ceiling panel, at the hub of this design, will be a series of slowly rotating light projectors, the beams from which will strike the jewels in expanding fashion, those near the hub picking up the light first, then those farther removed, so that there is a constantly radiating action from the center. At the entrance to the hall will be a colored-light pattern emblazoned on the floor, apparently in colored tile, but actually by light projection from the ceiling above.

While the entire Fair is being planned with the idea of offering a gorgeous scene by night, the daytime effects for this very reason will be unusual. To provide for illuminating effects, many

of the buildings have been painted in rich colors and others have been decorated in startling designs that lend an even more modernistic touch to the modernistic architecture.

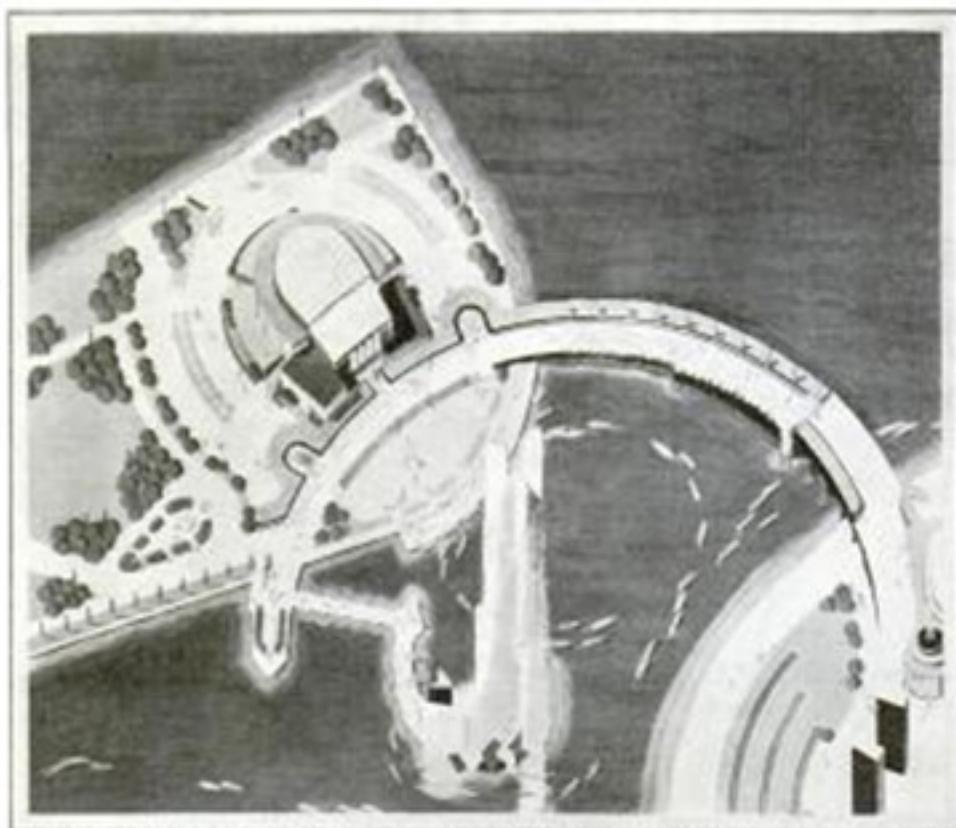
The use of such a vast amount of electric energy, paints and other materials exclusively for illumination purposes is a costly procedure in itself, but actually it has been found that decorative lighting will be a real economy. The reason is that



Above, North Approach to Hall of Science; Right, Looking through Windows of Hall of Science, Showing the Arcades and Symmetrical Wall Effects, Which Will Be Lighted.

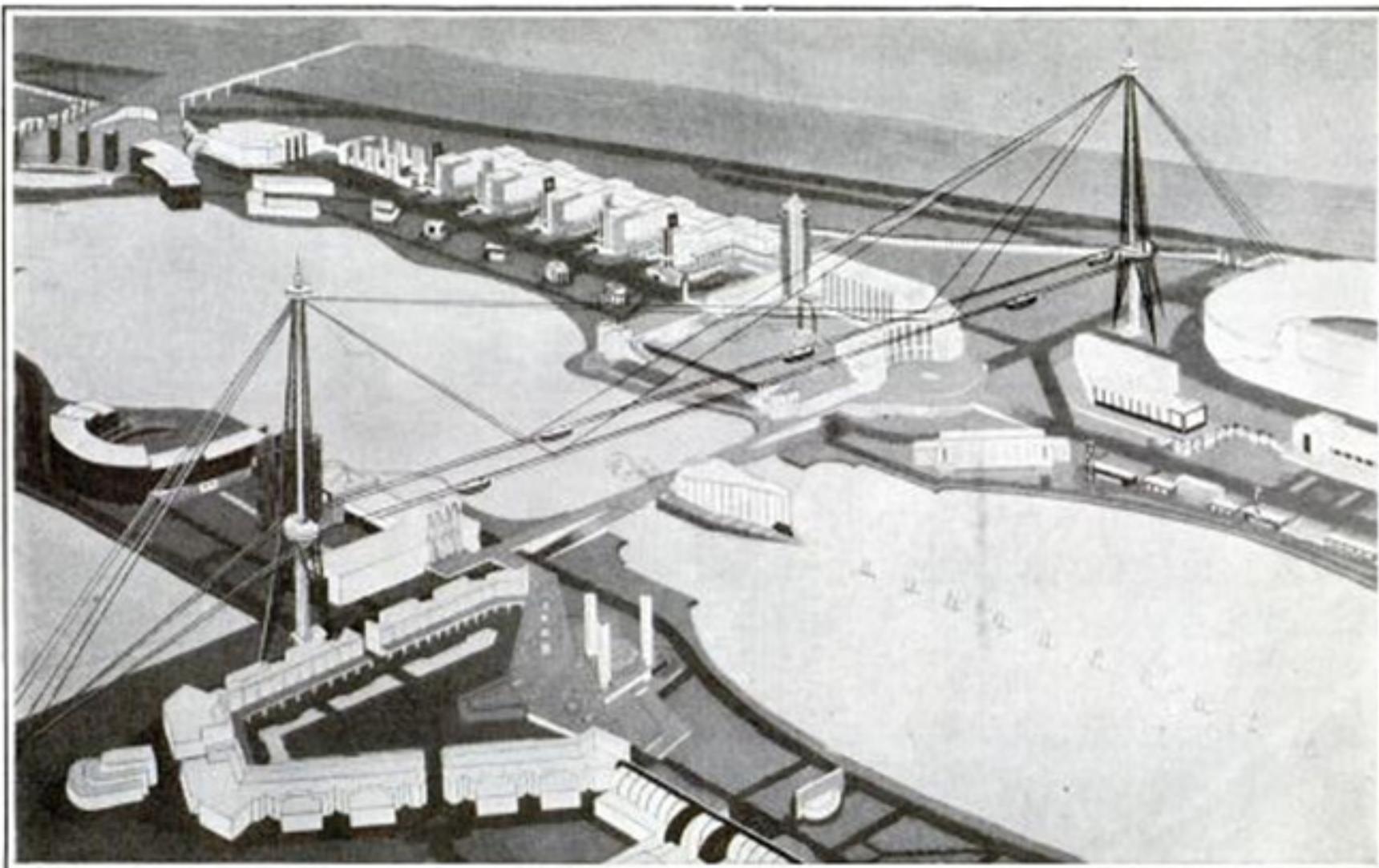


Right View of Administration Building; the White Central Portico Stands Out in Striking Contrast to the North and South Wings, Which Are Painted in by Dark a Shade of Blue as to Appear Almost Black.



Architect's Drawing of Proposed Music Grove; the Horseshoe-Shaped Auditorium, Upper Left, Will Seat 4,000 and Have a Stage Accommodating an Orchestra of 100 and Chorus of 600

Lights and rich colors will replace to a great extent the usual architectural ornamentation of buildings such as are used for exhibition purposes. This permits the structures themselves to be constructed along very plain and inexpensive lines. The most costly item in the illumination scheme is the current consumed, because all the effects are achieved with comparatively inexpensive materials since they are intended to be used for only six months.



Drawing of the "Sky Ride," a Feature of the Chicago World's Fair; Passengers Will Travel in Rocket Cars Running on Cables between Towers, 600 Feet High and 2,000 Feet Apart; High-Speed Elevators Travel to Observation Platforms at the Tops of the Towers