

How Thick Is A Human Hair?

Visit the TIMKEN Exhibit and Measure One of Yours

At the exhibit of The Timken Roller Bearing Company in the Metals Building there is an amazing instrument capable of accurately measuring the thickness of a human hair. Furthermore, it makes a permanent record of the measurement which you can keep for a souvenir.

You will have a lot of fun with this instrument but apart from that it will give you a good idea of the *precision* to which TIMKEN Tapered Roller Bearings are manufactured—hence why you should insist on having them in your new automobile, motor truck or industrial machinery of any kind.

THE TIMKEN ROLLER BEARING COMPANY
CANTON, OHIO

OTIS ELEVATOR COMPANY:—This Exhibit contrasts an up-to-date gearless elevator such as is found in modern buildings, with the old steam elevators of the 1860's. A series of photographs show the widespread activities of the Otis Company and its associated companies in foreign countries.

OZALID CORPORATION:—The Exhibit demonstrates the Ozalid direct printing process for making positive type reproductions of technical drawings as an improvement over blueprints which are negative in type. This process has been described as "the process of the day for the World of Tomorrow."

JOHN A. ROEBLING'S SONS COMPANY:—Effectively illuminated, the dominating feature of the Exhibit is a huge mural of the Golden Gate Bridge at San Francisco. Here also is a model suspension bridge set against realistic panoramic scenery. Animated replicas demonstrate the use of wire rope in various operations; you see a dredge at work, a model village complete with railroad and highway facilities, a radio tower and a working model of a modern tramway. Eight panels show the company's products.

TIMKEN ROLLER BEARING COMPANY:—Displaying the industrial products made by this company, the Exhibit includes Timken bearings for automotive, industrial and railroad use;

rock bits; fuel injection pumps; alloy steels, and alloy steel tubing. A museum display comprises historical exhibits, together with the largest antifriction bearing ever made, bearings and reciprocating parts from a locomotive; a machine illustrating the accuracy of manufacture of these parts; the first automobiles in which Timken bearings were used; and a mechanical display of the elements that go into a hundred pounds of alloy steel.

THE YALE AND TOWNE MANUFACTURING COMPANY:—In this Exhibit clever mechanical demonstrations illustrate the company's basic products, while other devices are displayed in such a way as to be operated by the visitor himself. An outstanding feature is a sunken stage in which Electrical Industrial Trucks and other material handling equipment are demonstrated by skilled operators and explained by voice and motion pictures. Displayed near illuminated dioramas covering the ancient Egyptian, the Roman and the modern periods, a collection of historical locks includes many of Roman and Medieval origins and those of Baron Rothschild, Andreas Dillenger and the late Emperor Francis Joseph.

THE PETROLEUM INDUSTRY EXHIBITION

PLAINLY LANDMARKED by a towering oil derrick in actual operation, the Building (Voorhees, Walker, Foley & Smith, architects; Gilbert Rohde, exhibit designer) fronts on the Avenue of Pioneers. Shaped like an equilateral triangle, the structure rests on four huge oil tanks, its metal walls rising in flaring tiers. Four large murals by William T. Schwarz decorate the inner walls of the Great Hall of Industry, each depicting respectively one phase in the story of Petroleum—*Production, Transportation, Research and Refining*. Here on a mammoth screen a motion picture in technicolor, its actors three-dimensional puppets, portrays the importance of petroleum in man's daily life.

The Petroleum Garden features an animated map on which miniature oil derricks depict the growth of oil production since 1859. A model of an oil refinery demonstrates the most up-to-date refining methods. Sponsored by fifteen major oil companies, the Exhibit shows how the industry has made possible and contributed to the advance of civilization during the past 80 years.

UNITED STATES STEEL SUBSIDIARIES

SITUATED on the Plaza of Light, this interesting hemispherical building (Walter Dörwin Teague, designer, G. F. Harrell, associate; York and Sawyer, architects) has literally been turned inside out, its structural members being on the exterior of a great stainless steel dome. The exhibits are keyed to the theme "Steel Thinks Ahead." By means of murals, animated dioramas, and actual demonstrations, the epic story of this fundamental industry

At the New York World's Fair —

Contemporary Science and Art representing 79 countries

. . . are combined in an unusual display of the talents of seventy-nine painters and three hundred International Business Machines Corporation Research Engineers and their assistants.

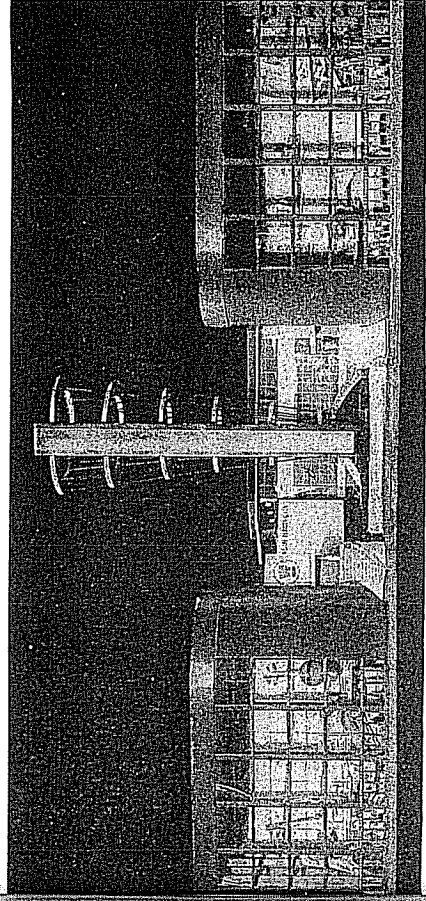
This display will be interesting and enlightening to all who have an opportunity to visit it in the company's Gallery of Science and Art, in the Business Systems and Insurance Building at the New York World's Fair.

is told. Here are depicted the principal steps in steel manufacture—an open pit ore mine; a blast furnace; an open hearth furnace, so vividly portrayed that you can almost feel the heat; and a spectacular rolling mill. In the landscaped garden behind the building, a long curving trellis, or arbor, thirty feet high and 200 feet long is constructed entirely of steel products as a means of showing the public the wide variety of practical things made of steel today. Another display shows the tremendous increase in the use of steel in the last 150 years, while on the second floor steel's vital rôle in the "World of Tomorrow" is portrayed.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

SURMOUNTED BY AN IMPOSING TOWER, the Building (Skidmore & Owings and John Moss, architects) on the Plaza of Light, is shaped like a rounded horseshoe, its ends terminating in two huge glass-enclosed rooms—the Hall of Electrical Power and the Hall of Electrical Living. Here are exhibits and demonstrations which show how man has utilized the tremendous, indefinable forces of electricity. Among the wonders are a riderless bicycle that steers and balances itself; the world of the invisible, where micro-animals lead their lives; and Elektro, the Westinghouse "motor-man," a 7-foot metal man that talks, sees, smells, sings, and counts with his fingers. You will, of course, visit the Theatre of Tomorrow, for here is produced a forecast of the future as foretold by the industrial and technical developments of today. At the axis of the two halls, you may see deep in its "Immortal Well"—the Time Capsule, the contents of which will provide by means of millions of pages of micro-film, a comprehensive cross-section of today's civilization destined for the world 5,000 years hence.

WESTINGHOUSE BUILDING



• • • SCIENCE • • • and

EDUCATION

Focal Exhibit

IN THE SCIENCE AND EDUCATION Building, which curves along Hamilton Place from Washington Square to the Avenue of Patriots, is located the Focal Exhibit on Science and Education. Like the other focal exhibits this is an entirely noncommercial, independent exhibit built with the purpose of presenting ideas rather than promoting institutions. It differs from the other focal exhibits in that it derives part of its support from outside contributions. It is undertaken and sponsored jointly by the American Association for Adult Education and the Fair Corporation, which has donated the necessary space and part of the funds.

This Exhibit differs in various ways from the other Focal Exhibits. It is in a sense, a twin exhibit, because it covers two closely related fields. As the visitor enters the Science and Education door of this building he sees to his left the Exhibit on Science. To his right he sees the Exhibit on Education. Directly opposite the door is the Science and Education Auditorium, whose main entrance is reached by passing through the exhibits to the other side of the Auditorium. In the Auditorium itself the exhibits are supplemented by motion pictures, lectures and forums. Here are held the various meetings of scientific societies and educational groups; here are presented motion pictures which are educational both in subject matter and in effect. The most important of these is the motion picture called *The City*, which deals with the subject of city planning and housing. In this Auditorium are shown motion pictures and demonstrations in the field of medicine and public health related in most cases to the various exhibits in the adjoining Medical and Public Health Building (see page 172).

The Science Exhibit is a demonstration of three or four simple ideas. There is no attempt to teach science. In accordance with the theme and exhibit plan of the Fair, the teaching of specific theories and facts in the world of science is a responsibility left to the commercial exhibits. In the projects of many exhibitors the basic processes and theories on which our technical civilization rests, are well and dramatically expounded. In the Science Focal

Exhibit, the theories and technical achievements of modern science are related to the rest of life. Science is shown as a social force; as the new dynamic force which has chiefly created the modern world in which we live.

Science is also depicted as a method of solving problems. Scientific research is a way of dealing with problems which consists of experiment, observation, the formulation of hypotheses and checking of results.

The Education Focal Exhibit is, like the Science Exhibit, an attempt to describe the technique and method of contemporary teaching by a dramatic portrayal of the aim and ideals of education in the present day world. The Education Exhibit is related to the Science Exhibit—science being the force which has been most effective and pervasive in creating a new set of problems and new conditions which our oncoming citizens must understand and for which they must be trained. The over-all message of the exhibit is that education in a democracy must be available to all men. It must train the whole man. It trains a man to be a better individual and a better member of society—to be a citizen rather than a subject, for subjects merely obey while citizens understand their world and take responsibility for it.

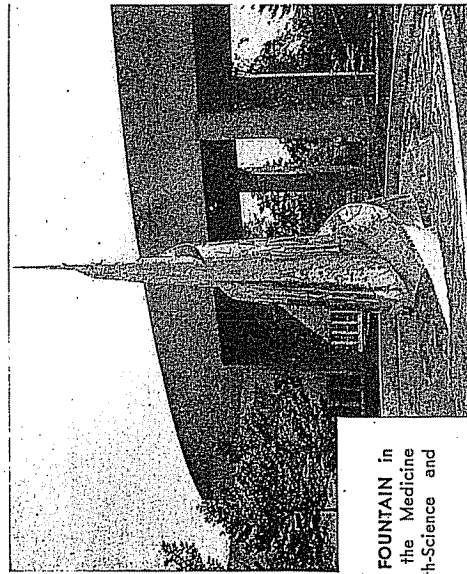
The twin exhibit in science and education deals with ideas, with the true nature of science and of education and with the social implications of these two great fields. In science the purpose is to show the "secret of success" that has brought science to the fore. In education are featured the responsibility of citizens in a democracy to keep pace with this changing world and the necessity for regarding education as a life-long process. Thus neither exhibit deals with institutions. There is no effort to teach science or to compete with the fascinating displays of scientific processes that are featured in the various commercial exhibits. Similarly in education there is no exhibit of school work, of school materials or of educational techniques.

As the visitor enters the door of the Science and Education Building he sees before him a beautiful stylized airplane poised aloft as though taking off in flight. The plane is supported on a large pillar, or drum, which is composed of a series of artistic transparencies representing twelve different sciences. The implication is clear that human flight rests on precise study in many fields of science and utilizes knowledge gained in all parts of the earth. Human flight is represented as a symbol of man's quest for power and freedom—as the climax of many centuries of science, and as a challenge to education, for man must learn to use this power for the happiness of all.

To the left from this entrance rotunda is the science section and to the right is education. One great wall in the science wing is occupied by a series of striking colored panels which present the activities of science in finding, observing and testing facts—the gathering of reliable knowledge. Here, for instance is seen a

stratosphere balloon in flight with all the complicated equipment that is used for measuring cosmic rays many miles above the earth's surface, as well as equipment for gathering samples of air, dust and plant spores. Another panel shows the investigation of the atomic nucleus with atom smashers and powerful radiations. Still another represents the bathysphere descending to the depths of the sea to investigate conditions in a region where man cannot live.

Other panels show telescopes reaching to the distant stars, microscopes studying tiny organisms, and bacteriological and chemical laboratories studying the composition of matter and of living things.



STAINLESS STEEL FOUNTAIN in the courtyard of the Medicine and Public Health-Science and Education Building

Observation, however, is only part of the scientific method. On the opposite wall is shown a great reservoir of facts and organized knowledge to which these observations contribute. In a series of intriguing dioramas the "secret of success" of science is shown, including the use of facts from the past, the inspiring new ideas, the careful testing of the ideas and the wide consequences of a new step forward in science.

Finally, the exhibit shows several examples of the use of the scientific method in ordinary life. Amusing cases show that the need for straight thinking is not limited to the laboratory, but is equally essential in the solution of everyday problems.

Turning to the education side of the exhibit we meet first a set of three pyramids foreshortened and joined together in a panel about interesting symbolic shapes which present an outline his-

tory of education. They show in immediate, understandable form the essential facts of how education grew from colonial times to the present, and the unique contribution which America has made to education. America can be proud, for example, of the way in which three types of responsibility work together—parochial, private and public schools. She can also be proud of the fact that basic education is available to all her citizens.

If the visitor turns his back to these pyramids he sees an alcove in which a pattern of cut-out symbols on a curving wall indicates the scope of present day educational machinery. Turning back and passing the historical display, he comes to the principal feature of the exhibit. This is a set of transparencies depicting the crucial incidents in the educational exhibits. Traditionally, educational exhibits are simply an example of school work or school material. Here we have an attempt to exhibit education in process rather than in its results or its physical paraphernalia. Education is presented as a continuing process which begins at birth and should continue until death. One measure of success is the extent to which it avoids a tendency to be limited to institutional activity. In this Pilgrim's Progress, institutional activity is not neglected. We see the work of schools and colleges, but we are continually reminded that education is not merely an institutional activity.

On the end walls of this Hall are murals which depict the "extra-curricular" activities and forces which contribute to the education of Americans—the radio, the motion picture and the theatre.

THE AMERICAN RED CROSS:—One of the greatest activities of the American Red Cross, the instant reaction to the urgent call of distress, is the dramatic point of this exhibit. It is entitled "When Disaster Strikes." A swirling symbol of sudden disaster strikes down upon the city of Washington on a huge map of the United States, at the back of which rises a fifteen-foot photograph of fire, flood and hurricane. At the moment of impact an electric flash illuminates Red Cross Headquarters and radiates from there to the subcommittees scattered over the land.

American Red Cross activities in general, including the participation of volunteer workers, are shown by dioramas, transparencies, photomurals and models, and these give a representative picture of the many fields in which the American Red Cross serves the country and helps in health education. In several separate panels its relation to the International Red Cross, with societies in sixty-one countries, is clearly depicted.

CARAVAN OF EAST AND WEST:—The New History Society and the Caravan of East and West—a world-wide correspondence club—has World Unity as its central theme. Here is displayed a giant Bible with slowly revolving pages presenting the text of many great religions. A "world" flag symbolizes everybody's native land, and a large map shows the location of the 150 chapters of the Caravan.

TRANSPORTATION

Focal Exhibit

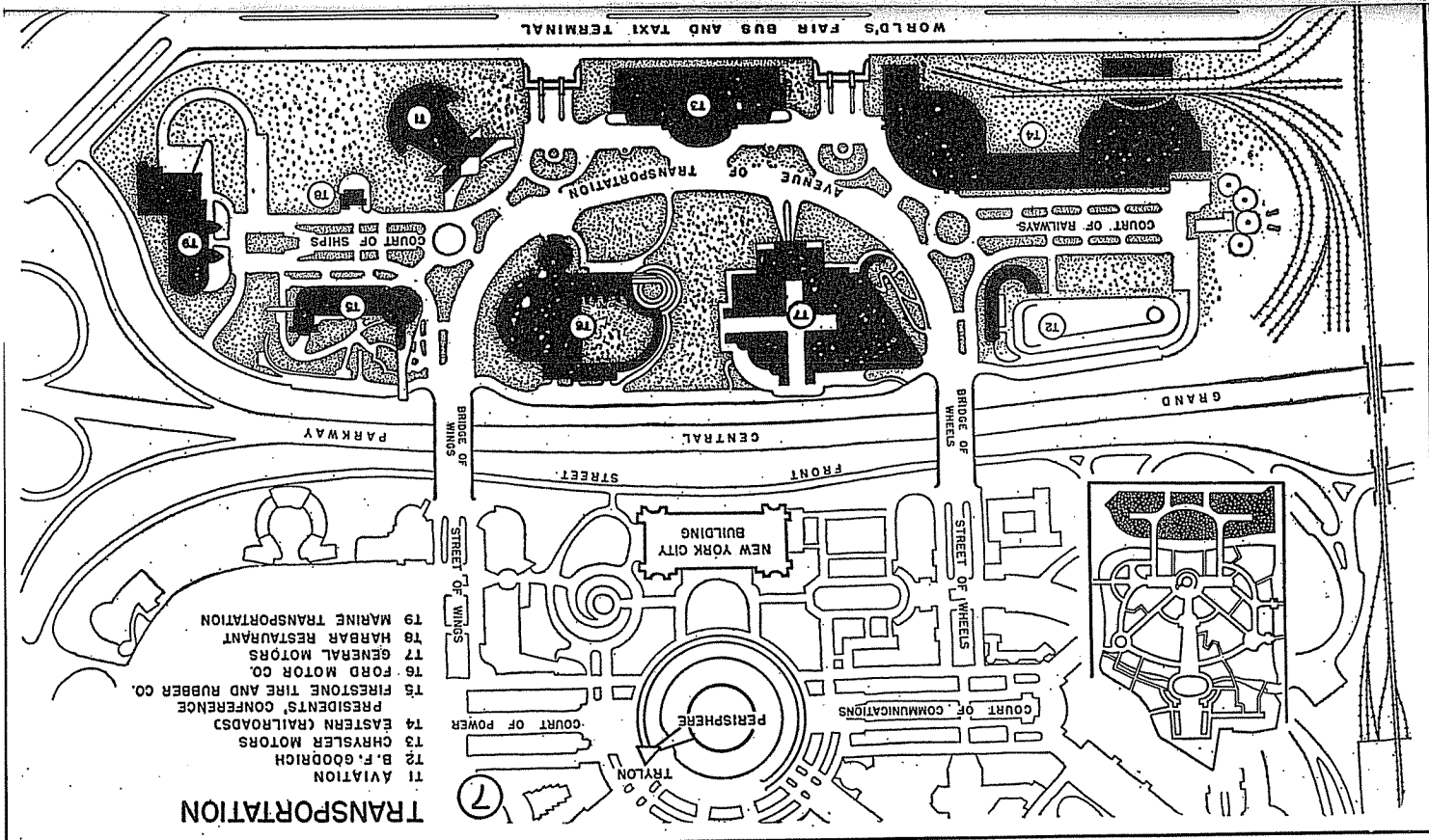
SITUATED SOUTHWEST of the Grand Central Parkway Extension and linked to the main Fair grounds by the Bridge of Wheels and the Bridge of Wings, the Transportation Zone is devoted to many of the extraordinary inventions which have enabled Man to conquer time and space. Setting the stage for a vast panorama of industrial exhibits pertaining to this phase of our modern age, the FOCAL EXHIBIT (Raymond Loewy, designer)—located in the Chrysler Motors Building adjacent to the Corona Gates—depicts the story of transportation from earliest times and emphasizes the fact that the world has steadily grown smaller, its people drawn ever closer together by improved methods of transportation on land and sea and in the air.

Within the rotunda of the building, the FOCAL EXHIBIT tells its graphic story of Transportation by means of moving pictures projected upon a great map of the world, and by the "Rocket-Port," a display that seizes upon your imagination and projects it into the future. The show consists of three parts—*The Early Period*, *The Middle Period*, and *The Mechanical Period*.

As the presentation begins, hundreds of bare and sandal-clad feet march across the map, to the accompaniment of a dull throbbing sound that heightens your impression of steadily increasing speed. The feet vanish; jeweled lights flash a line across the map, indicating the 200 miles our ancestors could travel in a week on foot. Now you see a lurching camel, the horse, and the chariot with wooden wheels. There on the sea an ancient galley propelled by ponderous oars; next the first sail craft; and finally the sharp-prowed Viking sailing ship, the swiftest means of transportation then devised and which enabled Man to travel 350 miles in a week. The seas binding Europe were still of unknown and terrifying vastness; continents and islands beyond those seas existed only in the imaginations of a few dauntless or foolhardy men inspired by song and legend.

But transportation progresses, and you view scenes of *The Middle Period*—the covered wagon creeping across the American continent, the rumbling stage coach, and the pony express; the latter enabling Man to cover 750 miles in a week. The sea again—Man's increasing genius reflected in the Clipper ship, a sleek-hulled, tall-sparred craft with wings of canvas that makes 1,500 miles in a week, a speed which only a hundred years before would have been considered a madman's dream.

Next you glimpse *The Mechanical Period*—the earliest trains that covered 1,400 miles a week; the first automobile, 1,200 miles.



This is the era in which Jules Verne, visioning the future, wrote the amazing adventures of Phineas Fogg, who "dashed" around the world in eighty days. Imagine for yourself Verne's astonishment could he but return to earth for a few brief moments to view with you the rest of this dramatic scene—the swift automobile, the streamlined train, the Zeppelin, and the modern plane that can encircle the globe—25,000 miles in less than one week.

What of transportation in the "World of Tomorrow?" As the airplane finishes its flight across the screen, lines shoot out and harness the earth with other planets. Twinkling signal lights, the hum of gigantic motors and the warning sound of sirens indicate that the Rocketship is loading passengers for London. You see futuristic liners unloading at nearby docks; sleek trains glide to a stop, automobiles whisk voyagers to the spot, high-speed elevators rise and descend as the Rocketship is serviced for the coming journey. The moment for departure arrives. A great steel crane moves, a magnet picks up the Rocketship and deposits it into the breach of the rocketgun. A moment of awesome silence. A flash, a muffled explosion, and the ship vanishes into the night.

The show is ended. Accompanied, perhaps, by the spirit of Jules Verne, you turn away to view the exhibition of a series of replicas of the various means of transportation throughout the ages. Here also are models of the vehicles of the future, as the designer Raymond Loewy envisions them. Here an ocean liner fully enclosed so as to be waterproof, and a luxury plane with comfortable sleeping rooms and spacious observation decks.

CHRYSLER MOTORS:—When you pass from the rotunda, you enter the great hall of the building and behold the exhibits of Chrysler Motors. Here is centered the exhibition of Chrysler progress, products and processes. In an air-conditioned theatre seating 360 persons, a Plymouth car is apparently assembled right in the midst of the audience. Magically, parts seem to move almost to your side, to take their place in the "car that can take it." Here is the amazing illusion of Major Bowes apparently present in person, as he explains to you the significance of Chrysler engineering developments. These extraordinary effects are made possible through the new scientific development of three-dimensional motion pictures combined with sound.

In a glittering "frozen forest," Chrysler Motors uses the science of its Airtemp Division to provide a highly spectacular and imaginative setting for its display of Plymouth, Dodge, DeSoto and Chrysler cars. Here, in the midst of New York's summer heat, is an oasis of snowy palms—a tropic island where moonlight turns mysteriously to snow on each tree it touches, suggesting what city gardens of tomorrow may become when today's science adds its inventiveness to the landscape gardener's ancient art.

In the third section you may see actual tests of materials and the processes and operations which stand behind the "cars and trucks that can take it." And here is a car that actually speaks for

itself, giving interviews, answering questions and showing some of its unusual attainments. Moving models demonstrate the progress achieved in Chrysler-built automobiles to create new safety, comfort, economy, durability and precision. The informative design of the Chrysler Motors Exhibit enhances its essential purpose: to give you a dramatic, compelling experience.

With an understanding of the tremendous part transportation has played in the drawing and binding together of continents and tiny islands in the seas, you now begin your exploration of the Transportation Zone, where other major companies directly engaged in the Transportation Industry exhibit in their own buildings techniques and achievements which offer infinite possibilities for the "World of Tomorrow."

AVIATION BUILDING

SITUATED ON THE AVENUE OF Transportation, the Aviation Building (Wm Lescaze and J. Gordon Carr, architects) represents a hangar embodying the architects' idea of "flight in space." The general theme of the Exhibit is "Wings of America," constituting as a whole the coöperative contribution of the American aviation industry under the group management of the United States Aviation Exhibit, of which Captain Eddie V. Rickenbacker is president.

Within, four large transport planes in flying formation are suspended from the ceiling at an angle which makes them appear to be gliding to earth for a landing. Beneath these droning giants of the sky are displayed the three theme divisions: **WINGS OF TRAVEL**, **WINGS OF DEFENSE**, and **WINGS OF RECREATION AND COMMERCE**.

The first division is devoted to air transport, and here is featured a cross-section "mock-up" of a composite modern transport plane. Matters of safety, travel schedules, economy and comfort of air travel are emphasized in supplementary displays. In **WINGS OF DEFENSE** Army and Navy aircraft are shown—bombers, pursuit planes, attack planes and ship-board fighters—and the various appurtenances associated with military aviation and air defense. The third division is given over to private flying and commercial transport. Here is told the complete story of civil flying for sport and trade; here is seen everything from the latest in popular-priced "fliers" all the way to luxury ships in the highest-priced brackets.

The three major exhibits are supplemented by comprehensive group displays. These show the production or use of power engines and propellers; navigation instruments and radio; ignition and carburetion; fuels and oils; aircraft structure and accessories; basic materials; airport equipment; and finally, the availability and nature of flying and ground schools. In keeping with the general theme are the photomurals on the walls which depict many of the major activities in the wide field of aviation.

THE FIRESTONE TIRE & RUBBER COMPANY

ON THE COURT OF SHIPS, the Building (Wilbur Watson and Associates, architects; George W. McLaughlin, designer) is L-shaped, with a rotunda entrance at the intersection of the two wings. The structure is surmounted by a long vertical fin 100 feet high.

The Firestone exhibit building and grounds cover three and a half acres and depict a fascinating story of rubber in visual form.

A major attraction of the Exhibit is a modern tire factory in actual operation, producing a finished tire every four minutes. Manned by skilled workmen and equipped with modern streamlined machinery, the tire production line—showing every operation from crude rubber preparation to the finished product—is so arranged that every visitor is provided with a comprehensive view of the entire process with comfort and without crowding.

Another feature is an actual life-size reproduction of a thriving American farm with livestock and farmhands. Sheep, cattle, pigs, chickens and ducks roam the fields; a farmhouse, barns, silos and other buildings give a realistic atmosphere to this replica of the countryside. This shows in a graphic way how the American farm has become modernized by the adaptation of pneumatic tires to every kind of wheeled farm implement, thus demonstrating Firestone's contributions toward making farm life easier and more economical.

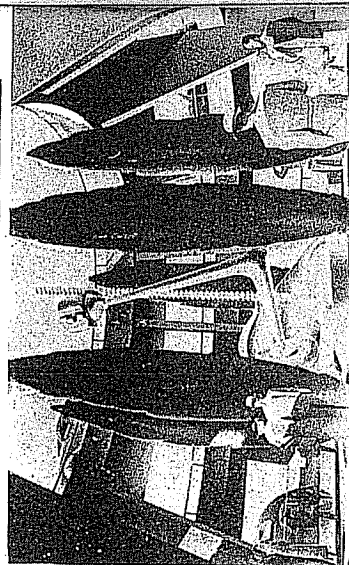
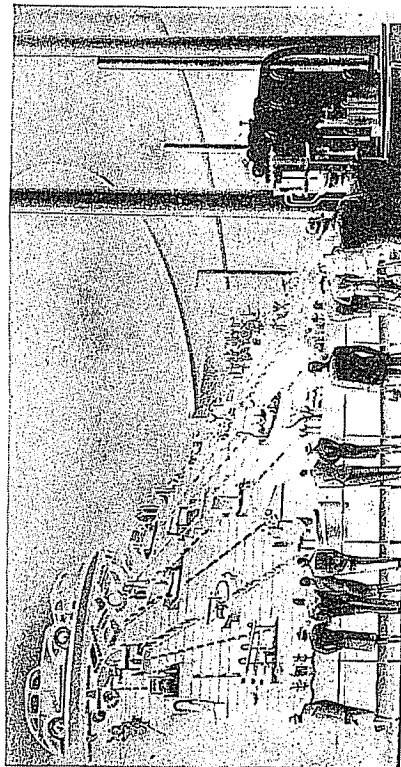
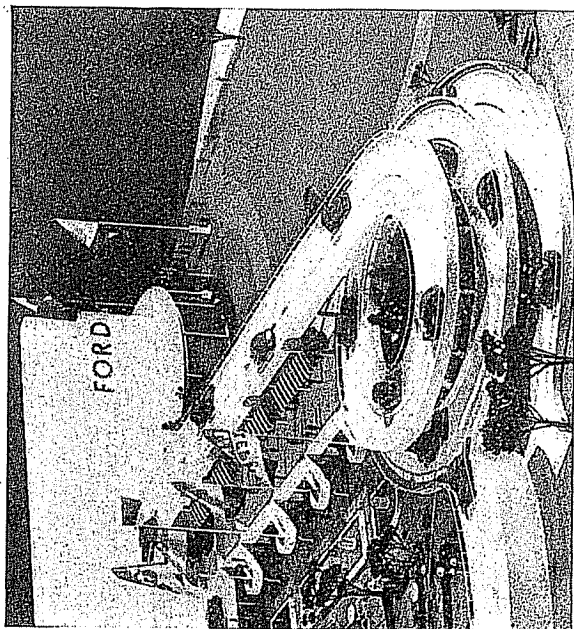
Actual work of gathering rubber on Firestone's Liberian plantations is portrayed. Dioramas, historical pageants and scientific demonstrations dramatize the history of the industry and the development of thousands of rubber products.

Rest and relaxation, while listening to the finest concert music, is provided for the visitor by the Firestone Singing Color Fountain. Concerts continue all day with seats provided in beautifully landscaped surroundings.

FORD MOTOR COMPANY

SITUATED on the highest part of the Fair grounds, the tremendous spectacle of the "Ford Exposition" (Walter Dorwin Teague, designer; Albert Kahn, Inc., architects) symbolizes the far-reaching benefits which 35 years of productive activity by a great industrial organization have brought to American life. Built prophetically, as a part of the building itself, "The Road of Tomorrow," rising on a spiral ramp, circles for more than half a mile over the top of the main structure and around colorful Garden Court. The "Exposition" has four main divisions: the Entrance Hall, the Industrial Hall, the Garden Court, and "The Road of Tomorrow." Each of the first three demonstrates in graphic style

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FORD MOTOR COMPANY
EXHIBIT

some significant phase of the company's work, showing how mass production of automobiles at moderate cost has contributed to a new way of life.

Above the Ford Exhibit towers an heroic figure of Mercury, the "winged messenger" of the gods, done in gleaming stainless steel. The statue, 25 feet high and weighing three tons, is free from the building, a three point bracing holding it in place. As a result of this unusual method of suspension, the figure appears to be in flight. It is the work of Robert Foster, sculptor and industrial designer.

The Entrance Hall is dominated by a series of striking exhibits. The first car Henry Ford built may be seen with current models of Lincoln-Zephyr, Mercury and Ford V-8 cars. "Everytown" is a large three-phase map activated on a series of synchronized prisms, depicting the changes the automobile has wrought in our country. A huge activated mural by Henry Billings shows how the basic sciences are utilized by industry. Outstanding in the adjoining Industrial Hall is the "Ford Cycle of Production." A revolving turntable 100 feet in diameter contains 87 exhibits showing the progression of raw materials from earth to finished cars. Industrial Hall also offers various exhibits demonstrating Ford manufacturing methods.

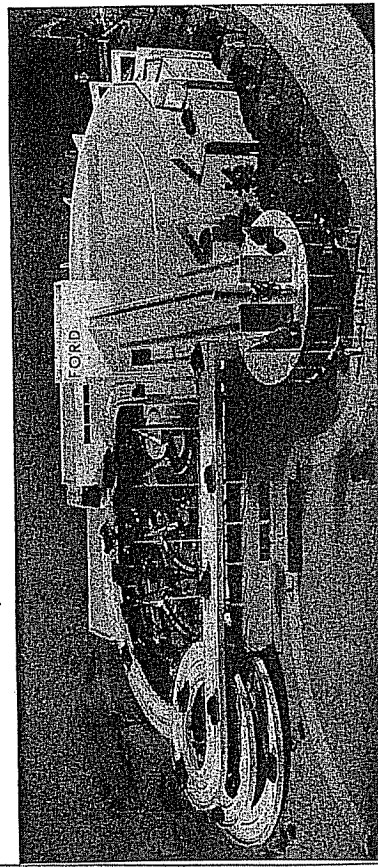
Garden Court offers restful surroundings where visitors may listen to a unique musical organization playing a battery of Novachords, the newest musical instrument of the day. Ferde Grofé, famous composer and musician, heads this group.

From a broad mezzanine you embark on your wondrous trip over "The Road of Tomorrow." The winding course circles the top of Industrial Hall and through a tunnel high in the nave of Entrance Hall. Descending at last to the second floor level, you circle Garden Court and return to the mezzanine and the end of a thrilling and delightful adventure.

GENERAL MOTORS

THE HIGHWAYS AND HORIZONS EXHIBIT (Albert Kahn, Inc., architects; Norman Bel Geddes, designer) occupies approximately seven acres on the Avenue of Transportation. Spacious open-air terraces with several hundred chairs for visitors' comfort encircle two-thirds of the structure. Actually, "Highways and Horizons" is not one building, but consists of four towering structures (four to six stories in height). Located on the four corners of an imaginary and spectacular, full-scale street intersection of 1960, the four buildings are joined into an overall exhibit structure by broad, elevated pedestrian sidewalks, which extend for a full city block in two directions. This open-air spectacle forms the center section of the Exhibit and at night is brilliantly illuminated by a battery of floodlights.

For thrills and entertainment "Highways and Horizons" con-



FORD BUILDING

tains attractions which might be termed a diversified world's fair in itself. In 600 moving chairs, each equipped with a sound device which serves as a private guide on the Aladdin-like trip, visitors travel over a vast miniature cross-section of America as it may conceivably appear twenty years or more from now.

A stage show of science and research wonders is presented on a double-revolving stage in the Casino of Science (650 seats). There are colorful, animated displays picturing many foreign nations in which General Motors operates, and an actual 4,000 horsepower, streamlined Diesel locomotive in operation.

Covering an area of 35,738 square feet, the "futura" is the largest and most realistic scale-model ever constructed. As visitors in the moving chairs tour this "futura" they experience the sensation of traveling hundreds of miles and viewing the scenes from a low-flying airplane. As they travel on several levels of the building in their magic chairs, they view a continuous animated panorama of towns and cities, rivers and lakes, country and farm areas, industrial plants in operation, country clubs, forests, valleys and snow-capped mountains. The "futura" contains approximately 500,000 individually designed houses; more than a million trees of eighteen species; and 50,000 scale-model automobiles, of which 10,000 are in actual operation over super-highways, speed lanes and multi-decked bridges.

Projecting a basic theme of highway progress and possible trends in motor transportation facilities of the future, the Exhibit shows how, by multiplying the usefulness of the motor car, the industry's contributions toward prosperity and a better standard of living for all are tremendously enhanced.

Perhaps no exhibit in the General Motors Building attracts more attention than the Quartz-Windowed-Engine in the Research Laboratory section of the Exhibit. The display enables the spectators to actually see fuel combustion in the cylinders of a motor car engine in operation.

On the stage of General Motors' theater is featured the Frig-O-

Therm, an amazing device on which one can cook, and at the same time, freeze ice cream.

The Frigidaire section of the Exhibit includes a laboratory dramatization of the causes and prevention of food spoilage. Fisher Body features a full-size "X-ray car," constructed of "plexiglas," a transparent plastic.

The "World Horizons" exhibit of the General Motors Overseas Operations dramatizes, in a series of animated displays, the importance of the interchange of products and culture among the nations. In a majestic spiral-ramped room of copper, glass and rosewood are shown the latest models of Chevrolet, Pontiac, Oldsmobile, Buick, LaSalle and Cadillac.

B. F. GOODRICH COMPANY

FACING THE AVENUE OF TRANSPORTATION, the low streamlined Building (William Berle Thompson with Wilbur Watson & Associates, architects and designers) comprises two wings that curve away from its main entrance, embracing an egg-shaped paved field where thrill driving performances by the famous Jimmie Lynch and his daredevil troupe of auto stunters are given six times daily. Here the non-skid qualities of Goodrich Silvertown tires are demonstrated as spectators are driven over a portion of the track sprinkled with water to simulate wet weather conditions. A 90-foot tower of classical design surmounting the entrance houses the giant "tire guillotine." Crashing down, the huge blade strikes a tire set between uprights and rebounds far up into the shaft. In the Goodrich laboratories at Akron, this device is used to develop and test new methods of tire construction.

Displays include a modernistic rubber automobile; marine bearings lubricated only with water; aircraft De-Icers in action; a section of America's "ghost highway," which stretches 60 miles in summer and virtually disappears in winter; and an automobile actually suspended in mid-air by a strip of rubber.

Many of the exhibits are either animated or operated by push-buttons and levers. Mirrors and magic eyes control a stream of water which appears to be aimed directly at you and provides an amusing feature of a pipe-joint display. One manufacturing exhibit makes miniature tires for ashtrays and another produces Koroseal, a synthetic elastic discovered by Goodrich, made of limestone, salt and coke. Also displayed is Goodrich's newly developed rubber automobile spring which combines the resilience of rubber with the strength of steel.

MARINE TRANSPORTATION BUILDING

HEADING DIRECTLY into the far end of the Court of Ships, two huge shapes resembling the bows of modern super-liners flank the entrance to the Marine Transportation Building (Ely Jacques

Kahn and Muschenheim & Broun, architects). So realistic is the scene that you can almost imagine these sharp prow slicing through angry seas, whipping up sheets of drenching spray. The gangway, which spans real water and leads you to the interior, is reminiscent of the North River waterfront.

In the curved end of the hall, the central exhibit consists of a depressed, illuminated map of the world, upon which the trade routes of American steamship lines are shown. By means of a magnet controlled by wireless signals, the position of miniature vessels on these routes is changed daily to correspond to the ship's position at sea. This presentation stresses the vital rôle of the merchant marine in modern civilization.

Safety and comfort exhibits show gyro compasses, radio direction finders, fire detection and control systems, electrically controlled water-tight bulkhead doors, wireless and radio telephone. A historical display includes the most comprehensive collection of ship models ever assembled. Here are exhibits of the modern equipment used in construction, operation, maintenance and servicing of vessels. Another section is devoted to Great Lakes and Inland-Waterways displays, another to travel bureaus and tourist agencies handling world-wide transportation. Educational lectures and graphic motion pictures afford additional interest.

AMERICAN EXPRESS COMPANY maintains a service office here for the convenience of Fair visitors. At the Railroad and Steamship terminals American Express uniformed representatives meet and welcome visitors to the Fair. The Company, in cooperation with the Railroads and Steamship Lines, has developed a form of Package Tour which includes hotel reservations.

THOS. COOK & SON—WAGON-LITS, INC., by means of photo-murals, presents a survey of the world's principal fields for pleasure travel, emphasizing the scenic wonders and architectural masterpieces of each country. Descriptive travel literature is available. Travel counselors are in constant attendance to serve passengers whom this agency has brought to the Fair from all parts of the world.

THE SOUTHERN RAILWAY OF ENGLAND shows an electrically operated miniature of Southampton Docks, with model quays and other premises, and replicas of the *Queen Mary*, the *Aquitania* and the *Empress of Britain*. By pressing a button, thus illuminating information panels, you can obtain many interesting particulars about Southampton. The exhibit includes an information booth where your inquiries receive courteous attention. Draped from the ceiling above the exhibits are the national flags of the major countries whose shipping uses Southampton Docks.

NEW YORK CITY BUILDING

This imposing building, located at City Hall Square directly southwest of the Theme Center, is the official exhibit of the City of New York; it is described in the general section on Government (see page 170).