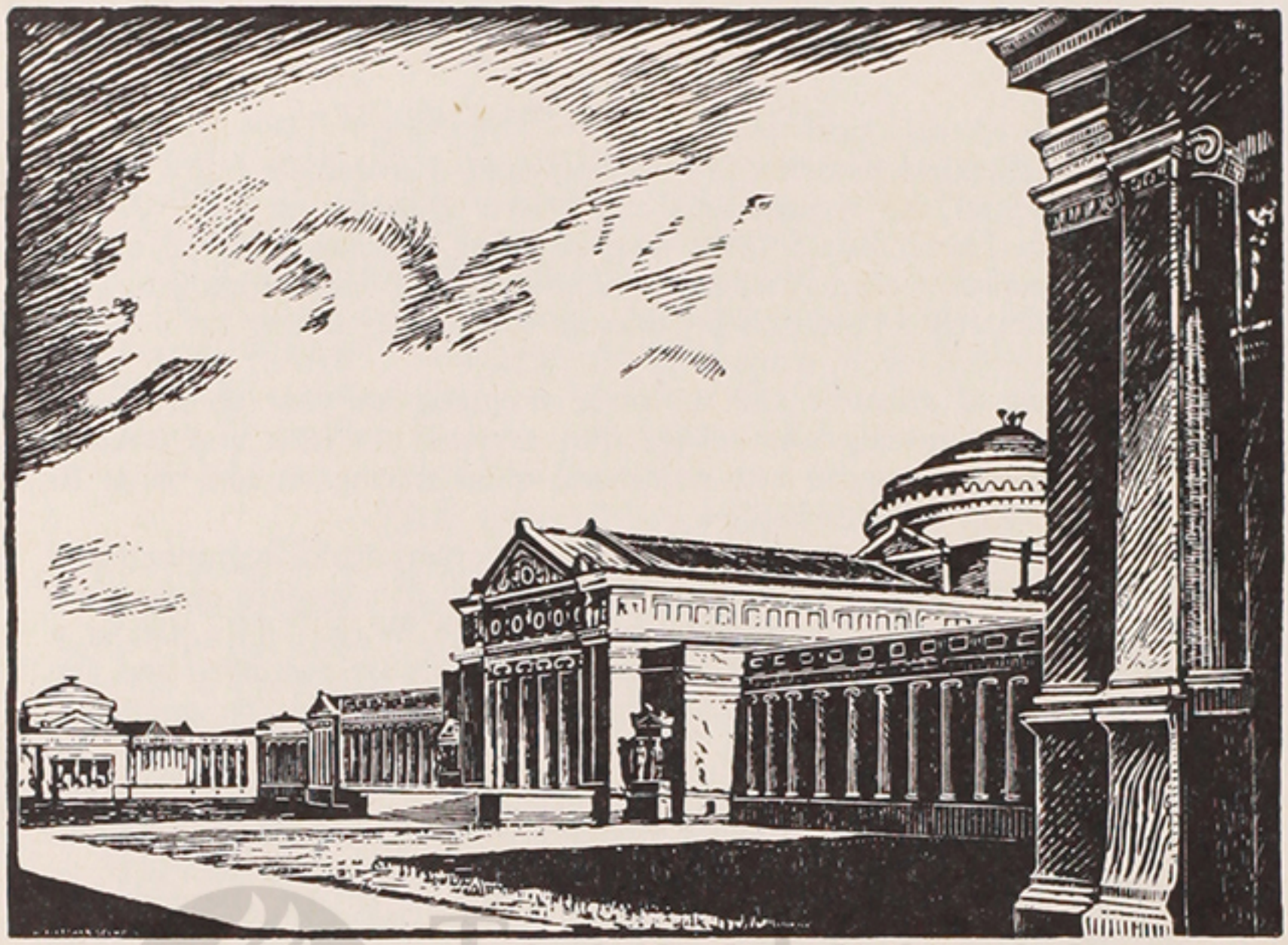


EXHIBIT FINDER

for the

MUSEUM *of* SCIENCE *and* INDUSTRY

57th Street at Lake Michigan

Chicago

General Information

THE MUSEUM OF SCIENCE AND INDUSTRY, founded by Julius Rosenwald, occupies the reconstructed Fine Arts Building of the World's Columbian Exposition of 1893. This structure is considered one of the finest examples of classic architecture in the world. With a total floor area of approximately 14 acres, it provides an outstanding setting for museum purposes.

Exhibits of scientific and industrial progress, many of them in full operation, are arranged by subject into sections, as "fuels and metals." Each section is grouped into sequences, often tracing an idea from its invention to its mass production.

It is the Museum's purpose to picture the experimental beginnings and the fully developed processes which fill the needs of a modern civilization, and to show how these represent our American Way of Life. Under a single roof, hundreds of great historic experiments are reenacted and, beside their portrayal, whirr and throb the wheels and pistons, the gears and levers, made possible by them. To explore these exhibits from beginning to end is to gain visual insight into the pages of a vivid history—to understand both the gropings within a test tube and the working surroundings of man's production through science and industry.

The ***Museum is open*** to the public, free of charge, every day of the year except on Christmas. The opening hour is 9:30 a. m. Closing on Sundays and holidays is 7:00 p. m.; on Saturdays at 5:30 p. m.; on other days, at 5:30 p. m. during the spring and summer months and 4:00 p. m. during the fall and winter months.

Free ***auto parking*** is available on three sides of the building.

Questions concerning the Museum's services to the public are answered at the ***information desk*** at the entrance.

Packages, hand luggage and food must be checked, without charge, at the ***checkroom*** to the left of the entrance. A charge of ten cents will be made for checking coats and hats.

Vehicles, such as baby carriages and bicycles, must be left outside the building where free racks are provided for securing them.

Near the checkroom is the ***Museum Mart,*** where visitors may purchase a variety of articles identified with the Museum exhibits, many of them actual products of the Museum's own processes.

Dining-room service, on the ground floor, includes a modern cafeteria, a picnic lunch room for the use of those bringing their own lunches; a group dining room, where clubs and other organizations may arrange for table service in privacy in the atmosphere of the Museum's dynamic exhibits; a dining room for official guests; and a soda fountain.

Demonstrators resident in each exhibit section give formal demonstrations at intervals and answer visitors' questions. Reservations for ***group tours*** on specific subjects must be made in advance.

In the lecture halls and Auditorium are motion pictures and lectures

on current material and ***special exhibitions*** from time to time, hours of which are posted on the bulletin board near the entrance.

A charge of 30 cents for adults and 12 cents for children is made for tours of the Museum's operating ***coal mine,*** of 5 cents to the Nickelodeon in ***Yesterday's Main Street,*** and of 25 cents for adults and 12 cents for children in ***Microworld.*** All other exhibits are free.

Persons engaged in research may have access to the ***Library's*** study facilities, by appointment.

Rest rooms are located on the ground floor, reached by the four stair wells of the Central Pavilion.

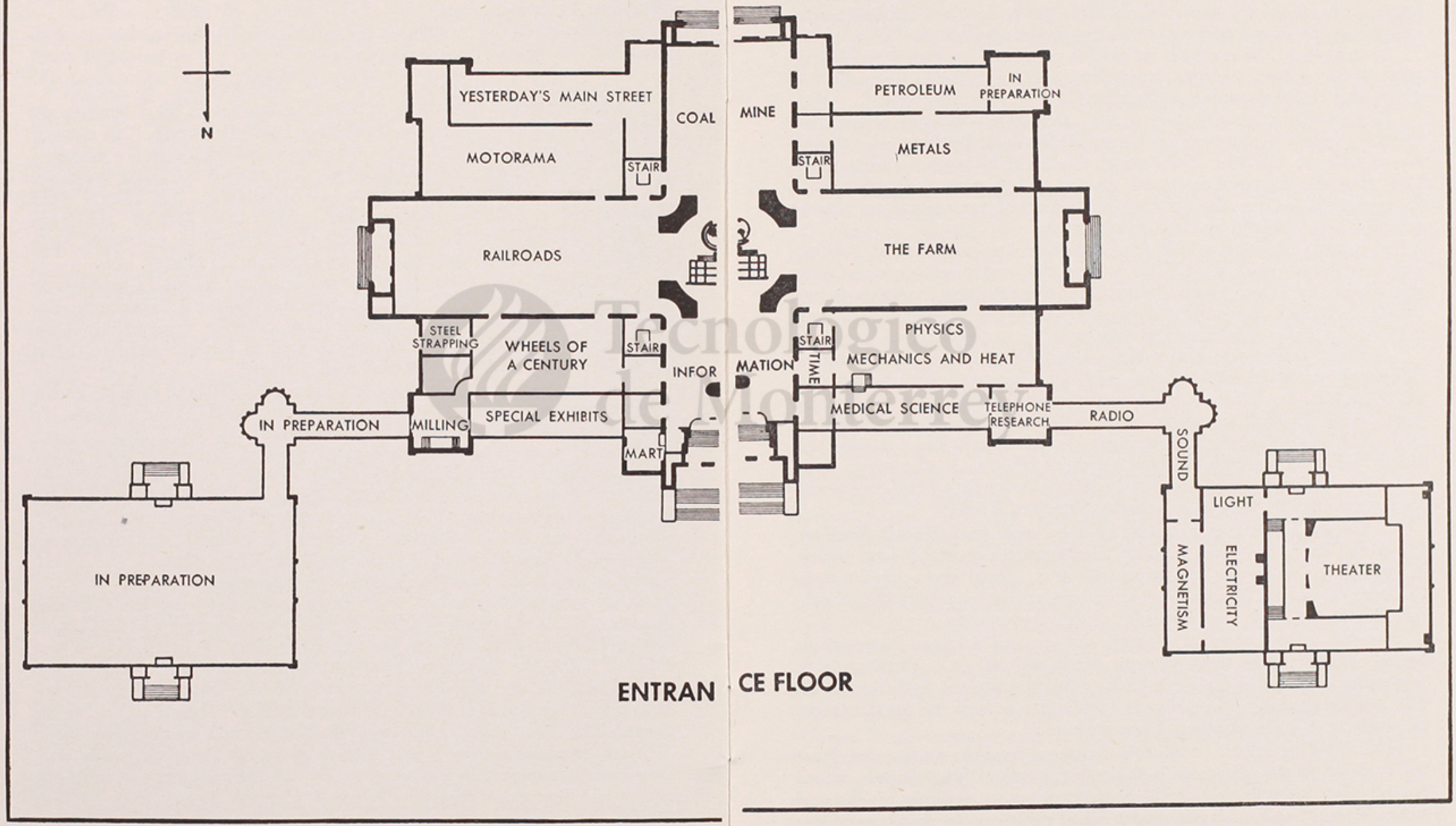
Entrance Floor Exhibits

In the center of the building, where all the courts meet beneath the central dome, stands the ***periodic table of the elements.*** This majestic symbol of the earth, from which all things and creatures are wrought, lifts the visitor's eyes above, to find inscribed around the dome the theme to which the exhibits are dedicated—"SCIENCE DISCERNS THE LAWS OF NATURE; INDUSTRY APPLIES THEM TO THE NEEDS OF MAN." Radiating from this centerpiece are great halls, showing the story of man's progress in science and industry.

The ***north court*** houses the first officially sponsored exhibit on ***nuclear phenomena,*** prepared by Argonne National Laboratory. Designed for visitor participation, the exhibit helps to demonstrate radioactivity, its sources and applications, as well as methods used to detect radiation and to determine its type and intensity.

Hanging overhead is a Spitfire, veteran of the Battle of Britain, in diving position over a German Stuka which was captured in North Africa. To the east of the entrance court, is an historical display of antique automobiles. Here may be seen the varied types of early cars with buggy wheels, wooden bodies, chain drive, and, in many cases, steam-powered. Their evolution is clearly pictured here and special collections are devoted to parts and accessories. The exhibit is called "Wheels of A Century."

In the east court a palanquin, a swaying stage-coach, the barouche of President McKinley, one of the first fleet of nine motor busses, and a prairie schooner set the stage for highway ***transportation.*** Near them is a rank of famous locomotives, replicas or originals — the barrel-chested Rocket of 1829, the North Western Pioneer, a wood-burner and first engine out of Chicago to the West; the wagonlike York of the Baltimore and Ohio of 1831, the Stevens of 1825 with benches at the rear, the surrey-topped Natchez and Hamburg. A locomotive nose illustrates signal practices and a cab beside it invites the visitor to climb aboard and sit at the throttle like Casey Jones, while steam distribution and running-gear operation are demonstrated by a half section of engine along the north wall. Street rail transportation is represented by full-size horse-car and cable-car, which had important parts in Chicago's transport history from 1860 to 1906.



The story of modern railroading is told in the 3,000 square-foot miniature Museum and Santa Fe electric railroad, which is kept in constant operation, showing passenger and freight travel over the slopes of the Middle West, the American desert with glimpses of the Grand Canyon, California fruit groves and oil wells, car shops and industrial plants served by rail. Trains and switch engine operate, on more than a thousand feet of track, from a centralized traffic control panel. The system is protected throughout by automatic block signals, as used in present-day railroading. Frequent demonstrations are given by a "dispatcher."

In a room to the north, is an exhibit presented by Acme Steel Company, showing how packages are steelstrapped for shipping purposes, and explaining the protection thereby afforded the packaged product.

South of the court the story of the automobile is colorfully portrayed in ***"Motorama,"*** presented by General Motors. It begins in the ***theme room*** with the evolution of the wheel, illustrated by famous wheels of history. Here are described the power sources and primary machines applied to transportation, and the working mechanism of an internal-combustion engine is demonstrated by animated diagrams.

Motorama's adjoining halls are devoted to the portrayal of developments in the automobile itself, its construction and production processes, and the rise of Diesel power. Featured in this area are the methods and results of research, designing, testing, engineering and styling, which made possible the many improvements found in the car of today.

In direct contrast to the modern automobile, are the early cars on ***"Yesterday's Main Street,"*** just south of Motorama. As a background for old autos, the Museum has reconstructed this full-sized, cobblestone street, with its brick sidewalks lined with shops displaying fashions of 1910. A Nickelodeon in the street's arcade shows early silent movies, and at the Arcade Studio you can have a picture taken in 1910 setting.

It's interesting to compare the early cars of Yesterday's Main Street with the latest model on Motorama's ***Main Street of Today.***

In the south court, as a feature of the ***Fuels and Metals Section,*** stands the head-frame and hoist of the Museum's working ***coal mine.*** Visitors can descend to the mine, where a special train carries them to the working face. Typical mechanical operations, as practiced in Southern Illinois coal fields, are shown by experienced miners.

Nearby, an operating oil derrick and rig lead west to ***Petroleum.*** Models and dioramas show steps in producing oil, from exploration in geological strata below the earth to the refining processes, both by distillation and by cracking. A petroleum family tree reveals the great number of products that are extracted from crude oil.

The adjoining exhibit on ***metals*** is entered from the south court. Here the story of metals begins with the colorful Inland Steel murals, which portray vividly the sources, methods of manufacture and uses of iron and steel. The terrazzo floor is inlaid with rolled steel sections. Just beyond this

room are operating models and full-sized machines used in the making and shaping of metals—a blast furnace and open hearth; a hot strip rolling mill; the five basic tools of the machine shop, a machine that twirls wire into springs. On a balcony above, reached by convenient stairways, are exhibits of alloys and the heat-treatment of metals; the ore flotation process which separates valuable metal-rich minerals from worthless rock; a blacksmith shop of the fifties operates beside a modern welding booth. In the gray-iron foundry, molten metal is poured daily except Mondays and Tuesdays. In the theater adjoining, free industrial and scientific movies are shown daily.

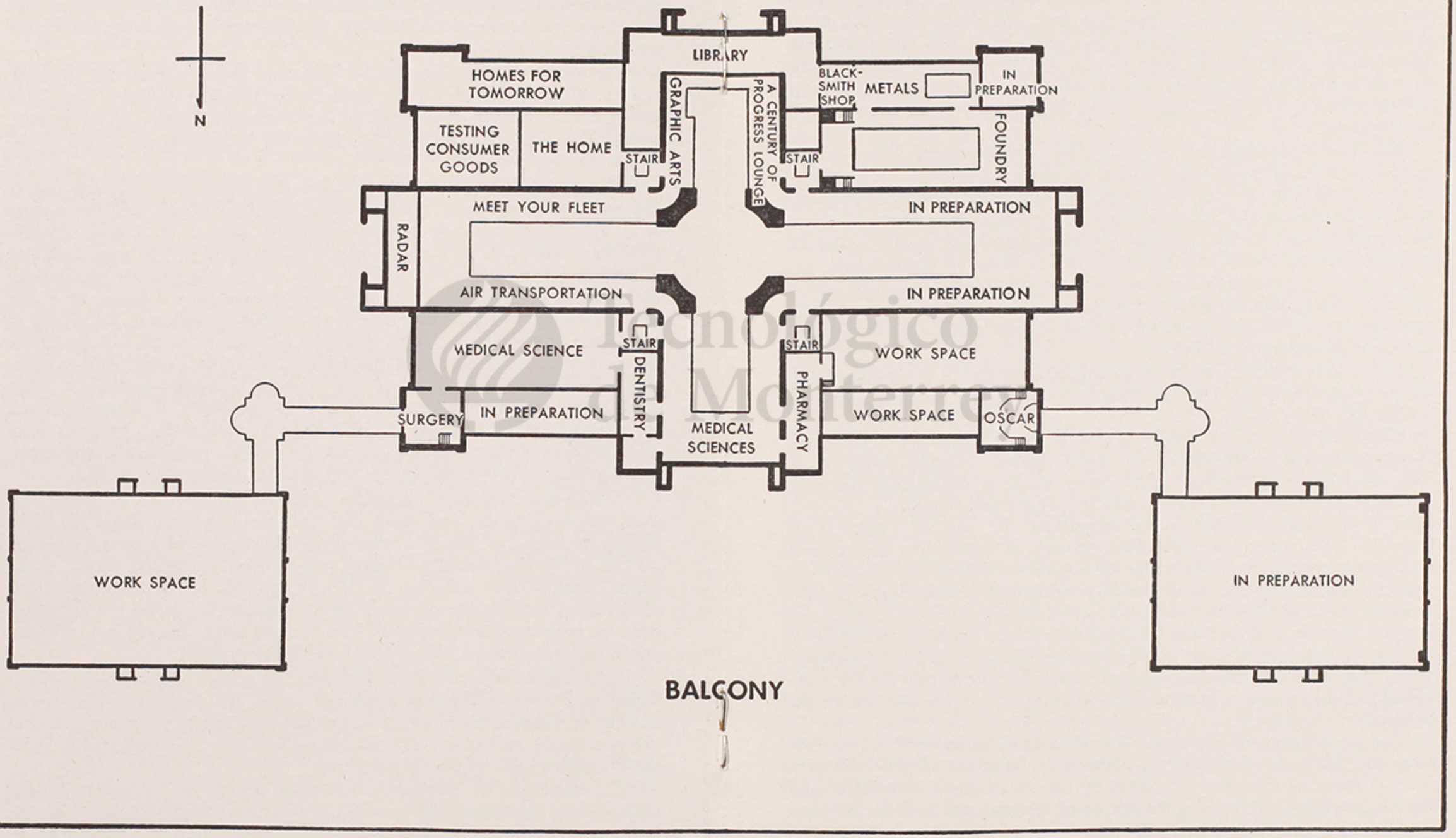
The west court is occupied by Harvester Farm, a complete, life-size replica of the heart of a fully mechanized 160-acre midwest farm in a setting that faithfully reproduces the surrounding fields and all the authentic rural sounds. The live baby chicks in the brooder are a source of delight to young and old.

The ***Physics Section*** extends from the north court through nearly the entire west pavilion. As you watch a ball fall back into the muzzle of a moving cannon, or note the creeping motion of a spot of light reflected from a tiny mirror on a gossamer quartz fiber, you meet firsthand Newton's Laws of Motion, and his Law of Gravitation, by which even the sun can be weighed. From determining time by the flicker of a star as it passes the crosshair of a telescope to seeing a fountain stand still in the flashes of stroboscopic light, you see examples, from the sublime to the purely practical, of how man has found and applied order and predictability in the various aspects of the physical universe—mechanics, heat, light, sound, magnetism, and electricity. In the Story of Magnetism you can play scientific detective, and following clue upon clue, progress from the lodestones of the ancients to a powerful modern research electromagnet, gaining an insight into the nature and possible causes of magnetism.

"Telephone Research" provides you the opportunity to hear your own telephone voice, and there also Oscar will let you share his high-fidelity microphone ears in a startling demonstration of binaural hearing. At one of the electrostatics exhibits, you can feel an electric wind, "shake hands" with 40,000 volts, see St. Elmo's fire, and learn about the action of lightning rods, as demonstrated on a miniature house. In the neighborhood of high-frequency currents, you can see nails turn red hot, without any direct connections to sources of electricity or heat.

Radio can be seen at work in an exhibit presented by the Galvin Manufacturing Company. Basic principles of sound, the nature of radio waves, and the function of air in sound transmission are shown by visitor operated exhibits. Radio receiving and transmitting sets have been stripped to show the principles upon which they depend.

The sequence of ***Medical Sciences*** begins in the room to the right of the entrance with a series of dioramas depicting some of the important discoveries made in medical science in the last hundred years.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METALS
IN PREPARATION
FOUNDRY
MEET YOUR FLEET
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RADAR
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IN PREPARATION
MEDICAL SCIENCE
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DENTISTRY
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PHARMACY
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MEDICAL SCIENCES
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IN PREPARATION
BALCONY

Here also are shown enlarged anatomical models of the ear, heart and circulatory system, the brain, the skin and the urogenital system. Other models show the chemistry of blood, the making of thyroid serum, steps involved in the removal of an inflamed appendix, and the energy-regulating organs of warm and cold blooded animals.

Balcony Exhibits

Continuation of the exhibits of Medical Sciences on the balcony tell the story of human growth from the first cell division to the adult structure. A sequence of preserved specimens from real life shows the development of the human embryo and foetus from the ovum at the time of fertilization to the moment of birth, and a group of transparent models permit a close examination of the skeletal growth at various stages of pregnancy.

The Camp Transparent Woman, the centerpiece of this balcony, provides the visual material for a dramatic demonstration of the intricacy of the human body. During demonstrations the figure is lighted internally to show the locations of the nineteen vital organs in the proper places in the interconnected system. Through the transparent plastic "skin" may be seen the bone framework of a typical female of about 30 years of age.

Nearby are interesting contrasts between the present and the past in medicine—an apothecary shop of a past generation, with its sheaf of dusty prescriptions and obsolete patent medicines, stands beside a modern, white and shiny pharmaceutical desk.

A dental operating room of yesterday, gloomy and ill equipped, stands across a narrow space from a completely equipped modern room of similar use.

The institution of the family doctor is memorialized by a life-sized, three-dimensional reproduction of Luke Fildes' famous painting of "The Doctor" from the period of Queen Victoria, illustrating the ideal relationship between the physician and his patient and family.

The University of Illinois is sponsoring the exhibit, "Miracle of Growth." This is the story of human growth. It shows how growth is a continuous process and illustrates how growth follows an orderly sequence in all normal individuals. A life begins with an hereditary endowment, to which is added at conception an environment which enhances or impedes growth. Internal and external conditions begin immediately to modify the rate and pattern of development. To give wider understanding of these processes of normal human growth, thus improving the individual's chance to live a healthy and satisfying life, is the purpose of the exhibit.

East of Miracle, the National Foundation on Infantile Paralysis presents an exhibit on virus diseases, with particular stress on polio. Next to it are a series of dioramas presented by the Northern Illinois Light and Power Company, and showing the history of resuscitation methods. Beyond, a new exhibit on cancer is being developed.

The advance of surgery and hospitalization is told by a series of dioramic scenes typical of the pre-anaesthetic operating room and before the era of aseptic and antiseptic surgery, with a wholly modern operating room shown as contrast.

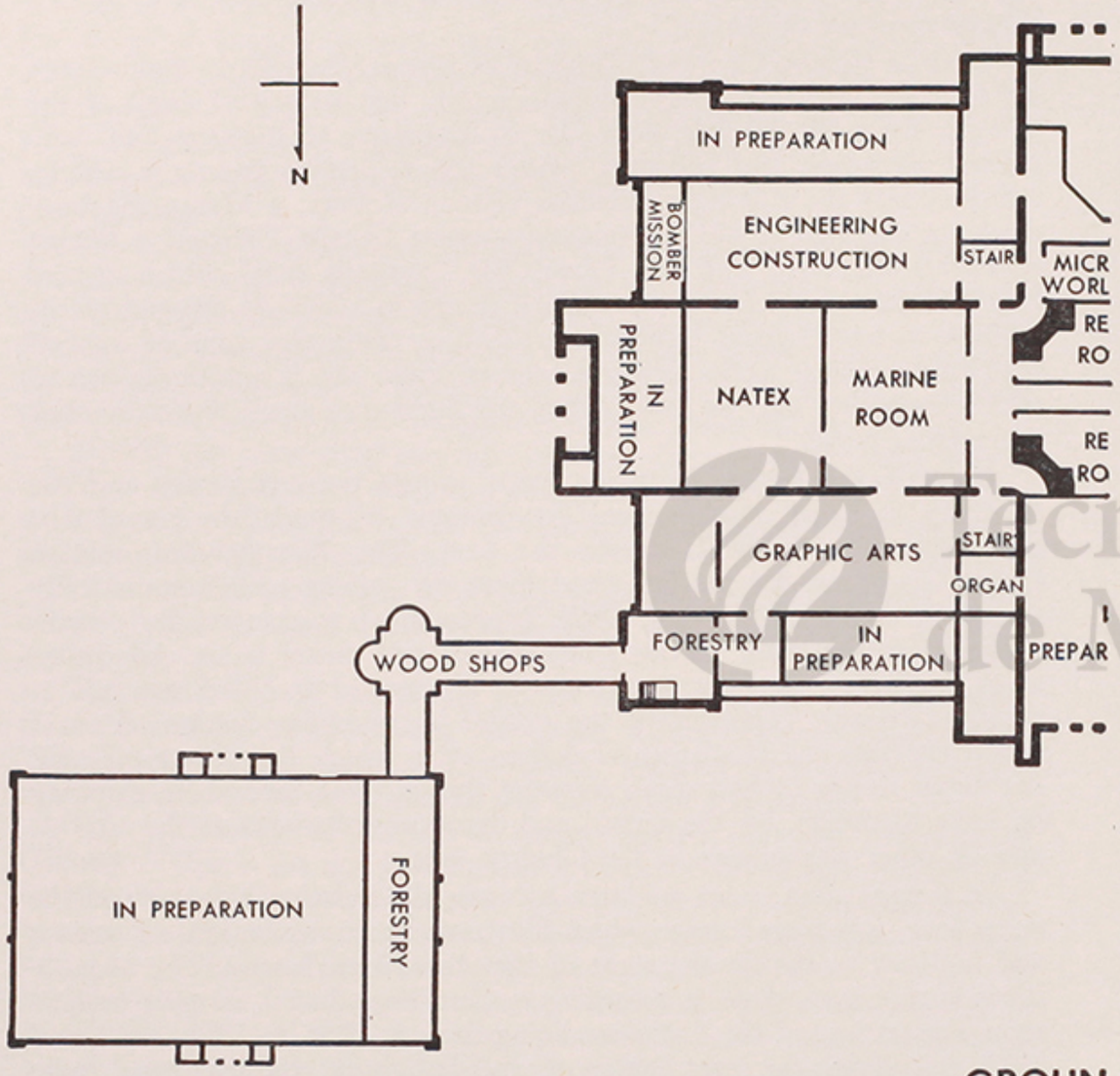
The balcony over the east court is devoted to the stories of lighter-than-air and heavier-than-air ***aviation*** development. Models of balloons, semi-rigid and rigid dirigibles tell the evolution of man's aspiration to fly and his first conquest of the air.

Four of Octave Chanute's original gliders are exhibited—products of his famous experiments just previous to the first successful flight of the Wright Brothers. Models show the development of military and commercial airplanes, and full-sized planes are suspended from the ceiling. Among them are a Wright Brothers biplane of 1911, a Morane-Saulnier mosquito-like ship of 1913, a famous wartime Curtiss "Jenny;" a Boeing 40B mail transport, and the Travel Air "mystery ship" which carried Frank Hawks to a coast-to-coast speed record in 1930. At the end of the balcony stands Captain Yancey's autogiro, a distinctive type of aircraft with its four large rotors slowly revolving. Here also is a pilot trainer, at which the visitor may sit and control the flight of a small model by stick and rudder pedal.

Meet Your Fleet, featuring radar, shows the complexity and the efficiency of naval developments. By diorama, by model, by actual ship equipment, the visitor is shown the fleet. The "Combat Information Center" is shown for the first time. Here the parting table automatically traces the course of the ship, while information is pouring in for coordination from the radar rooms, scout planes, and picket boats. All equipment, including the mast gyro-compass is operated and demonstrated at regular intervals. Highlight of the exhibit is the ***radar*** section. A short movie explains the fundamental points, after which the visitor may see the radar scopes in operation, showing the patterns formed by shipping on Lake Michigan, by the arrival and departure of planes at the airport, and by other phenomena in the Chicago area.

In a mezzanine room, midway between the aviation balcony and the main floor, is a large lounge which illustrates the contributions of science and industry to the development of the ***American home.*** The commodious lounge area, done in sweeping modern lines, has in its four corners room-size settings of the American living room in 1886, in 1898, 1912, and 1927, embodying the introduction of electric lighting, the telephone, radio and the like into the story of a typical family of a small middle-western town, as told by Sears, Roebuck and Company. The history of merchandising in the United States is presented in a series of vivid dioramas. In the area adjoining, Sears-Roebuck is installing a laboratory showing how consumer goods are tested.

South of the Sears exhibit, are eight scale-models of ***"Homes for Tomorrow,"*** presented by the Ladies' Home Journal. The models, com-



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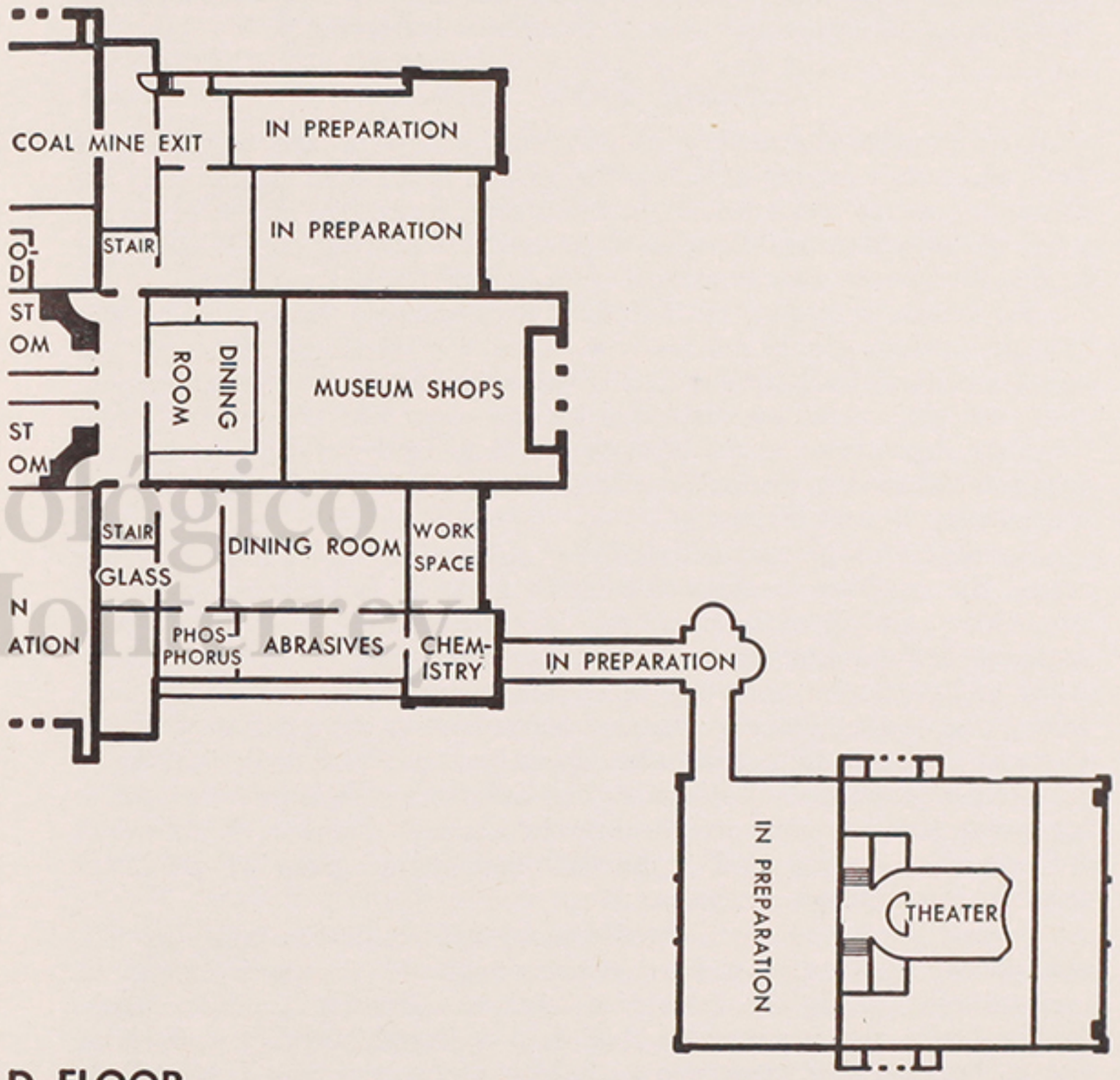

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plete in every detail, were designed by eminent architects to show how simplicity can be combined with comfort and individuality in pre-fabricated homes.

A lounge occupies the South Court Balcony. This is a memorial exhibit of ***A Century of Progress,*** Chicago's world fair of 1933 and 1934. This includes a large painting of the Hall of Science lighted normally as in daylight and flashing night lights every thirty seconds, a pictorial history of the preparation of the fair grounds and the demolition of the fair, and a map and view of the fair in full swing.

Ground Floor Exhibits

Graphic arts, engineering construction, chemistry and a portion of fuels and metals are presented on the ground floor. Also located here are the dining rooms and some of the other service features of the Museum.

The ***Graphic Arts Section*** is devoted to showing the development of man's efforts to express himself by means of the written word.

An alcove, presented by Theodore Regensteiner, shows on one side the earliest hieroglyphics carved on stone. On the other side, an old monk is seen at his laborious task of copying manuscripts in his scriptorium, the only means by which the written word was preserved through the Dark Ages, prior to the birth of printing. Bridging the gap between that and the modern period, is a hand press of the last century, at work reproducing zinc etchings.

By means of up-to-date operating equipment, the visitor may see traced the complete process of modern printing production, from the preliminary setting of type on the linotype and by hand to the final stitching and binding of a publication. One series of exhibits is devoted to lithography, showing the steps involved in reproducing a four-color print of the Museum. Another series follows the process of photo-engraving, demonstrating all the operations performed in making a full-color reproduction of an artist's original picture. A huge rotary printing press, formerly used in printing the Chicago Tribune, is shown in full rumbling motion and a detailed explanation given of the steps required in printing a newspaper.

Beyond the printshop, is the ***Forestry*** exhibit. Silviculture, logging, sawmilling, and lumberyard activities are shown. An early American carpenter shop is shown alongside a modern, operating home workshop. In this section also is a wooden shoe shop, a Danish wood-carver's shop; also rubber and cork trees, and an exhibit of live termites showing how they destroy timber.

The Marine Room traces in exquisitely executed models the development of shipbuilding from the all-wood, butterfly-doweled Egyptian sailing vessel, through the Phoenician galley, the Chinese junk, the ships of the Columbus fleet, the great East India vessels, the Black Ball packet, the whaler, the graceful clipper, the four-masted bark, the schooner, the

American river boat, to the modern passenger liners and fighting ships of today. A gyroscopic stabilizer is operated regularly and an operating model shows how a vessel is drydocked.

Natex, or naval aviation training exhibit shows how naval fliers are trained for combat roles, and displays many of the revolutionary devices used for that purpose. In the gunairstructor, the student sitting in the cockpit must fly his plane, bring the enemy into range, and watch the horizon to see if he dives, climbs, or banks. Other equipment shown includes the primary flight trainer, the trace projector trainer, the panoramic gunnery trainer, the automatic rater, and the Link trainer for instrument flight.

In the section adjoining, ***Bomber Mission,*** a British exhibit, takes the visitor for a bombing trip over enemy territory.

The ***Engineering Construction Section*** demonstrates the fundamental principles of engineering and their application to human needs down the ages. Famous bridges and types of bridge construction found throughout the world are on display. The evolution of road-making is traced by models of historic roads, such as the famous Appian Way of ancient Rome. There is also a section of the original Las Cruces trail, over which the visitor may walk. An operating model of Boulder (now Hoover) Dam visualizes the workings of a huge reclamation project.

Principles of safety are impressed upon the public by a colorful display of historic fire-fighting equipment including old Number 17 fire engine, the horse-drawn "flower pot" which helped to fight the devastating Iroquois Theater and Stock Yards blazes in the early days of Chicago, now shined and trim, just as it stood in the days of its use.

At the foot of the southeast stairwell, is the ***Microworld Theater.*** Here, at intervals each day, a performance is given in which tiny, living organisms are magnified to enormous proportions and projected on a screen. Among the star performers is a two-headed worm. In many of these little animals all the bodily functions of any animal, locomotion, respiration, digestion, reproduction, etc., are visible. The exhibit is presented in cooperation with the University of Chicago. The program is changed at regular intervals. Teachers may make arrangements for bringing their biology and physiology classes to Microworld, when attending in a group.

The ***Chemistry Section*** presents a series of exhibits to show the application of chemistry to industry. Industrial uses of gas and the properties of glass round out the demonstrations, many of which may be operated by the visitor by means of a push-button mechanism.

An exhibit by the Victor Chemical Works tells the story of phosphorus and the many phosphates which are used in homes and industry. An animated flow diagram on the wall above shows the processes by which these substances are obtained. Lighted dioramas and panels show many of the uses. Of especial interest is a modern kitchen, with phosphorus-bearing products and utensils spotted out in fluorescent light—biscuits in the oven,

stainless steel, dye in the window curtains, free-flowing salt, soaps and soap powders, matches, and cereal foods.

The story of abrasives is told in an exhibit sponsored by the Carborundum Company, including the background of discovery, methods of production and many uses. A secondary room in the abrasives section shows the more unusual uses of the hard, gritty substances employed in grinding and finishing, such as the making of heating elements, heat-resisting furnace walls, and porous tubes from which air flows in tiny bubbles to aerate and assist in cleansing of sewage in disposal plants.

In the rooms beyond, there are numerous exhibits which demonstrate many fundamental chemical and physical characteristics of substances as well as some of the techniques used in chemical investigations. Among the dynamic exhibits, a reaction is demonstrated which produces a temperature of 3000°C in a few seconds. Other reactions produce beautifully colored solutions, and dazzling crystals are demonstrated growing under different conditions, etc.

Stairwell Exhibits

Each of the four stairwells houses an interesting exhibit. In the northwest one, there hangs a free-swinging pendulum, attached to the Museum's roof. Murals on the walls tell the visitor how Foucault proved by the use of such a pendulum that the earth rotates on an axis.

In the southwest well is shown a typical ore crusher. In the southeast well a gate valve is installed. These control the flow of water in canal locks, reclamation projects, municipal water systems, large industrial plants, and superpower generating stations. The northeast stairwell contains a wood model of the Golden Gate Bridge tower, one-seventeenth actual size.

Special Events

At certain times, lectures, pageants and other special events are scheduled. These will always be listed on the bulletin board at the information desk. Each year, for the first two weeks in December, a Christmas festival is held, depicting the Christmas traditions of other lands. It is called "Christmas Around the World."

How to Reach Museum

Illinois Central Suburban Trains to 57th Street Station.

Chicago Motor Coach Busses Nos. 1, 2 and 4 to Museum door.

Street cars on Stony Island Ave. to 57th Street.

Elevated trains to Jackson Park. At end of line, free transfer to street car going north to 57th Street.

The Museum is located at 57th Street and Lake Michigan. The telephone is Museum 1414.