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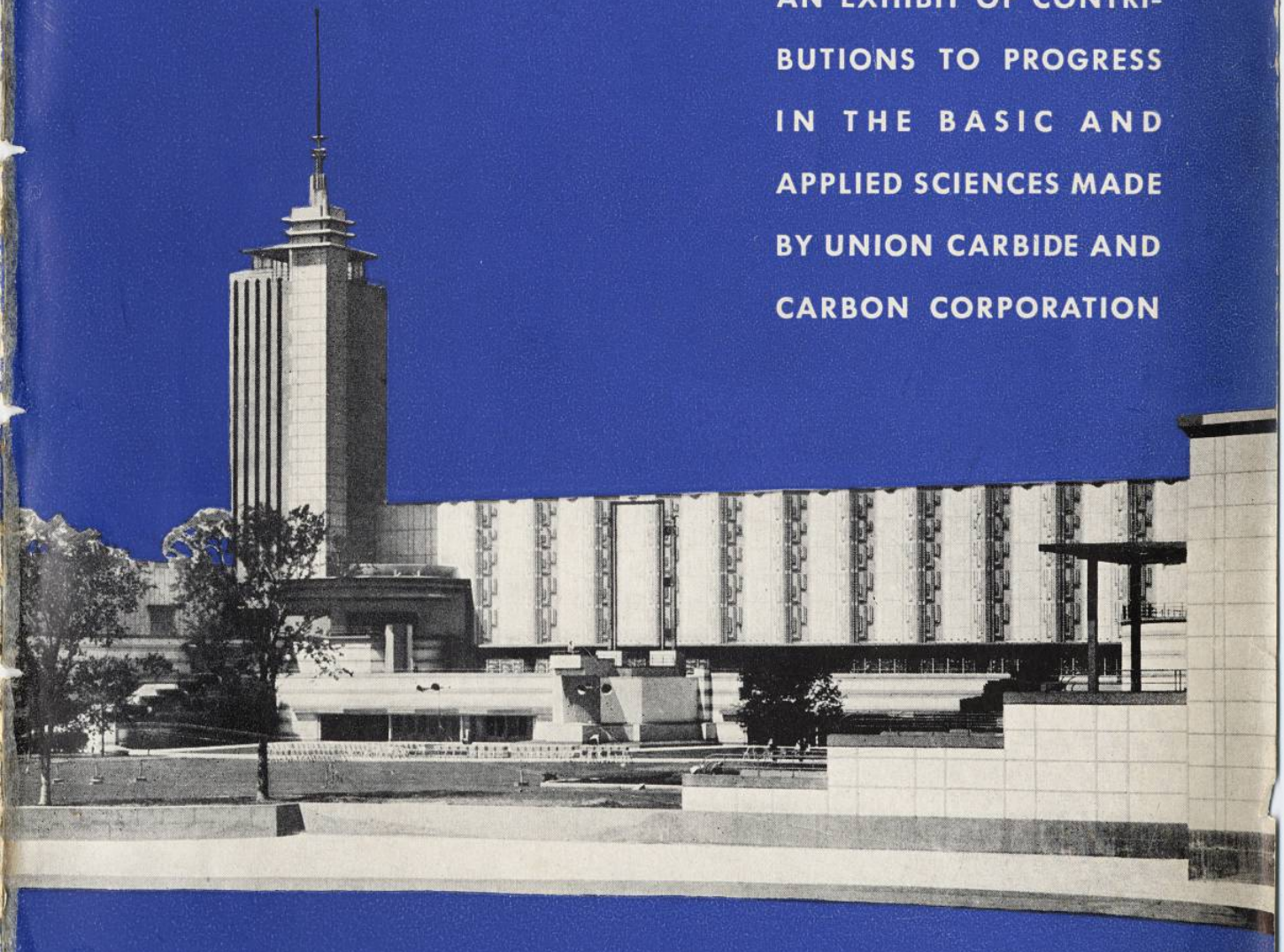
AN EXHIBIT OF CONTRIBUTIONS TO PROGRESS IN THE BASIC AND APPLIED SCIENCES MADE BY UNION CARBIDE AND CARBON CORPORATION



GIANTS OF THE NEW AGE

UNION CARBIDE AND CARBON CORPORATION

30 East 42nd Street, New York

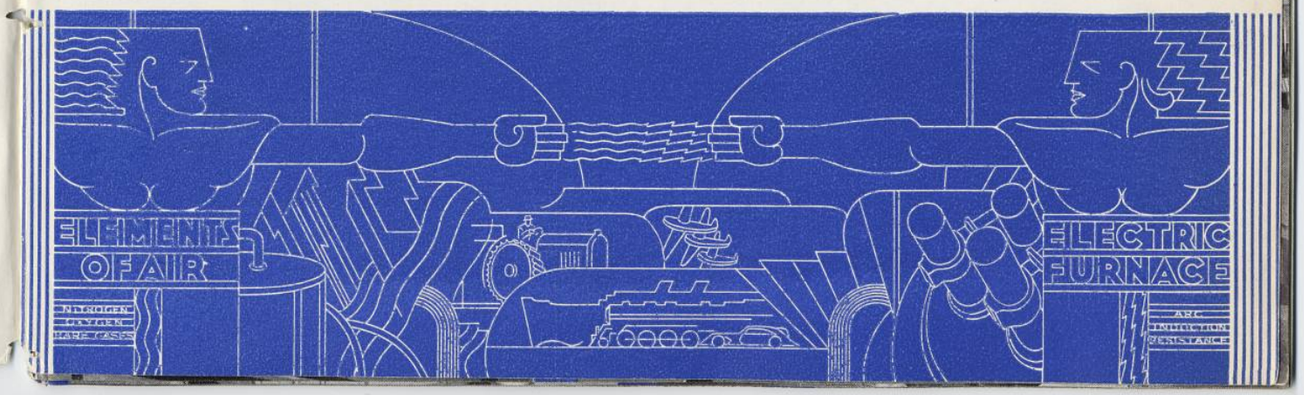
UCC

Beneath the surface of modern life, the gigantic forces of Science move onward quietly, steadily. There is no fanfare to herald their advance. To the great majority of people, scientific progress from day to day is almost imperceptible. Yet the changes wrought in the past twenty years and being wrought today are so vast as to stagger the imagination.

Because of the important part played by Union Carbide and Carbon Corporation in advancing the Basic and Applied Sciences, exhibits of the Corporation occupy a prominent place on both the main and ground floors of the Hall of Science—magnificent central structure of A Century of Progress. The Basic Science Exhibits sponsored by the Corporation have been prepared by, and are being operated under the care of the Exposition authorities. These offer visual demonstrations of scientific progress in two fields—the practical utilization of the elements of air, and the development of the electric furnace—both of which are closely allied with the activities of Union Carbide and Carbon Corporation. The results of such progress in terms of actual manufactured products and services to industry are shown in the Applied Science section, on the floor below.

On the pages in the center of this booklet are shown floor plans of the exhibits for your convenience in viewing them now and recalling them later.

Union Carbide and Carbon Corporation welcomes you to A Century of Progress. Attendants on duty in the Corporation's exhibit are cordially ready to answer your questions, and to help make your visit to the Hall of Science both enjoyable and memorable.



BASIC SCIENCE EXHIBITS . . . . main floor of the Hall of Science

THE STORY OF AIR

The air which we breathe is such an intimate part of our daily life that we seldom give it more than a momentary consideration. We realize in a general way that our very existence is dependent upon a constant supply of air, and that air is necessary to make our fires burn. But of the modern uses of air as a raw material of industry we have little knowledge.

To our unaided senses, air appears to be a simple substance. It was only about 150 years ago that early scientists discovered that air was really a mixture of several gases. About 1780, Lavoisier, in France, showed that about one-fifth of the air consisted of the element, oxygen; and that oxygen was the active constituent of air, supporting life and combustion.

Air Is a Mixture of Gases

The remaining four-fifths of the air does not support life or combustion, and consists mainly of the element nitrogen. This was all that was known of the composition of air until the English scientists, Rayleigh and Ramsay, in 1894 to 1898 discovered that certain other elements, the rare gases, were present in very small amounts in air. These rare gases are argon, neon, helium, krypton and xenon.

During the past thirty years, methods have been developed whereby the various elements in the air can be separated on a commercial scale, and the production and utilization of these gases have given rise to a number of important industries. The gases in the air are separated commercially by the liquid air process, developed by Linde in 1895. It is interesting to note that the liquid air process involves the lowest temperature used industrially—about 300 degrees below zero, Fahrenheit.

Some aspects of this extremely low temperature are shown in the Basic Science exhibits, where a teakettle filled with liquid air boils on a cake of ordinary ice, and in the Linde Liquid Air Demonstrations on the floor below.

Oxygen Most Important Commercially

Of the gases thus obtained for industrial purposes, oxygen ranks first in importance. The oxy-acetylene process is widely employed in the welding and cutting of metals. The therapeutic use of oxygen for patients whose respiration is impaired has increased rapidly in the last few years.

Nitrogen from the air is put to work in many industries where an inert atmosphere is needed, and in other ways.

The rarer gases, such as neon, are used in colored luminous signs and for various scientific work. Helium is well-known, of course, as a non-flammable lifting gas for balloons.

Entering the exhibit from the Great Hall, one sees first, on the right, a diorama of the laboratory of Lavoisier, the great French chemist, who gave the name, oxygen, to the active constituent of the air. Opposite, the phenomenon of a teakettle, boiling on a cake of ice, is shown.

Air Is Made Interesting

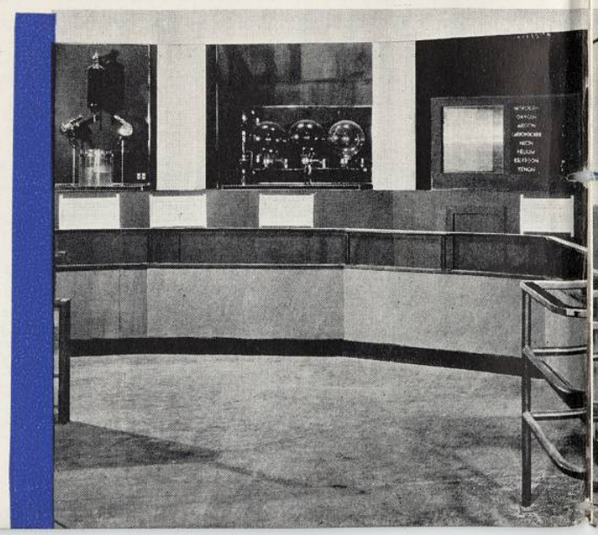
The first display in "The Story of Air" illustrates the relative proportions of the gaseous elements in the atmosphere. The huge glass globe at the right represents nitrogen, 78 per cent of the total. Oxygen, next in volume, is 20.7 per cent, and so on to the rarer gases, present in almost infinitesimal quantities.

How Air Is Liquefied

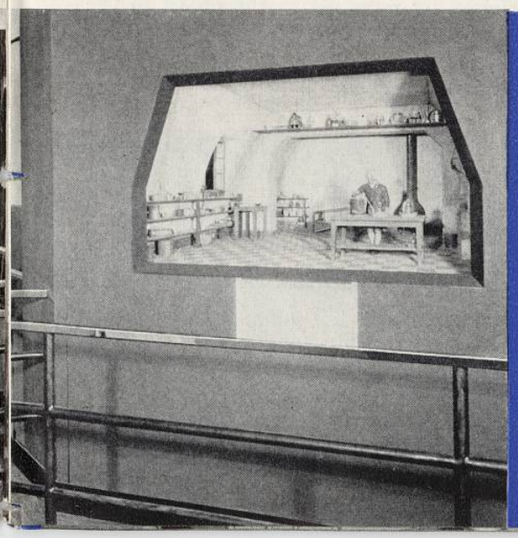
Four of the displays illustrate the fundamental principles which govern the liquefaction of air or any other gas. These show how lowering the temperature sufficiently will convert a gas to a liquid or even a solid; how increasing the pressure may have the same effect if the gas is below a certain temperature, known as the critical temperature; and how a cooling effect is produced by sudden expansion of a compressed gas.

Interesting examples of the industrial and therapeutic use of oxygen and other air products are shown in the Applied Science exhibits.

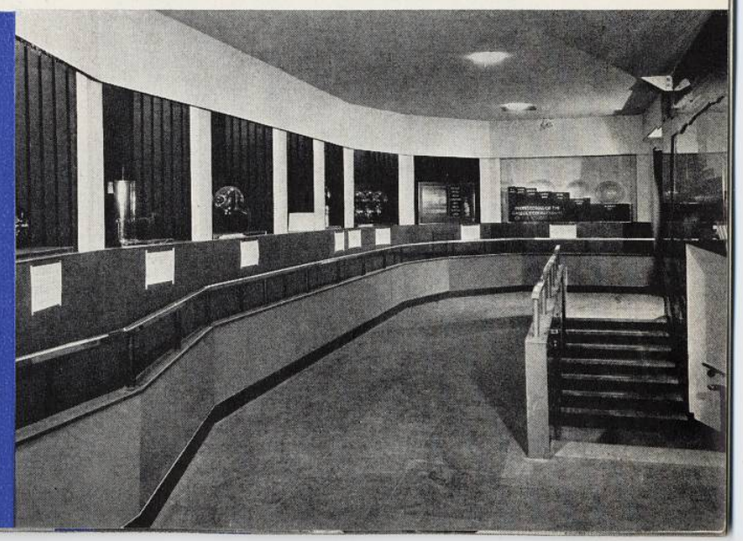
"The Story of Air" begins with the diorama of right in this illustration. At the left are several



Lavoisier's laboratory, shown at the of the other displays in this group



In these displays, light, color, and motion aid in effectively dramatizing "The Story of Air"



THE STORY OF THE ELECTRIC FURNACE

Until quite recently the highest temperature available in commercial furnaces was about 2500 degrees Fahrenheit, obtained in a combustion furnace operating under forced draft. Since the beginning of the present century, the development of the electric furnace has made furnace temperatures of over 6000 degrees Fahrenheit available for industrial use.

As these temperatures are more than twice as high as those previously obtainable it is easy to understand why the electric furnace has made possible the manufacture of products hitherto unknown.

There are three general types of electric furnace: the arc furnace; the resistance furnace; and the induction furnace.

Arc Furnaces

The arc furnace utilizes the principle familiar to every one in the arc lamps used for street lighting. A powerful electric current passing between carbon electrodes (or between the electrodes and the material to be melted) forms an intensely hot arc which melts the charge in the furnace.

Arc furnaces are used to manufacture:

Calcium carbide, from which acetylene is generated for use in oxy-acetylene welding and cutting of metals, farm lighting and mine lighting and in the manufacture of chemicals.

Ferro-alloys and special metals such as ferrochrome, ferrosilicon, ferromanganese and many others used in the manufacture of steel alloys and non-ferrous alloys.

Abrasives of the alundum type used as grinding wheels, whetstones, etc.

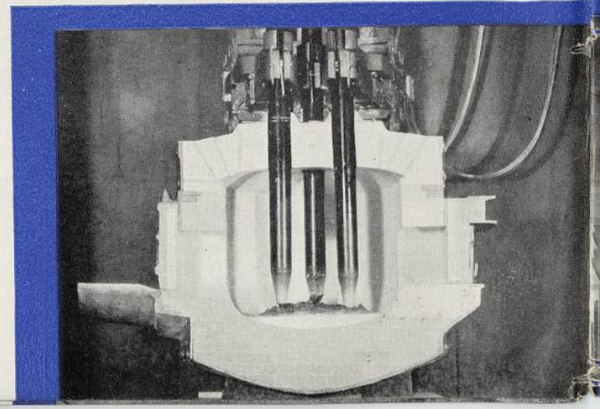
Phosphorus for match manufacture, and phosphorus compounds for food products and cleaning compounds.

Arc furnaces are also extensively used for melting steels and other metals and alloys.

Resistance Furnaces

Industrial resistance furnaces are identical in principle with the household electric iron or electric range. Electricity is simply converted into heat by passing through a suitable resistance. In some instances the material in the furnace charge forms the resistance and the heat is developed right in the charge. In others, resistance elements set in the furnace walls develop the heat, which is transferred by radiation to the object in the furnace to be heated.

This cut-away model of an electric arc furnace is built to show the interior construction



Resistance furnaces are used to produce:

Graphite products such as electrodes for arc furnaces and electrolytic cells, flashlight battery electrodes, brushes for motors and dynamos, graphite for lubricants.

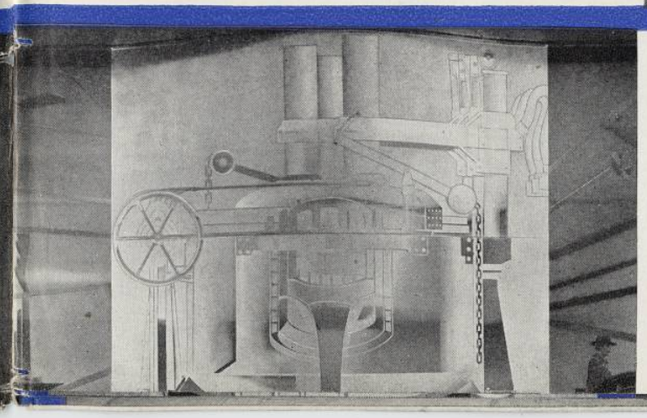
Carborundum, used for abrasive products such as whetstones, grinding wheels and polishing powders, and as a refractory.

Induction Furnaces

In the induction furnace, an alternating current of high frequency is applied to the primary coil surrounding the metal to be heated but not in contact with it. The metal itself acts as the secondary. And the high frequency current in the primary coil induces such a heavy electrical current in the secondary that the metal heats rapidly and melts.

The induction furnace is used for melting brass and non-ferrous alloys, special steels and other metals and alloys where contact with carbon is to be avoided.

An artistic motif is achieved by an electric arc furnace etched on stainless steel



The panels of engraved steel at the right of this group of exhibits portray five scientists who have contributed to the development of the electric furnace: Davy, Siemens, Moissan, Acheson and Heroult. There are eight sections of the display proper, three of them devoted to the arc furnace, two to the resistance furnace and three to the induction furnace. Each of these groups contains exhibits demonstrating the scientific principle involved. Other displays show practical uses of the electric furnace. There is a cross-section model of an arc furnace, showing how steel is melted; a small working demonstration of the manufacture of calcium carbide; and a scale model of one of the huge resistance furnaces used in the manufacture of carborundum.

Further interesting displays of electric furnace products and their applications will be found in the Applied Science Exhibits.

In these displays the construction and operating principles of electric furnaces are made clear

APPLIED SCIENCE EXHIBITS . . . ground floor of the Hall of Science

The Applied Science Exhibits, connected by a central stairway with the Basic Science displays on the floor above, are designed to present, swiftly and graphically, a broad picture of the activities of Union Carbide and Carbon Corporation.

Through its more than thirty subsidiary companies, the Corporation manufactures and markets a vast diversity of products. These range all the way from such familiar trade-marked articles as Eveready Flashlights and Batteries to ferro-alloys used in the making of steel, and synthetic organic chemicals for the textile and other industries.

Broadly speaking, the business of Union Carbide and Carbon Corporation is to link the discoveries of pure science to the purposes of practical industry. Perhaps no single organization in the world has contributed a greater variety of materials and products to modern industrial advancement.

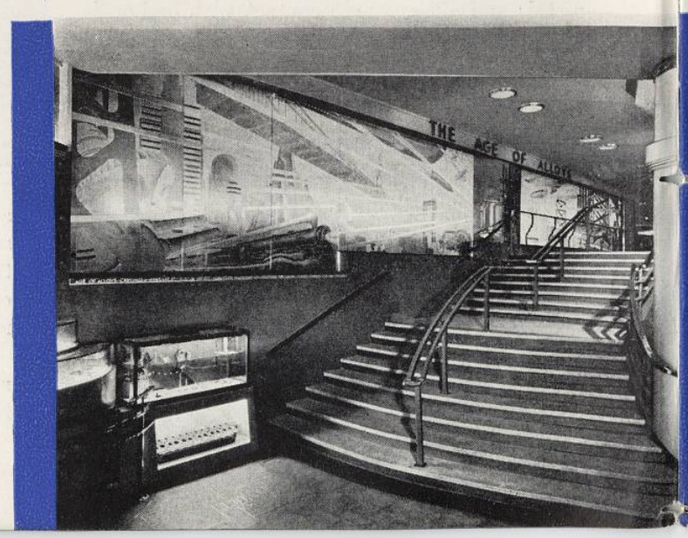
Research Points the Way

Every step in the manufacture of these products involves the application of scientific principles. All these activities are guided constantly along progressive lines through scientific research. Union Carbide and Carbon Research Laboratories, Inc., a subsidiary maintained by the Corporation is recognized throughout the world as being in the first rank of industrial research organizations. Here are developed the basic science discoveries which through the medium of applied science become the new product or the new industry of tomorrow.

Symbolizing the development of the electric furnace and the products of air with their widespread influence on industry, are the huge steel murals which decorate the stair-head. These are the first decorative panels of this size ever engraved on stainless steel.

Below, at the right of the stairs as one descends, is a still larger mural of glass engraved and colored, and illuminated through the edges and from both sides. With its center panel of steel, this decoration is 55 feet in total length—by far the largest carved glass mural of its kind in the world. It pictures the progress of industry and transportation brought about by lighter, stronger metal-alloys—themselves made possible by the terrific heat of the electric furnace.

Along one side of the central stairway is this magnificent glass mural, the largest of its kind in the world, visualizing "The Age of Alloys"

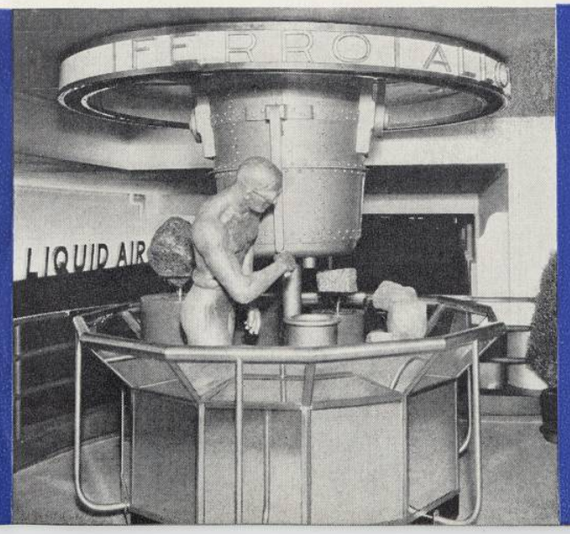


THE AGE OF ALLOYS

Few people, not engaged in manufacturing or metallurgy, can appreciate the tremendous significance of alloys in modern life. We see occasional evidences of their uses in such every-day products as the stainless steel knives and other utensils in our kitchens, and the metal trim of our automobiles. But we may not realize that all transportation—rail and highway—water and air—is being made swifter and safer by the extra strength and lightness of alloys; or that they are rapidly revolutionizing machinery, architecture, and even the very furniture in our homes.

Ferro-alloys and alloying metals of various kinds are produced by Electro Metallurgical Company, a Union Carbide and Carbon Corporation unit, under the brand-name of "Electromet."

On the balcony, surrounded by samples of ferro-alloys used in making steel, is this life-size figure of a steel-worker



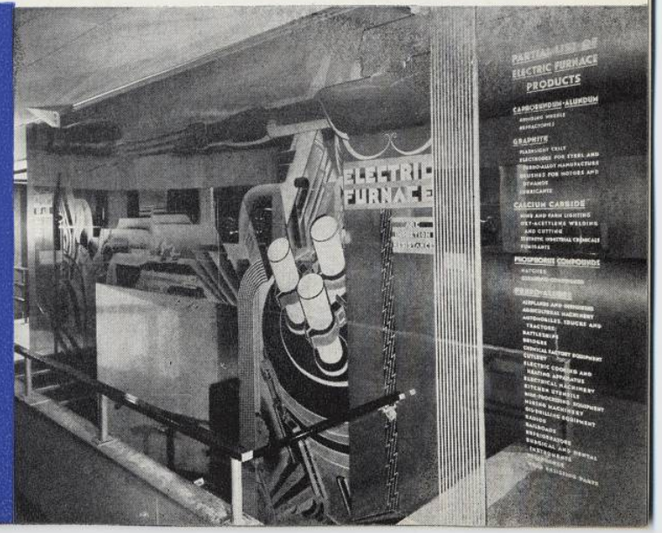
These alloys are combined with the molten steel in the great steel plants. Different alloys produce a variety of desirable qualities in steel, such as increased hardness, toughness, corrosion resistance, or strength. Practically all steel produced today is purified or improved by treatment with ferro-alloys.

A Glorified Steel-Worker

On the balcony between the Basic and Applied Science Exhibits, is a unit which shows a steel-worker pouring the molten metal from a giant ladle. Mounted in a semicircle around him are six actual samples of ferro-alloys each revolving and each bathed in colored light.

"The Story of Alloys," a graphic presentation of the effects of alloys in steel, is shown in interesting and instructive motion pictures and a display below the balcony.

Beautifully engraved stainless steel murals symbolize the development of the electric furnace and the products of air



HAYNES STELLITE

Near the foot of the stairway, on the south side of the Applied Science Exhibit, is a group of displays illustrating characteristics of the interesting metal alloys manufactured by Haynes Stellite Company, another unit of Union Carbide and Carbon Corporation.

Haynes Stellite is a non-ferrous alloy of chromium, cobalt and tungsten. It has the peculiar and valuable property of "red hardness" which means that it retains its hardness even at a red heat. It has other desirable properties also, being resistant to wear, abrasion and corrosion.

Haynes Stellite is widely used as an edging or hard-facing material for plow shares, oil well drilling tools, excavating, mining and road building equipment, wearing parts in the cement and brick industries and for parts which must resist both heat and abrasion in the iron and steel industry and in the manufacture of machinery. The day may not be far off when your automobile motor will have Haynes Stellited exhaust valve seats and the expense of valve grinding will be a thing of the past. Haynes Stellite is also made into cutting tools and for years has been the standard material for many machining operations.

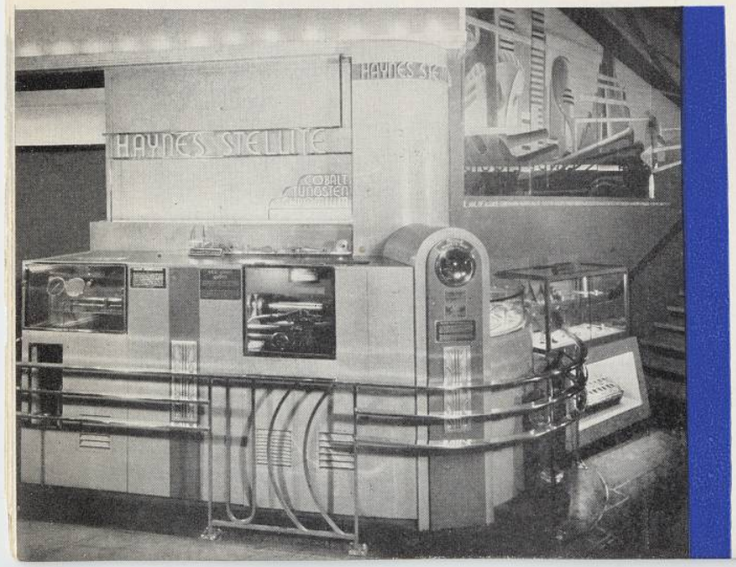
Resists Wear and Cuts Red Hot

One unit of the exhibit demonstrates the low rate of wear of Haynes Stellite as compared with ordinary steel. Bars of these two materials are held against a swiftly revolving grinding wheel and the rates of abrasion are shown on dials at the left. The steel wears away seven times as fast as the Haynes Stellite.

Another unit shows a Haynes Stellite cutting tool, kept at red heat and still effectively cutting a steel billet on an automatic lathe. The temperature of this tool is maintained at approximately 1300 degrees Fahrenheit—a heat which would destroy the usefulness of the hardest tool steel.

In the third unit the acid resistance of Hastelloy, a Haynes Stellite product, is demonstrated by immersion in a hydrochloric acid bath. A steel wire of similar size is eaten away in one day, while it is estimated that the Hastelloy wires would not be destroyed before the year 2000 A.D.

Spectacular demonstrations of wear-resistance and red hardness of Haynes Stellite focus attention on this unique alloy



EVEREADY PRODUCTS

EVEREADY FLASHLIGHTS and BATTERIES

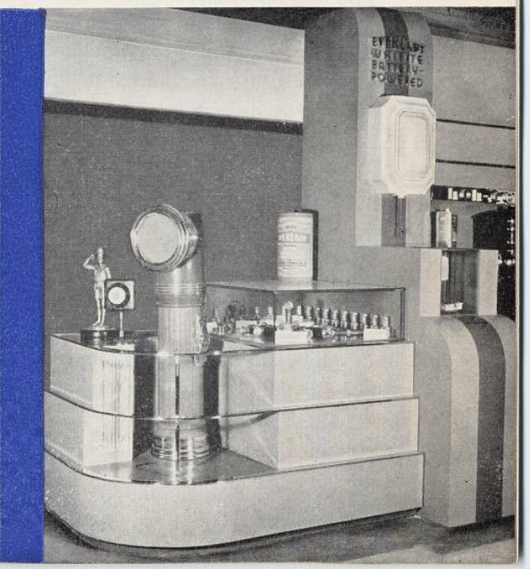
National Carbon Company, Inc., manufacturers of the numerous products which bear the Eveready trade-mark, is probably better known to the general public than any other unit of Union Carbide and Carbon Corporation. There is hardly a home in America which does not have in everyday use one or more articles which bear this famous trade-name.

Flanking the Eveready group at either end are mammoth reproductions of the Official Girl Scout and Boy Scout Eveready Flashlights. Each of these displays is equipped with a voice-controlled motion picture apparatus. A microphone stands beside the huge lens of the flashlight model. When one speaks into the microphone, the picture flashes into action on the opaque glass of the flashlight. The magic words which start the film are "Eveready Boy Scout Flashlight" for one model and "Eveready Girl Scout Flashlight" for the other. These motion pictures show scenes of scout camp life and emphasize in a most dramatic way the many practical uses of these handy lights.

Other Eveready Flashlight models, from the tiny penlite and vest pocket flash up to the big five-cell model which is capable of clearly illuminating objects 3,000 feet away, are arranged in glass cases in the same sections of the exhibit.

The wide variety of useful products carrying the familiar Eveready trade-mark are grouped in this attractive display

This large Boy Scout Eveready Flashlight tells its own story with pictures



EVEREADY WALLITES AND ELECTRIC CANDLES

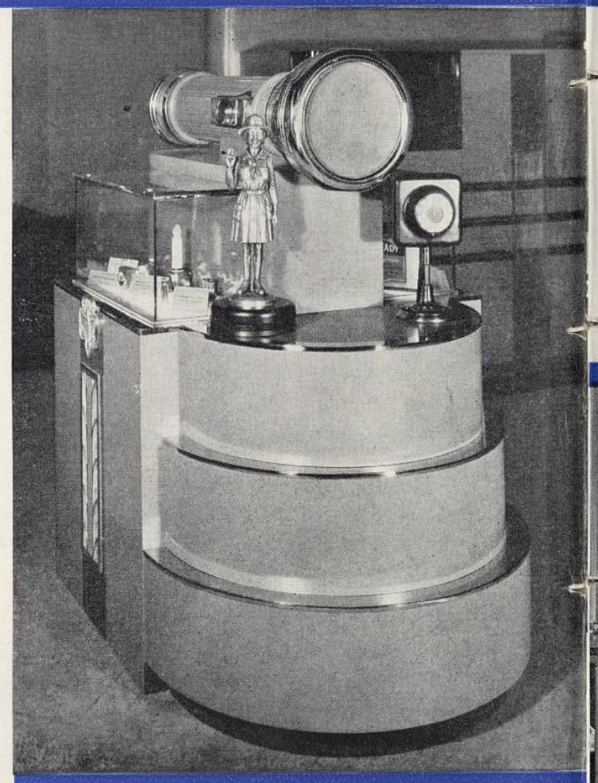
Mounted on wall panels are giant reproductions of two other Eveready wireless electric lights—the Eveready Wallite and the Eveready Electric Candle. The Wallite is especially useful for illuminating closets, stairways, and the dark corners in both wired and unwired homes. It is powered by Eveready extra long life Flashlight Batteries and needs no wires or connections. A pull of the chain switches it on and off, and in the larger, three-cell model there is an automatic time switch which extinguishes the light after approximately 30 seconds.

Pick It Up — It Lights

The Eveready Electric Candle is a decorative and useful adjunct for the bedside table, bookcase, or telephone stand. It lights when you pick it up and goes out when it is set down. A soft, steady light is also available by pressing the switch in the base.

A part of the display is devoted to the many types of Eveready dry batteries for use in every type of light, in railroad signaling, in telephone systems, for powering radios and starting motor boats. National Carbon Company, Inc., is the world's largest manufacturer of dry batteries for every purpose.

The production of dry cells has required the development of highly specialized machinery and the introduction of the most improved methods for handling continuous quantity production. Quality and dependability are also prime considerations. Many thousand units are continually under test in a constant temperature laboratory at the Edgewater Plant, Cleveland.



At the magic words "Eveready Girl Scout Flashlight", a motion picture flashes on the screen in the lens of the giant model

EVEREADY AIR CELL "A" BATTERIES

On the opposite side of this giant battery a talking motion picture dramatizes the new era in rural home radio reception

Inside the south entrance doorway to the exhibit is a large reproduction of a new Eveready Battery which promises to revolutionize radio reception in rural sections. This is known as the Eveready Air Cell "A" Battery. It takes its name from the fact that it literally breathes oxygen from the air. Shipped dry, the battery is activated for service merely by filling with water. It is then ready to deliver its full quota of electric power.

A Full Year's Service

This type of battery replaces the cumbersome and expensive storage battery formerly used for "A" power, with a compact unit which operates without attention for 1000 hours. At three hours per day this is the equivalent of almost a full year's service.

All leading radio set manufacturers are now building Air Cell receivers which will give the rural home radio reception equal to that of the wired city home.

The Air Cell Speaks

In the rear panel of the large model battery shown in the display is a screen on which a talking motion picture is thrown. This movie illustrates in interesting fashion the advantages of radio to the farm family, and the myriad programs and events which can be heard by means of an Air Cell set.

The famous Eveready Layerbilt "B" Battery is also displayed in the same unit.

EVEREADY PRESTONE

One of the most important Eveready Products is Eveready Prestone, the leading permanent anti-freeze for automobiles. The story of Eveready Prestone is dramatically told in a series of three interesting displays which occupy the center of the southern wall of the exhibit. These three units demonstrate the three principal advantages of Eveready Prestone. In the center is a beautifully lighted reproduction of a polar scene with the aurora borealis flashing in the background. A stream of Eveready Prestone flows down a mountain of snow into an icy pool and thence to a tank below.

Through this picturesque representation of a polar scene, a constant stream of Eveready Prestone circulates freely at zero

Flows Freely Even at Zero

By means of refrigeration this tank is kept at a temperature of approximately zero, Fahrenheit, yet the Eveready Prestone circulates freely without the slightest tendency to congeal. This polar demonstration is doubly interesting due to the fact that Rear Admiral Byrd used Eveready Prestone for protecting his motor-driven sledges in the Antarctic regions, with the greatest success.

Another outstanding feature of Eveready Prestone is the fact that it prevents rust and corrosion in the cooling system. The display at the left shows two complete automobile engine blocks and radiators operating constantly under identical conditions. In one has been placed a solution of 40 per cent Eveready Prestone and 60 per cent water. In the other was placed plain water.

See What Happens

Part of the front of each cylinder block has been removed and replaced with a transparent plate, so that it is possible to see at all times the exact condition of the liquid that is circulating in the cooling system.

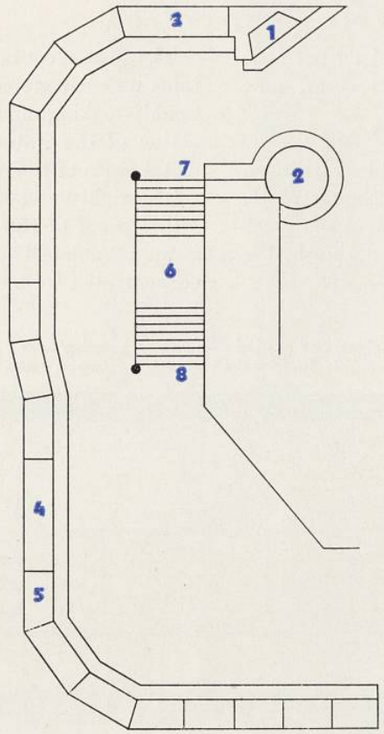
The system containing the Prestone solution retains its clear green color while in the other is a muddy-looking mixture—the result of the rusting action of the water on the cast iron and other metal parts of the motor.

The right-hand section of the display presents visual proof of the fact that Eveready Prestone is an economical anti-freeze. It is sold only in concentrated form.

These two automobile engines, one cooled with water, the other with a solution of Eveready Prestone, prove that Eveready Prestone prevents the formation of rust, a common cause of radiator clogging and overheating

FLOOR PLAN OF BASIC SCIENCE EXHIBITS

Main floor of the Hall of Science



1. Lavoisier Diorama

2. Liquid Air Experiment

3. Story of Air: Exhibits

4. Steel Panel: Developers of Electric Furnace

5. Story of the Electric Furnace: Exhibits

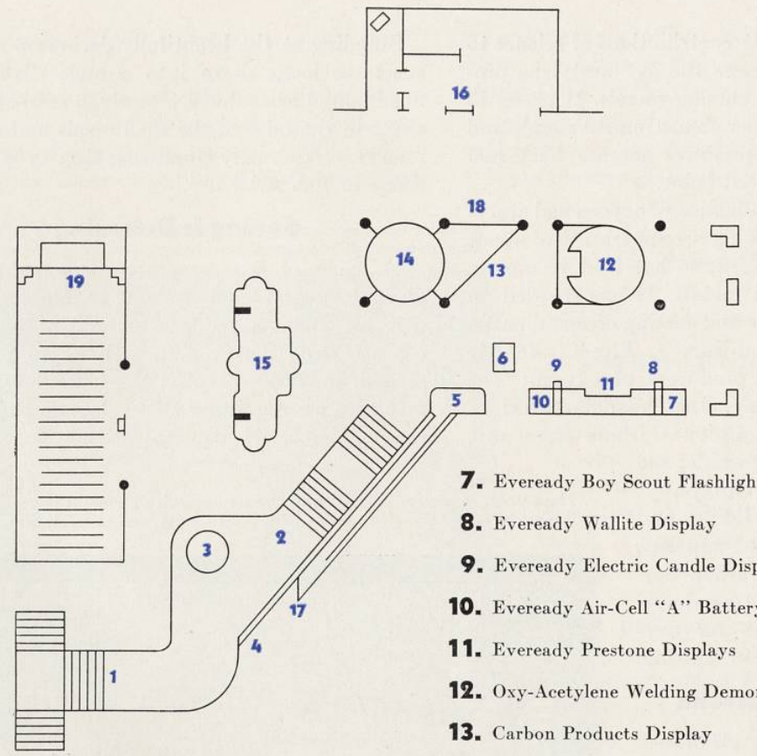
6. Stairway Downward to Applied Science Exhibits

7. Steel-Engraved Mural: Elements of Air

8. Steel-Engraved Mural: Electric Furnace

FLOOR PLAN OF APPLIED SCIENCE EXHIBITS

Ground floor of the Hall of Science



1. Stairway from Basic Science Exhibit

2. Glass and Steel Mural: The Age of Alloys

3. Electromet Exhibit: Ferro-Alloys

4. Motion Pictures and Display: Story of Alloys

5. Haynes Stellite Exhibit

6. Eveready Girl Scout Flashlight Display

7. Eveready Boy Scout Flashlight Display

8. Eveready Wallite Display

9. Eveready Electric Candle Display

10. Eveready Air-Cell "A" Battery Display

11. Eveready Prestone Displays

12. Oxy-Acetylene Welding Demonstrations

13. Carbon Products Display

14. Revolving Stage

15. Chemical Products Display

16. Vinylite House

17. Composite Model of Typical Corporation Plants

18. Map Showing Corporation's Distribution Facilities

19. Linde Liquid Air Demonstrations

OXY-ACETYLENE WELDING

One of the great contributions of science to modern industry is the oxy-acetylene process of welding and cutting metals. It places in the hands of the worker an instrument simple and easy to use which produces intense heat and focuses it at any desired point.

The controlled combustion of oxygen and acetylene gives a flame having a temperature of about 6300 degrees Fahrenheit, so hot that it rapidly melts all commercial metals. It has speeded up the production, repair and cutting of metal parts.

Through its subsidiaries, The Linde Air Products Company, producers of oxygen; The Prest-O-Lite Company, Inc., manufacturers of dissolved acetylene; Union Carbide Company, producers of calcium carbide; and Oxweld Acetylene Company, manufacturers of welding and cutting apparatus and supplies, Union Carbide and Carbon Corporation is the largest producer, of all the necessities for oxy-acetylene welding and cutting.

The Welding Arena

In order to present this branch of industry vividly and accurately, one of the largest displays in the entire Applied Science Exhibit is devoted to oxy-acetylene welding and cutting. The circular welding arena in which these demonstrations take place is at the northeast corner of the exhibit on the ground floor.

Standing at the beautifully decorated rail, the spectator looks down into a huge silver shell, floodlighted from above. Silently, a semi-spherical cover in the base of the shell opens and a workman is seen actually employing the oxy-acetylene flame in industrial use.

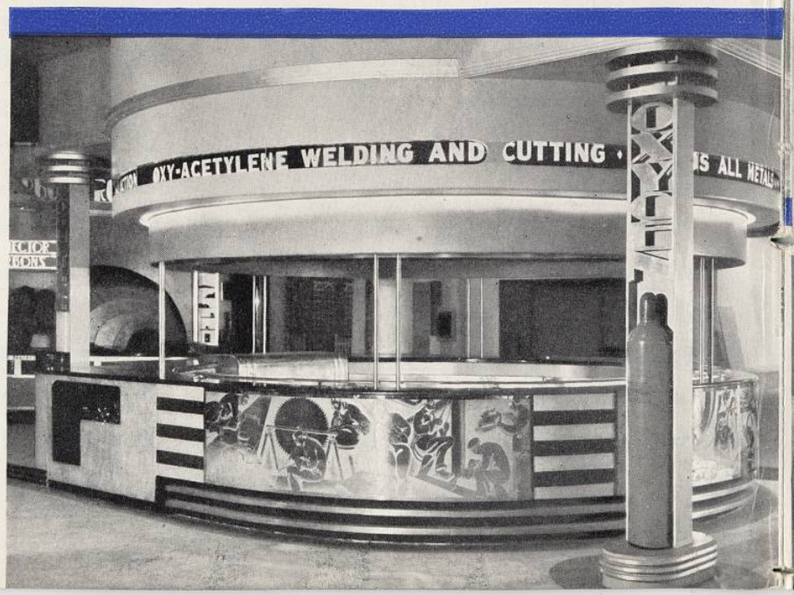
Seeing Is Believing

A cycle of four separate demonstrations is given during a period of about 15 minutes. These demonstrations include the four major uses of the oxy-acetylene flame: first, welding to produce; second, welding to repair; third, welding to surface with wear-resistant alloys; fourth, oxy-acetylene cutting. Each demonstration is followed by a short motion picture which shows other interesting applications.

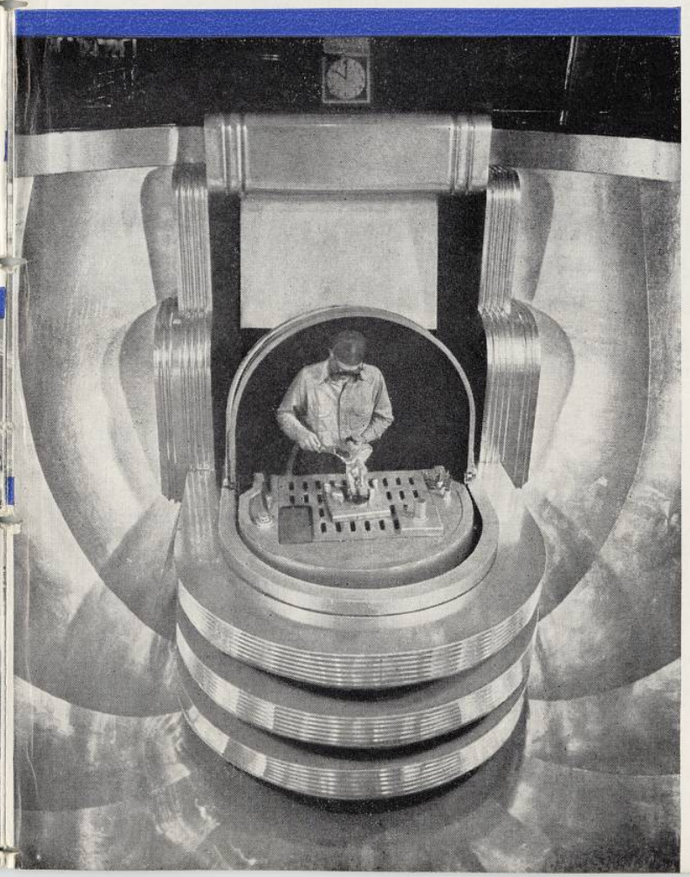
In the opening demonstration your attention is attracted by a workman welding aluminum spouts for coffee pots and teakettles. With amazing swiftness the stamped metal parts are united in one strong piece. The succeeding motion picture shows how these spouts are welded to the body of the coffee pot in the factory and then passes on to the others of the numerous manufacturing applications of oxy-acetylene welding.

Again the arena is lighted and you see the workman rebuilding a broken tooth in a gear-wheel. Under the terrific heat of the flame, the broken tooth is built-up with bronze until it becomes an actual unit with the original gear.

Here you can see for yourself how the oxy-acetylene process is used to make things, to repair things, to make things last longer, and to sever metal sections



Here is what the throng of interested spectators sees when watching one of the fascinating oxy-acetylene welding or cutting demonstrations



Longer Life for Metal Parts

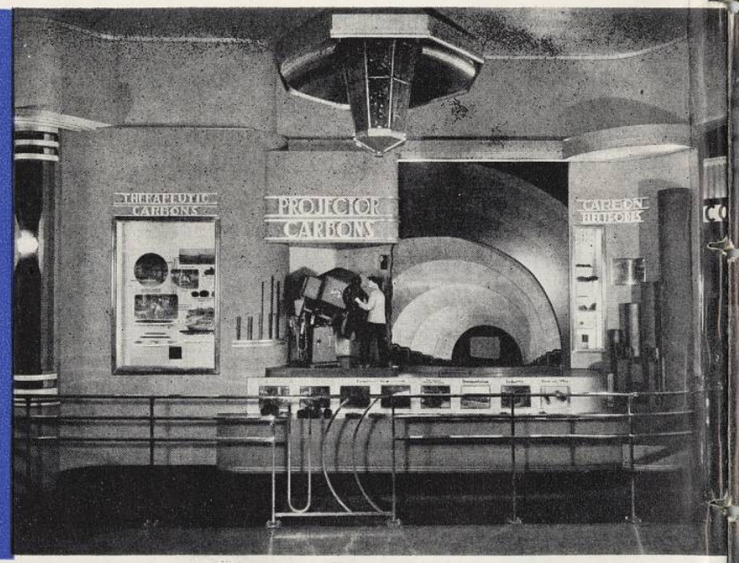
Even Haynes Stellite with its great hardness and heat-resisting qualities can be added to parts made of other metals by means of the oxy-acetylene flame. In the third demonstration the workman welds a wear-resistant layer of Haynes Stellite to the cutting edge of a plowshare.

The final demonstration in the cycle shows how steel is cut through by the oxy-acetylene flame as if it were butter being cut with a knife. This has become an extremely important factor in the cutting and shaping of steel in foundries, forge shops and many manufacturing plants and in the demolition of steel structures.

In a display case set in the side of the welding demonstration area are exhibited various types of welding and cutting blowpipes and regulators. These include several small-scale models of complete portable welding and cutting units.

CARBON PRODUCTS

Near the center of the northern side of the main aisle in the Applied Science Exhibit is an interesting display of Carbon Products. Its main feature is a miniature reproduction of the new Radio City Music Hall in New York, the world's largest and most modern theater. At the left is the motion picture operator's booth, with a model of a typical projection machine using a carbon arc for projecting the motion pictures.



A miniature reproduction of the new Radio City Music Hall, as viewed from the projection booth, is the outstanding feature of the Carbon Products display

Better Movies

It is largely through the research activities of Union Carbide and Carbon Corporation that carbon electrodes for this purpose have been brought to their present perfection, giving the intense, steady light needed for the proper showing of motion picture films. On the screen at the base of the stage, actual movies show the use and applications of projector carbons.

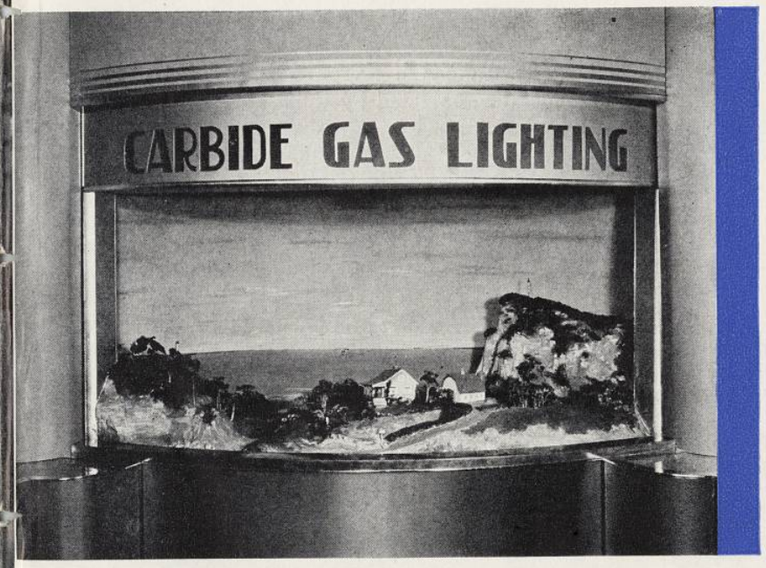
At the right of the display are sections of carbon electrodes of all sizes, from the huge cylinders used in the large electric furnaces to the tiny electrodes for flashlight batteries.

A display of therapeutic carbons occupies the left side of the exhibit and overhead is a large carbon arc lamp for artificial sun bathing.

Along the base of the display is a series of glass cases containing exhibits of the carbon brushes used in electric motors of all kinds.

Without carbon, the wheels of many industries would cease to turn; the manufacture of aluminum, steel, and many important alloys would be seriously handicapped; the generation of electric power on the present huge scale would be impossible, and our greatest agency for education and entertainment, the motion picture industry, would come to an end.

THE REVOLVING STAGE



When the light grows dim on this seacoast scene, signifying the approach of night, other lights appear at points which indicate the many uses of carbide gas

Adjoining the display of Carbon Products is a circular display in which four stages periodically revolve. These stages contain attractively lighted sets, demonstrating four important products. A synchronized voice explains each unit.

CARBIDE GAS LIGHTING

This diorama shows carbide gas lighting for farms and homes outside the city gas and electric areas. The scene is a pretty seacoast farm. As it first appears the time is still afternoon, then the light slowly fades and night comes on. Light appears in the farmhouse and barn, in the lighthouse and buoy in the harbor and in the airplane beacon on the cliff.

On the background of sky pictures flash on and off showing others of the varied uses of carbide gas for lighting. It has long been employed by miners for work under ground and in many other ways less familiar to the general public.

Stored Sunlight

Carbide gas, one of the most efficient and economical lighting materials known, is made in convenient generators from calcium carbide manufactured by the Union Carbide Company, a unit of the Corporation.

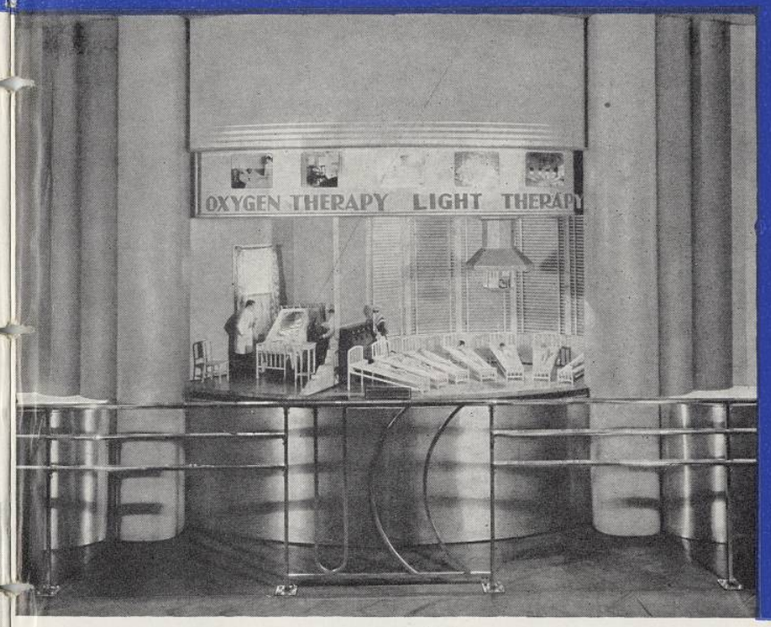
Calcium carbide releases its stored sunlight when water is added, forming then what everyone knows familiarly as carbide gas. Thirty-five years ago carbide gas began giving its clear white light to country homes. To-day it furnishes the convenience of modern light not only to farm homes, but also throws its penetrating beams far into the skies to guide the flight of airplanes, and far out over the seas to warn ships of rock-bound coasts.

Deep into the earth it is carried as well, so that miners may see to produce coal and minerals.

PYROFAX

As the Pyrofax stage moves into view, you notice an illuminated picture overhead which shows a tired housewife working over an old-fashioned range while her husband toils outside at the wood pile. On the stage an interesting contrast is presented. Here we see a Pyrofax equipped home, and standing before a modern gas range, the housewife turns a handle and instantly has a hot flame burning. In the background is her automatic refrigerator, operated by the same gas. Outside, the Pyrofax service man is just replacing one of the cylinders of Pyrofax gas in the outdoor cabinet. Pyrofax is genuine gas of exceptionally high heating power. It is compressed into cylinders holding 100 pounds of fuel—the equivalent of 5700 cubic feet of city gas. One cylinder lasts the average family two to four months, and does all the cooking at a cost of a few cents a day.

Pyrofax gas brings the convenience of gas for fuel to country and suburban homes, institutions and industrial plants located beyond the city gas mains



These scenes are typical of the modern hospital equipped with efficient oxygen therapy apparatus and with carbon arc solarium units for supplying artificial sunshine

OXYGEN THERAPY AND LIGHT THERAPY

The use of the Corporation's products in the treatment of disease has increased with great rapidity in the last few years. New and effective methods have been developed for oxygen therapy—the treatment of pneumonia, certain kinds of heart trouble, and other diseases by allowing the patient to breathe more oxygen than is ordinarily present in the air.

The ultra-violet rays produced by a carbon arc lamp are used to treat rickets, skin diseases, and some kinds of tuberculosis. This treatment has been approved by doctors and many hospitals now have sun rooms equipped with these lamps.

This section of the revolving stage shows two separate rooms in a hospital where oxygen therapy and light therapy are being practiced.

For Pneumonia

In the room at the left is a patient in an oxygen tent undergoing treatment for pneumonia. The doctor makes a note of the patient's condition and under his supervision, the nurse adjusts the regulator on the oxygen cylinder to supply the correct amount of oxygen. At the right a huge carbon arc lamp sheds artificial sunshine over a group of young patients.

From time immemorial the old family doctor prescribed for his patients "plenty of fresh air and sunshine". In this modern age this prescription still holds good and the doctors have gone a step further by making it possible to get these wonderful remedies by artificial means bringing "plenty of fresh air and sunshine" into homes and hospitals.

MILK IRRADIATION

The fourth side of the revolving stage shows a machine which irradiates milk with ultra-violet rays by means of a carbon arc.

Perhaps you do not know that milk contains much less vitamin D than it healthfully could. Science has discovered that the artificial sunlight created by a special carbon arc lamp can be utilized to increase the vitamin D content in milk about ten times or nearly 1000 per cent.

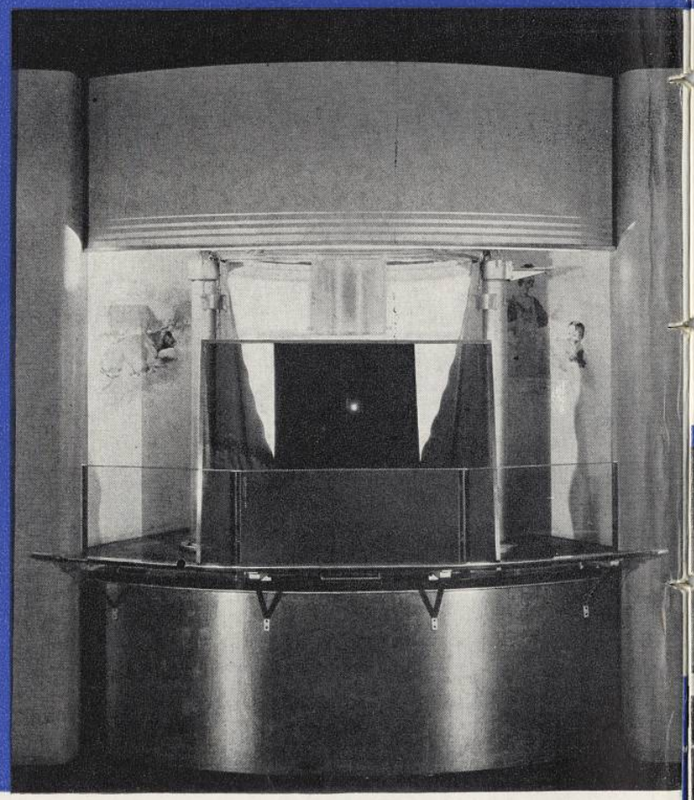
Adds Vitamin D

This method of milk irradiation is based in the discoveries of Dr. Steenbock of the University of Wisconsin. Its purpose is to supply a milk with extra high vitamin D content. The former method was to modify the milk with cod liver oil, but this was found to give the milk an unpleasant taste.

Irradiation with ultra-violet rays makes no change whatever in the taste of the milk, and exposure for only a few seconds to the rays of the carbon arc lamp gives the milk a uniform vitamin D content amply high for the proper antirachitic effect.

With the machines shown in this display it is possible to irradiate 1700 quarts of milk per hour. Dairies in nearly every city are now able to supply irradiated milk to their customers.

Your children need healthful irradiated vitamin D milk. You need it. Tell your milkman when you get home so that you and your family can immediately begin to enjoy the benefits of this health giving food—irradiated vitamin D milk.



In this machine, the vitamin D content of milk is greatly increased through exposure to the ultra-violet rays from an Eveready carbon arc

CHEMICAL PRODUCTS

Filling nearly all of the west side of the Applied Science Exhibit is a huge display featuring the many chemical products of one of the Corporation's subsidiaries, Carbide and Carbon Chemicals Corporation.

Through scientific research, this company has developed a synthetic chemical industry that is unique in the entire world.

The significant wording on this display states:

"SYNTHETIC CHEMISTRY SERVES ALL INDUSTRY"

This statement is borne out by the tremendous variety of materials and manufactured products shown in the display.

In the center of this display is a symbolic statuary group showing the research chemist, the

Around this central group of figures symbolizing the roles of the chemist in industry are displayed an amazing variety of synthetic chemical products

laboratory man, and the chemical plant man, with the chemicals resulting from their labors flowing downward and outward.

Serving the Automotive Industry

In the foreground on the east is a demonstration of the many ways in which synthetic chemistry serves the motor car industry. These are arranged in groups including such products as the well known, nationally advertised anti-freeze, Eveready Prestone; solvents for lacquers used in automobile finishes, and blending agents for high test gasoline.

The southern wing of the display includes a group of interesting and colorful exhibits portraying the service of chemicals to the textile industry. Many products of the Corporation are used as solvents and cleaning agents by textile manufacturers. Other products shown in this group are important in the manufacture of rayon and similar materials. Still others are used in the dyeing and printing of cloth.

As is shown in this section of the Chemical Products display, the beauty, color and finish of modern textiles owe a great deal to the recent developments in synthetic chemistry

The northern section of the display is devoted to plastic products. This includes displays of some of the many uses of Vinylite, a synthetic resin made by the Corporation.

Long-Playing Records

One shows the making of the new long-playing phonograph records. Others include such a variety of uses of this remarkable material as box toes for shoes, dental plates for false teeth, and a great number of other molded shapes.

At the rear or west side of the display is a demonstration of the manufacture of photographic film, in which synthetic chemistry plays an important part. Still other fields of industry are represented in other sections of the display. These show the uses of the Corporation's chemical products in checking insect pests, in sealing cellophane packages, in absorbing impurities with activated carbon, in making explosives effective in cold weather, and in the manufacture of cosmetic and pharmaceutical preparations.

In this section, an attractive display of Vinylite products, including phonograph records, and a great many other molded shapes, emphasizes the growing importance of plastics

VINYLITE HOUSE

We have seen in other exhibits the tremendous changes which have been brought about by the Age of Alloys. Now the world is at the threshold of what may be an equally important advance—the Age of Plastics.

A Preview of the Age of Plastics

Union Carbide and Carbon Corporation has pioneered experiments with synthetic molding compounds, made from basic materials similar chemically to acetylene gas. The history of vinyl resins goes back to 1838, when a French chemist, Regnault, first created them. Today, vinyl resin castings, as heavy as 150 pounds each, have been successfully produced by Union Carbide engineers.

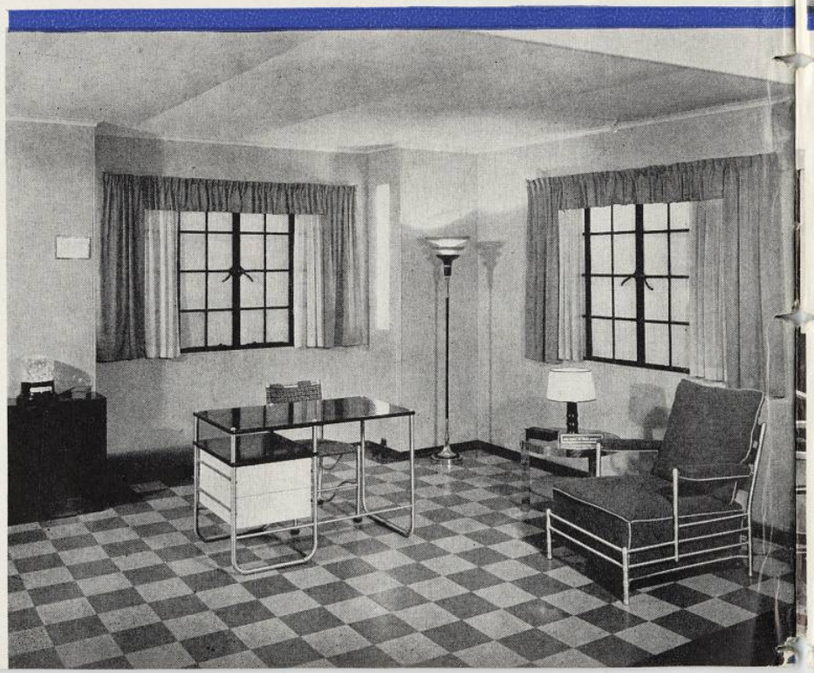
To demonstrate some of the possible uses of Vinylite the Corporation has constructed a house made largely of this material, across the corridor to the north of the Corporation's other Applied Science Exhibits. It consists of a living-room, kitchen, and bathroom.

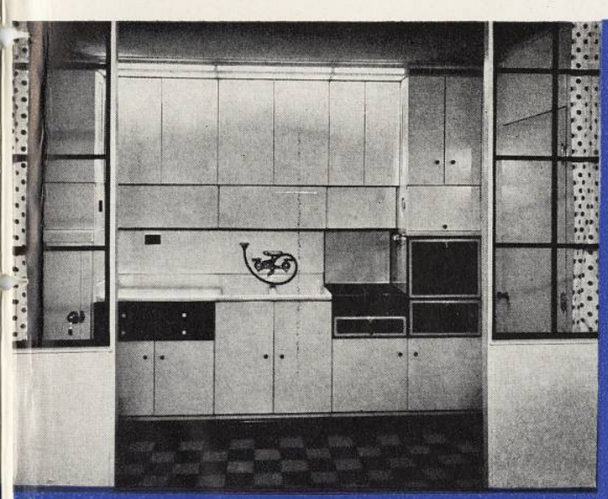
Colorful

As you enter you walk on Vinylite tiles — alternately green and yellow in the living-room, black and gray in the kitchen, coral and blue in the bathroom. The walls are of large flat plates of Vinylite. The doorknobs, electric switch plates and the porcelain-like lacquer of the refrigerator are of the same material. Even the doors and windows are Vinylite-molded. It is possible to make Vinylite as transparent as glass, though in this case the window panes have been made translucent rather than transparent.

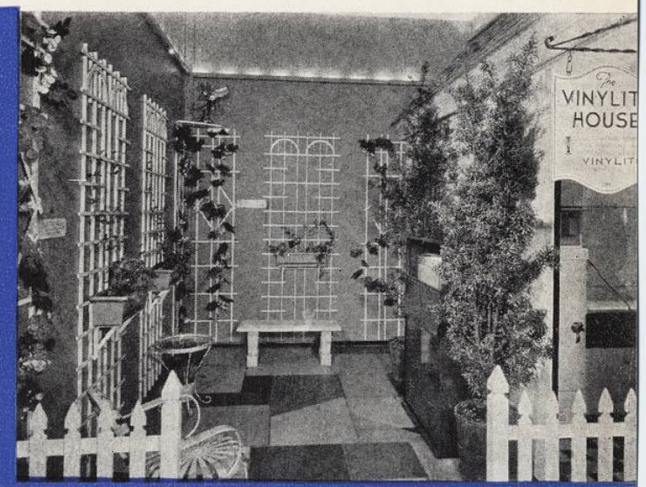
In the kitchen, a beautiful cabinet is surfaced entirely of Vinylite. About the only articles in the house which do not consist of this amazing material are the plumbing fixtures, the gas range, the bathtub, and such incidentals as upholstered furniture and draperies.

In the living room, the walls, colorful floor tiles, frosted windows and lighting panels, and many decorative accessories are made of Vinylite





Acids from fruits or other foods won't stain this kitchen, nor will hard knocks chip the refrigerator and kitchen cabinet



Even in the courtyard the flagstones have been designed with Vinylite floor tiles. The shingles, too, are Vinylite composition

In the bathroom the uses for Vinylite range from toothpaste and shaving cream tube caps to towel racks, and include toothbrush handles and hand-rails on the bathtub.

As an added element of interest a Pyrofax cabinet, supplying gas to the kitchen, is installed in the courtyard.

A Versatile Material

Vinylite is truly a versatile compound. It is a plastic material which can be molded into strong panels for walls or rolled into thin sheets almost as transparent as glass. It can be spread over wood and metal in the form of hard washable lacquers. It can be shaped into innumerable articles of everyday use — toothbrush handles, cigarette boxes, tumblers, trays. Many of these have been placed before your eyes in the Vinylite house. Get acquainted with them now for in a few years perhaps it may be possible to order a factory-made Vinylite home which will be delivered in convenient sections and erected ready for you to move into within a few days.

Vinylite naturally has many other uses. Today long playing flexible phonograph records are made of it because it is nearly unbreakable and because it does not shrink or warp under varying weather conditions. This latter is important because shrinkage or warpage would disturb the delicate sound track and distort the tone.

LIQUID AIR DEMONSTRATIONS

Liquid air has many unusual properties which are of human as well as scientific interest. To show visitors to A Century of Progress some of the astounding properties of air in its liquid state, the Corporation cooperates with A Century of Progress in presenting the Linde Liquid Air Demonstrations. The demonstrations are given each hour in a comfortable auditorium seating 150 guests, just west of the Chemical Products display, on the ground floor.

Air, the Magician

In this auditorium, Air is the chief actor, and the actual feats it performs would put a magician to shame. For example, a fresh rose, dipped in liquid air, shatters like glass at a touch. Rubber hose becomes as rigid as an iron bar when frozen in liquid air. A tube of mercury is congealed by the intense cold and used as a hammer to drive nails.

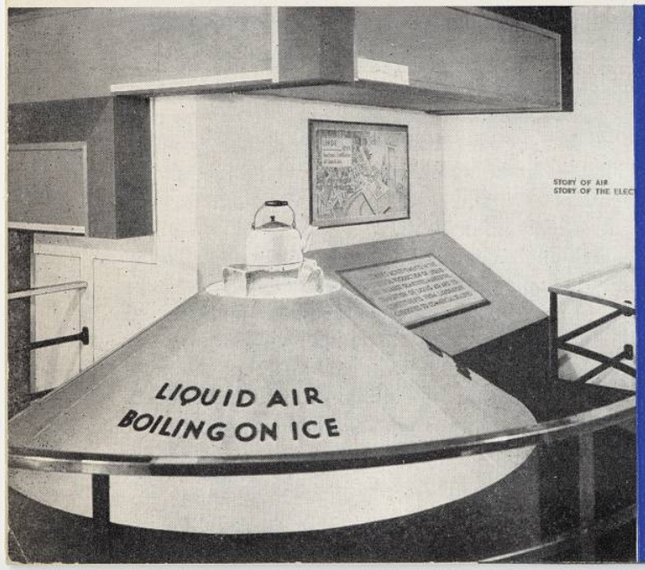
To show the enormous expansion of liquid air as it volatilizes, a balloon is inflated and an airplane propeller is set in motion by the converted gas.

The liquid air and liquid oxygen used in these demonstrations are furnished by the Corporation's subsidiary, The Linde Air Products Company.

Liquid oxygen is no longer merely a scientific curiosity or a source of entertainment. In the form of Linde Driox, liquid oxygen is sold to large industrial users for oxy-acetylene welding and cutting operations.

Liquid air also has certain industrial applications where intense cold is required.

Here is a teakettle, in the Basic Science Section, boiling on a cake of ordinary ice. It contains a small amount of liquid air



Crowds pack the Linde Liquid Air Demonstration auditorium to marvel at the mysterious effects produced by liquid air

CORPORATION EXHIBITS

In a specially constructed dome under the grand stairway, the visitor will find a diorama showing a composite of 12 of the Corporation's 160 plants. This interesting model contains approximately 480 buildings. It shows in the background Niagara Falls, from which power is derived for the great electric furnace plants of Union Carbide Company and Electro Metallurgical Company at Niagara Falls, New York.

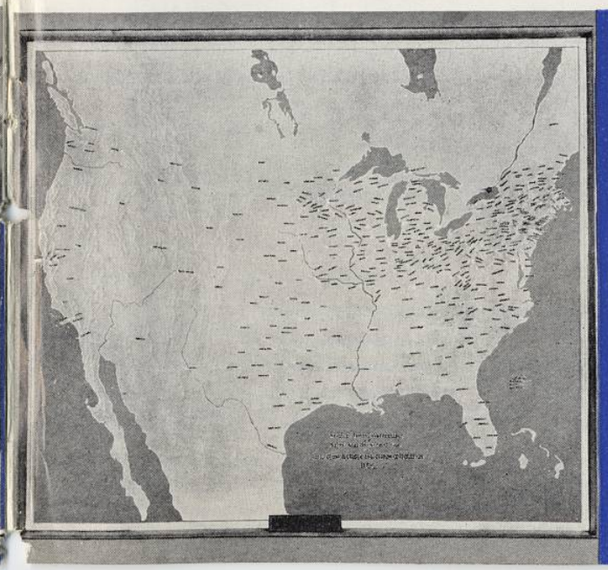
As Though Seen From the Air

Other plants assembled in this composite diorama are the power developments at Saulte Ste. Marie, Michigan, and Alloy, West Virginia; the Carbide and Carbon Chemicals Corporation plant in South Charleston, West Virginia; and plants at Niagara Falls; Kokomo, Indiana; Cleveland, and in other cities. An oxygen plant and an acetylene plant, typical of the large number of such plants throughout the United States, are shown. In the background are Canadian plants.

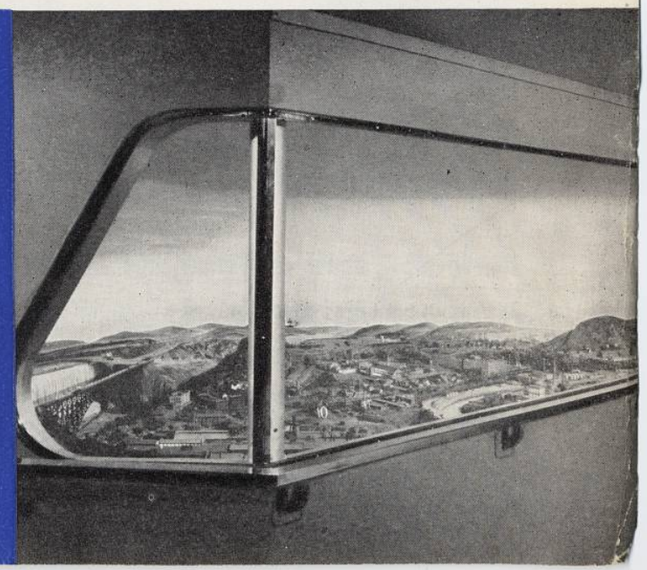
A large glass map on the north side of the Applied Science Exhibit indicates the location of the various Union Carbide plants, sales offices and warehouse stocks. And on the adjacent column appear the names of the principal units which make up Union Carbide and Carbon Corporation.

If you wish further information about any product of the Corporation or its subsidiaries—or where to buy it—you are invited to leave your request with the information desk in the exhibit. Booklets and other data will be gladly furnished you.

On this carved glass map are indicated the locations of the Corporation's various plants, sales offices and warehouse stocks



This diorama presents a composite picture of some of the more important plants of Union Carbide and Carbon Corporation



Periodic Table of Chemical Elements

While not actually an exhibit of the Corporation, this huge central feature in the Great Hall of the Hall of Science has an interesting connection with the Union Carbide displays. Here for the first time in history every one of the earth's 92 chemical elements has been gathered for a single exhibit. Of these 92 elements, about half have been contributed by Union Carbide and Carbon Corporation. A number of them could be supplied by no other organization in the world.