



EARTH AND ITS ELEMENTS

Enter the central portion of the Hall of Science at the Century of Progress exposition and a great globe will be slowly spinning before your eyes, while below there are samples and information on the 93 building blocks of the earth, arranged in the form of the chemist's periodic table. These 93 chemical elements, the basic materials of the world and the universe, have been given a central position in the Century of Progress. Those who learned in school that there are 92 elements are informed that neutron is the one added to the periodic table in the last year. Some of the samples in the display are rare specimens of chemical elements that were totally unknown a few years ago.

GENERAL SCIENCE

Science Theme Carried Out Through 1933 World's Fair

SCIENCE that has remade the world in the last hundred years is glorified at Chicago's Century of Progress exposition.

First of all, the very ground upon which the miles of buildings rest was created out of the shallow waters of Lake Michigan by an engineering operation.

Then for the past three years engineers have been at work designing and rearing the buildings which are to serve for the next six months and then be demolished, much like the settings of a movie city. Yet while it lasts, the Century of Progress city will entertain millions of visitors and exhibit millions of dollars' worth of displays and treasures. It will serve millions of meals. Adequate fire protection must be provided and hundreds of police, guides and other personnel will inhabit the exhibition city during the exhibition hours.

Some of the buildings strike new notes in modern architecture. The bright hues of many-colored paints are spread over the pylons, towers and walls, and

unusual lighting effects blaze their contribution to the fair's decorative scheme.

From the hemispherical planetarium at the northern corner to the gigantic transportation hall near the southern end of the exposition's expanse, there awaits the visitor a liberal education in science and its effects on human life.

The Hall of Science, to which the cross-bannered court of honor of the principal entrance leads directly, contains an array of mechanized, self-operating demonstrations and exhibits in chemistry, biology, physics, medicine and the earth sciences. In some cases the visitor or attendant pushes a button and the machine goes through its cycle of demonstrating a basic science principle. In other cases the exhibit methodically carries out its demonstration every few minutes without the prodding of button pushing.

Some of the machines talk their message by means of sound film or phonograph attachments, while others use more prosaic labels in ordinary or transparent lettering. Lantern slides automatically projected are parts of many demonstrations.

Giant electric machines, automatic telephones and switchboards and the thousands of devices developed by science and used in communication or the electrical arts, are displayed in the great halls of communication and electricity.

In the gold-domed federal building and the hall of states with its emblematic facades, Uncle Sam and the state governments show their public service and governmental activities, particularly along scientific lines.

The Adler planetarium, as yet America's only mechanical show of the stars, is a part of the exhibition. In this richly somber dome the astronomical exhibits are contained.

America's agricultural interests are represented by a low, long building decorated in black, red and blue-green.

On Northerly Island, across the lagoon from the Hall of Science, is also the Hall of the Social Sciences, in which exhibits will recall the social consequences of the century of progress and suggest how the problems can be met.

Southward along (Turn to Page 344)

PHYSICS

Deuton, Heavy Hydrogen Effective in Atom Smashing

WHEN heavy-weight hydrogen hits atoms things happen.

Introducing "deuton" as a new name for the double-weight hydrogen atom only known to science for a little over a year, Prof. Ernest O. Lawrence of the University of California reported to physicists of California Institute of Technology what happens when the heavy isotope of hydrogen is used as a projectile in smashing various elements.

Only about a month ago, Dr. Gilbert N. Lewis, the famous University of California chemist, supplied Prof. Lawrence and his associates, Drs. Henderson and M. Stanley Livingston, with some deutons.

The atom smashing was done with the aid of potential up to 1,500,000 volts imparted to the deutons with Prof.

Lawrence's "merry-go-round" magnetic method of creating high voltages.

Lithium, beryllium, boron, nitrogen, fluorine, aluminum, and sodium gave good results. Transmutations occurred, alpha rays were formed, and probably other processes yet to be examined followed.

The most energetic alpha rays ever seen were produced from lithium. They travel almost fifteen centimeters through air. At this rate of progress one dares not guess what will be achieved in nuclear physics within a few years.

A most momentous experiment is being attempted by Professors G. O. Gibson and Fowler who plan to bombard deutons with deutons in the hope of making them combine into helium.

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GENERAL SCIENCE

Indians To Live As In Wild On Exposition Grounds

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the lake front, beyond concession buildings designed to amuse or convince the throngs commercially, is an area devoted to America's aborigines.

Rising to a commanding position is a reproduction of one of America's earliest and most striking architectural developments, a Maya temple. With strange carvings of huge mask heads, great serpents and other elaborate designs, painted brilliant yellow and green, there is duplicated a portion of the Monjas or Nunnery at Uxmal in Yucatan, built by the Maya Indians many years before Columbus discovered America. Within it can be seen some of the most valuable of the Maya treasures loaned by American museums.

In the shadow of the Maya temple five groups of American Indians will live primitive existences as their ancestors did before them. This will be their contribution to the Century of Progress. Nootka Indians from the American northwest will raise their totem poles. Winnebagos in wigwams will represent the woodland tribes. The plains Indians whose existence depended upon the buffalo will be represented by a group of Sioux Indians living in tipis, while the Pueblos will dwell in reproductions of their terraced villages, which were America's earliest apartment houses.

Navahos, too, will show the part they played in the old Southwest. For the visitors these Indians will dance their ceremonials and sing their chants.

Close by the Indian villages and the Maya temple are the exhibition buildings of leading automobile manufacturers. Here may be seen the operating assembly line where complete cars are built from piles of parts.

The pageant of a century of transportation will be shown under the gigantic sky-hung dome of the travel and transport building, so large that railroad cars and transport airplanes seem lost beneath it. Along the lake front will be found famous ships of today and yesterday.

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ANATOMY

Two Mechanical Men Explain Body's Mechanism

See Front Cover

MECCHANICAL men reveal to the visitors of the Century of Progress expedition the physiology and chemistry of the human body.

The famous transparent man, manufactured in Germany, as a life-sized display of the vital organs of human anatomy is a central exhibit in the medi-

cal section of the Hall of Science. He is illustrated on the front cover of this week's Science News Letter.

The life-sized model transparent man obtained by the Century of Progress from the famous Hygiene Museum at Dresden has his exterior made of a synthetic transparent material. Heart, lungs, the stomach, liver and other interior organs are lighted in rotation to show vividly to the visitor their relation to the surface of the skin.

An American robot, ten feet high, who speaks and gestures, and explains an illuminated interior view of himself is a part of the chemical exhibit.

"Now ladies and gentlemen, I shall swallow," the chemical robot tells his audience many times each day in exhibiting the mechanical movements of his stomach and intestines by illuminated dynamic pictures of his interior. "You will see the mouthful of food passing down my esophagus. The food is forced down by the contractions of the esophagus. Now you see the swallow entering the top door of my stomach. Watch my stomach contract to churn up the food."

The robot, who is a handsome well-dressed young man except for the fact that his upper garments are pulled aside to show his digestive area, can point to the various happenings within him. He gives practical advice to the audience upon nutrition and the kinds of food that should be eaten.

A talking motion picture provides both the speech and the interior views of the robot, while ingenious mechanisms allow him to wave his arms when he orates.

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