

AERONAUTICS

# New Ascent Will Try to Pass Heights Reached by Piccard

## Lighter Metal Sphere With Larger Gas Bag To Rise Into Stratosphere This Summer at Century of Progress

WITH THE GOAL of floating eleven or more miles above the earth, higher than man has ever gone before, a stratosphere balloon with airtight man-carrying gondola of special design will rise from Soldiers Field, Chicago, in late June or early July as a part of the science program of the Century of Progress international exhibition.

Within the seven-foot diameter ball hung from the 600,000 cubic foot balloon will be two men, one a pilot and the other a scientist.

Lieut. Comm. T. G. W. Settle, Navy expert who is licensed and qualified to pilot every type of aircraft known, will be in charge of navigating the balloon to its great height.

Prof. Auguste Piccard, the Belgian physicist, whose ten-mile-high balloon ascensions in Europe now are world records will probably be the scientist. If Prof. Piccard cannot make the flight, Prof. A. H. Compton of the University of Chicago will designate one of his colleagues in cosmic ray research to take the stratosphere ride in the interest of science. Measurements of cosmic rays will be one of the main scientific objectives of the ascension.

A magnesium metal alloy, known as dowmetal, will be used in constructing the spherical gondola in which the men and scientific instruments will be housed during the flight. Dowmetal is a third lighter than aluminum. It is the metallurgical creation of the Dow Chemical Company of Michigan, who are now constructing the gondola. This saving in weight, coupled with a balloon that is a fifth larger than the one used by Prof. Piccard on his previous flight, makes the exploration of the eleventh and even twelfth miles above the earth extremely likely. The Piccard flights reached a little over ten miles altitude.

Tentative plans have been made to broadcast the flight, minute by minute, from the stratosphere to a ground radio station from which it would be relayed

over one of the national radio chains.

The National Aeronautic Association has given its approval of the ascension and it will provide altitude instruments which will make the height records official for world record acceptance.

Near the top of the atmosphere in the stratosphere the balloon will hold 500,000 cubic feet of gas, which is 100,000 cubic feet more than the previous Piccard balloon. But at the start only about 125,000 cubic feet of very pure hydrogen gas will inflate the giant gas bag, which will have a pear shape due to its inflation to only about one-fifth capacity. As the balloon rises, and most of the atmosphere and its pressure is left behind, the gas will expand tremendously and at the greatest height the balloon will be fully filled.

To obtain the greatest possible lift the Union Carbide and Chemical Company will furnish hydrogen gas of a purity of 99½ per cent. or better. Oxy-

CHEMISTRY

# First Chemical Evidence of Artificial Transmutation

CHEMICAL evidence of the production of helium gas from paraffin and similar carbon-hydrogen compounds, by bombardment with the mixed radiation from thorium is aduced by Prof. Fritz Paneth and his associate, P. L. Günther, of the University of Königsberg, Germany, and reported to *Nature*. The rays given off by thorium B and thorium C themselves contain some helium in the form of alpha particles, but after passing through paraffin, there is a surplus of helium amounting sometimes to 100 per cent.

A practical method for the manufacture of helium would be of great commercial value but the method described by Prof. Paneth and his associate can-

gen carried in tanks and released as needed within the gondola will allow the crew of two to live safely at stratosphere altitudes where there is practically no air. The balloon is being made by builders of the Navy's giant airships, the Goodyear Zeppelin Corporation at Akron, where Commander Settle is at present serving as airship inspector for the Navy.

The take-off will occur at ten or eleven o'clock in the evening, to take advantage of the cool night temperature during the early hours of the flight. As the sun rises the balloon will rise with it, ascending into thinner and thinner air as the heat expands the gas.

The greatest height above the earth should be reached about (*Turn Page*)

ENGINEERING

## New Works Preventing Exceptional Flood Damage

IF IT WERE not for the extensive flood-protection works that have been completed during recent years, the present flood situation in this country would be rating as an unusually bad one—perhaps a record, officials of the U. S. Weather Bureau informed Science Service. As it is, the damage is severe, but not exceptional.

*Science News Letter, May 27, 1933*

not as yet be used for this purpose. The amounts they obtained were very small and were detected only by improved methods of analysis.

Nevertheless, their experiments are extremely important because this is the first indication that the transmutation of elements may be effected in amounts large enough to be chemically detectable. Until now, proofs of artificial transmutation depended upon the physical detection of single atomic destructions, observed as scintillations, or by electrical methods. Only when the new atoms formed were expelled with a large amount of energy could the transmutation be detected by these physical methods.

*Science News Letter, May 27, 1933*

mid-afternoon when the sun is hottest. Then the descent will be made and the landing should be made in the evening.

The great crowd of spectators which will throng famous Soldiers Field to watch the beginning of the flight will get a thrill as the balloon rises. A few hundred yards to the southeast of the starting point there are the 628 foot towers and cables of the Century of Progress skyride and the balloon will be shot up at about twenty miles per hour in order to clear this hazard.

The exact day of the start will depend upon weather conditions. Where the balloon will land will depend on wind directions and other meteorological factors. Even if the magnesium metal sphere drops into one of the Great Lakes, it and its human and scientific freight will be rescued safely because the air-tight ball will float for hours.

Commander Settle has won many balloon races for the Navy, including the international race in Switzerland last year. He is said to be the only man in the world who is licensed to fly a balloon, an airplane, an airship the size of the U. S. S. Macon and a glider. One of his feats was a descent from the airship Los Angeles in a small glider. He crossed the Atlantic on the Graf Zeppelin as Navy observer. One of his most perilous experiences was a wild balloon ride in 1928 during the national races, when an electrical storm killed two other pilots and jeopardized Commander Settle and other contestants.

The Navy is lending Commander Settle to the Century of Progress exhibition for the stratosphere flight.

*Science News Letter, May 27, 1933*



**MAN:  
DUST OR DESTINY?**

by

**Dr. Madison Bentley**  
—of the Department of Psychology of Cornell University.

Friday, June 2, at 1:45 p.m. Eastern Standard Time over stations of the Columbia Broadcasting System. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service.

PSYCHOLOGY

# Scientists Penetrate Unknown Surrounding Newborn Babies

## They Find That Very Young Babies Smell Flower and Other Odors and Know When Light Dims or Brightens

**C**AN THE BABY just arrived in this world smell the flowers banked in mother's room or the less agreeable odor of disinfectant on the hospital floors.

Yes, he can, it appears from experiments reported to the Midwestern Psychological Association meeting at Ames, Iowa, last week by Dorothy R. Disher of Ohio State University. Her research is still in progress under the direction of Dr. F. C. Docketay.

Psychologists have been hampered in all attempts to find out exactly how sensitive the newborn is to what is going on about him. The child cannot tell what he sees, hears, smells, or feels. The scientist can find out only by the most indirect means.

Miss Disher gets around this obstacle by making the experiment when the baby is sleeping. She then lets him smell an odor of a definite quality and strength and measures the activity which results. Moving pictures taken at the same time record all the kicks and jerks, puckers of the face, movements of the head, and so on.

No race, sex, or age differences were noticed in this experiment, but it did seem as though the right nostril may be more sensitive than the left. Considerable difference was found between individuals.

Even very young babies from one to ten days old can notice the difference between dim light and moderately bright illumination and demonstrate that fact by a reduction in activity in the stronger light. The newborn is much more keenly aware of his surroundings than has been realized, the psychologists learned from a report of LaBerta Weiss, of the Iowa Child Welfare Research Station.

The ingenious method devised by Miss Weiss for revealing what the baby can see and hear is that of recording the movements of the child. A machine appropriately called a stabilimeter records each little wriggle, squirm, and jerk of the tiny body.

These movements are consistently

stronger in the dimmer illuminations, Miss Weiss found, and are reduced in direct proportion to the intensity of the light turned on.

Similar effects resulted from exposing the babies to noises of about the intensity of a vacuum cleaner and of an average motor truck.

These results showed that newborn babies can differentiate between moderate and dim lighting and between comparative silence and moderately loud noise.

*Science News Letter, May 27, 1933*

GEOLOGY

## Petroleum Said to Come From Garbage of Sea

**P**ETROLEUM, now one of the principal wealths, was originally garbage—offal from the endless complex banquet of the sea, that not even the bacteria in the bottom slime would eat.

This un-pretty picture of the origin of "black gold" comes from a report presented at the meeting of the American Petroleum Institute in Tulsa, Okla., last week by Dr. Parker D. Trask of the U. S. Geological Survey. Dr. Trask and his associates have for a number of years been conducting an exhaustive study of both modern and ancient sea-bottom deposits, seeking for further knowledge of how petroleum was formed in the first place, so that seekers after oil may have a better idea of what kinds of geological formations are likely to yield paying results to their expensive drillings.

They found that fine-grained beds contain more organic matter than coarse-grained: clay more than silt, silt more than sand. They learned, as was to be expected, that where the sea bottom is rolling and irregular, richer deposits are to be found in the hollows than on the submarine hilltops or slopes. They found, above all, that the dead bodies of the myriad sea plants that escaped eating by fish and other marine animals were not left as raw materials