

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-

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.

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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-

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.

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