

## PLAN TO USE AIRPLANES IN PILOTING STEAMERS

Airplanes are destined to find extensive employment in the piloting of ships approaching port, according to Capt. F. B. Bassett, hydrographer of the Navy. "It is a comparatively simple matter," says Capt. Bassett, "for an airplane to leave its station on shore, fly out over the sea, meet the oncoming ship and signal the proper direction to proceed."

A recent experience of the airplane carrier "Langley" is quoted as a case in point.

"The 'Langley' arrived off the entrance to Pensacola Bay at daylight. A light fog existed reducing visibility to four miles or less. The shore could be made out for a limited distance but as it is low and sandy and has in that vicinity very few conspicuous marks to aid the navigator, it was impossible to determine whether the ship was to eastward or to westward of the entrance. Soundings indicated almost conclusively that we had been set during the night to the westward.

"There were several planes on the flying-off deck that were to be landed as soon as possible on arrival. Knowing we were very close to our destination a plane was sent off to locate the entrance and indicate its bearing to the ship. In a very few minutes the plane, which was not equipped with radio, flew back to the vicinity of ship and indicated positively the bearing of the entrance, the ship being to eastward instead of to westward.

"It appears that this illustrates a use of ships planes that might be of inestimable value in an emergency that required entry into port of a vessel or force with least possible delay."

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GERMANS AGAIN CLAIM TO MAKE GOLD FROM MERCURY

The transmutation of mercury into gold, which was recently reported to have been accomplished by Prof. A. Miethe of Berlin University and generally questioned by other chemists is announced to have been confirmed by his collaborator, Dr. H. Stammreich. He claims to have repeated Miethe's experiment, using mercury which careful analysis had shown to be "absolutely free from any trace of gold" but which at the end of the process was found to contain appreciable amounts of the precious metal.

Approximately one and one-half kilograms of mercury was used in a mercury arc lamp. The lamp was operated for 197 hours with from 160 to 175 volts at 12.6 amperes. The gold produced amounted to eighty-two millionths of one gram, or a little less than three ten-millionths of an ounce.

Obviously no commercial or economic results can be expected from this discovery, say the scientists, for the cost of producing gold by this method is hundreds of thousands of times higher than the value of the gold itself. But as an actual demonstration of a chemical feat held theoretically possible ever since the discovery of the electronic composition of the atom, the result is of great scientific importance.

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The conversion of mercury into gold reported from Berlin is admitted by American and English scientists to be possible, but the sufficiency of the energy used and the reliability of the tests applied by the Germans for the detection of the gold have been questioned.

Dr. R. A. Millikan, winner of the Nobel prize for physics last year, declared that no experiments on the production of gold from mercury have been made or planned in the Norman Bridge Laboratory, Pasadena, California, of which he is director. He points out that "reliable results are very difficult to obtain because traces of gold are practically always found in mercury anyway".

Prof. W. D. Harkins of the University of Chicago, well known for his work on atomic structure, declares that in the mercury vapor lamp, with which Prof. Miethe claims to have produced gold, the energy brought to bear upon the atoms of mercury is exceedingly small in comparison with the amounts of energy in all actual artificial disintegrations thus far accomplished.

"According to accepted theories it also seems probable," he says, "that such small amounts of energy would not be able to penetrate the outside of the atom to get at the nucleus at all. Prof. Haber found gold in Miethe's mercury and this is undoubtedly accurate but Haber disclaims all knowledge of how the mercury got in. Experts in this field will not trust any reports of atomic disintegration by large or small currents, unless voltages of millions of volts have been used, until they are supported by experimental work carried out with the most extreme precautions in such a way as to give definite evidence that the results claimed have been obtained. It is possible that Miethe has such evidence. I have not repeated his experiments.

"Mercury would be converted into gold if a hydrogen nucleus were lost from or an electron added to mercury's nucleus. I have bombarded argon nuclei by helium nuclei with an energy corresponding to five million volts without their disintegration. The voltage used in a mercury vapor lamp is small."

The products of Prof. Miethe's first experiment were analyzed in the laboratory of Dr. Fritz Haber, famous for his work on nitrogen fixation. Prof. Haber, when in this country recently, informed a Science Service representative that silver as well as gold was found in the samples submitted. This is taken to indicate that both silver and gold were present as original impurities of the mercury, since they are usually associated together in mercury ore.

Dr. Frederick Soddy, the English chemist at Oxford, stated in a British scientific publication that even in advance of the German announcements, it appeared to him that not only was such a transmutation possible but that it was inevitable unless our present views of atomic structure are radically at fault. He believes that the chemical detection of the gold produced, not the transmutation, would probably be the more formidable experimental difficulty.

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### ORION RETURNS TO EVENING SKY

By Isabel M. Lewis,  
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Orion, the Warrior, the most popular and widely known constellation in the heavens, visible from all corners of the world because of its position on the celestial equator, has returned once more to the evening sky and may be seen towering majestically above the eastern horizon by nine o'clock in the evening.

The quaint star maps of the ancient astronomers pictured Orion with uplifted club in his right hand, its tip close to the horns of Taurus the Bull which he faces