

Correspondence.

A Denial from Mr. Maxim.

To the Editor of the SCIENTIFIC AMERICAN :

I have noticed in the daily papers many advertisements of liquid air.

I have been consulted by the organizers of the Tripler Liquid Air Company concerning the application of liquid air to the manufacture of explosives, and at their request wrote them a letter on the subject; but further than that, I have not been consulted, and am in no way responsible for the claims for liquid air which are now being advertised. HUDSON MAXIM.

New York, March 1, 1900.

A Confirmed Habit.

To the Editor of the SCIENTIFIC AMERICAN :

Enclosed please find P. O. for a year's subscription to the SCIENTIFIC AMERICAN commencing with the year. I have tried to do without it, but have come to the conclusion that it is impossible to lead a Christian life and hope for peace and advancement in life to come without subscribing for the SCIENTIFIC AMERICAN. I remember when it was first published, and a couple of years ago I saw No. 1, which was in strong contrast with what it is now. LEWIS SWIFT, Director.

Lowe Observatory, Echo Mountain, Cal., U. S. A., January 18, 1900.

TRANSPORTATION OF BUILDINGS BY WATER.

Our illustration from a photograph shows an unusual, yet simple method of transporting buildings which occasionally is resorted to where great distances are involved. Moving a house by sea is so uncommon that when Dr. William A. Edwards had his residence and barn taken from San Diego, Cal., across the bay on floats, a voyage of over a mile and a half, it attracted much attention.

The buildings were first moved to the shore close to the water's edge; then at high tide the floats shown in the illustration were floated as closely as possible to the buildings. At low tide the buildings were moved upon their floating foundations and at high water were easily floated and towed to their destination without difficulty or accident, the waters of the bay at the time being calm and smooth.

Operations of this character have to be conducted under the most favorable conditions, otherwise a strong wind or heavy waves would greatly interfere with the success of the undertaking. Usually early in the morning is the time selected.

A Photographic Search for an Intermercurial Planet.

It is a fact capable of demonstration, that the faintness of a star that may be photographed with a given instrument, against a bright background of sky depends, within certain limits, directly on the length of the focus of the lens, and is independent of its aperture.

In the Harvard Observatory Annals, vol. xviii, p. 104, it was shown that if the place in which to look for the Pole Star is known, that three minutes after it first becomes visible to the naked eye in the evening, the light of the sky in its immediate vicinity is of about the same photographic intensity as that of the sky surrounding the sun at the time of a total solar eclipse.

Starting with these two fundamental facts, a series of experiments has been undertaken with a photographic lens having an aperture of 3 inches, and a focal length of 11 feet 4 inches. The curves adopted were those employed in an ordinary landscape lens, and it was found that the field was large enough to cover nine 8x10 photographic plates arranged in three rows of three each. This result was only obtained, however, by attaching the plates to the interior of a concave surface of double curvature, and thus obtaining a curved field.

By giving an exposure of one minute in the region of the pole, with this instrument, three minutes after the Pole Star first became visible, it was found that the light of the sky was sufficient to darken the plate appreciably, but not so much as to prevent stars of the eighth magnitude appearing with sufficient intensity to be found by a careful search, in the large part of the field of view.

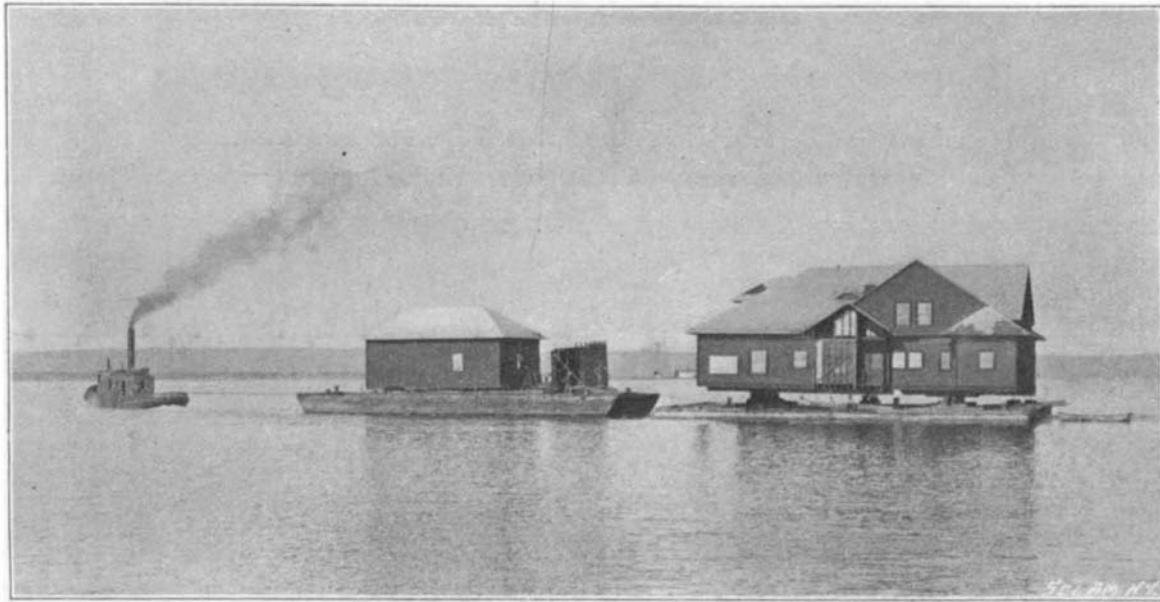
Three similar lenses have now been ordered, and the four will be placed upon one mounting, in such a manner as to photograph a region extending for sixteen de-

grees on either side of the sun, and having a breadth of ten degrees throughout its length. Throughout nineteen degrees of its length every portion of the region will appear upon two separate plates.

The satellites of Mars, Jupiter and Saturn all revolve very nearly in the equatorial planes of their primaries, and in the same manner Mercury revolves very nearly in the equatorial plane of the sun, which is inclined about seven degrees to the plane of the ecliptic. It is, therefore, reasonable to suppose that bodies still nearer to the sun would revolve in the same plane. It so happens that the earth passes through this plane about one week after the date of the solar eclipse of next May, so that there is a strong probability that if an intermercurial planet exists, it will appear somewhere upon the narrow line forming the projection of this plane upon the celestial sphere. It will be seen, therefore, that the date of this eclipse is especially favorable for the proposed search.

We have very good evidence, from the visual observations hitherto made, that no intermercurial planet brighter than the third or fourth magnitude exists. We possess no evidence whatever for or against the existence of fainter bodies in this region having sufficient size to be properly called planets. We are reasonably certain that the immediate vicinity of the sun is filled with countless bodies of such size as to be properly described as meteors.

If we assume that at its average brightness, Mercury is of the first magnitude, and that the albedo of an intermercurial planet is the same as that of Mercury, we shall find that at the distance of Mercury from the sun, a body of the eighth magnitude would be 120 miles in diameter. If its distance from the sun was but one-half as great, its diameter would be 60 miles, and if but one-quarter as great, or 9,000,000 miles, it



NOVEL METHOD OF HOUSE MOVING, SAN DIEGO BAY, CALIFORNIA.

would be 30 miles in diameter. Judging by the analogous case of Jupiter, the existence of such a small planet is quite possible.

Should such a body exist, and should it appear upon the plates, which it is proposed to expose somewhere in the State of Alabama, we should still be entirely at a loss to compute the orbit, or to determine the distance of the body from the sun. If, however, other photographs of it should be obtained with a similar apparatus, in Spain or Algeria, we should then be enabled to compute an approximate orbit, based on the assumption that it moved in a circular path. It might then be found again at the following eclipse, which occurs a year later, and a more accurate elliptical orbit could be computed for it. While it is desirable that the duplicate apparatus should also be furnished with four lenses, this is not necessary, and in case the planet should be found upon our plates, two lenses, one photographing the region on each side of the sun, would be all that would be necessary to independently make the discovery, and furnish the elements necessary to compute the circular orbit. It is in the hope of inducing some European observer to supply himself with this apparatus, that the present article has been written.

The foregoing plan appears to be of sufficient importance to justify aid from the observatory. Preparations have, therefore, been made to give it a careful trial. It is hoped that this early publication may permit similar observations to be made at a second station sufficiently distant to reduce the danger of failure from clouds, and if an intermercurial planet should be found, to furnish an approximate determination of the form of its orbit.

EDWARD C. PICKERING, Professor of Astronomy.
Harvard College Observatory, February 13, 1900.

AN important deposit of good lignite has been discovered in Russia.

The Report of the Librarian of Congress.

The report of Herbert Putnam, the new librarian of Congress, has just come to hand, and shows that the library is in excellent condition. The expenditures for the year ending June 30, 1899, was \$159,854.81; there was \$58,267 earned by the copyright business. The total expense of the copyright business was \$40,272.38, leaving a net balance of profit of \$17,944. The care and maintenance of the building amounted to \$86,395. The total force, including the Superintendent of Buildings and Grounds, consists of ninety-nine persons. The report of the librarian for the year ending July 30, 1898, contains an enumeration of the library with the following totals: In the general collection there are 705,122 books, in addition to 226,972 pamphlets. There are also 126,985 duplicate copyright deposits which cannot be considered as part of the collection proper. The accessions during the year have been very gratifying; the total on June 30, 1899, included 957,056 books and pamphlets.

During the period from September 1, 1898, to June 30, 1899, the additions to the manuscript department comprised 1,866 manuscripts. The superintendent of this department went to Porto Rico in search of manuscript material, and incidentally of local imprints. The visit to San Juan resulted in transferring to the Library of Congress practically the entire accumulation of archives in the palace of the Governor-General. The shipment arrived in 220 cases. The manuscript department now contains many interesting rarities. During the year there were catalogued three volumes of Paul Jones' papers, including 259 manuscripts, and there have been calendared of the Washington papers 839 manuscripts. The number of manuscripts in the department is about 25,500; so far only 7,340 have been catalogued, and only 1,604 have been calendared. Two

employees from the Government printing office have been at work on the repairing of manuscripts. Seven hundred and fifty have been repaired and 36 volumes of the Loyalist papers have been prepared for binding. Seven hundred and eighty of 1,049 bound volumes are in need of rebinding, and there are 210 packages of original manuscripts and 900 transcripts still unbound. The total number of maps and charts is 52,181, and the work of indexing the maps has progressed in spite of the inadequate force. Various bibliographies have been prepared or are in preparation. One of them will be a list of the maps in the library of Congress relating to the Revolutionary War, and a list of those relating to the city of Boston.

The larger list of maps relating to America in books now forms a document of eighteen hundred typewritten pages, which will later be offered for publication under authority of Congress. The number of pieces of music now in the Department, including duplicates, amounts to 277,465. The total number of prints in the collection is now stated to be 70,823. The reading-room of the library has been frequented by 121,270 persons, the largest number being on February 4, 1899, when there were 962, and the smallest number on a half-holiday, when there were 41 readers. The number of books and periodicals supplied was 297,662. The reading-room for the blind is opened every day from nine to four, and from October to July there have been on each afternoon except Wednesdays readings, and on every Wednesday musical recitals. The readers and musicians are volunteers. During the year it has been visited by 31,000 persons, of which 7,025 have attended the readings and recitals. The number of blind in the District of Columbia is, of course, limited, so the importance of a library of this type lies not so much in the persons directly reached as in the demonstration that it offers. The whole library is now in regular receipt of 3,641 periodicals.

Death of Leander J. McCormick.

Leander J. McCormick, an inventor of harvesting machinery, died at Chicago, February 20. He was born in Virginia in 1819, and became associated with his father in the reaper manufacturing industry at an early age. In 1847, he engaged in the manufacture of reapers with his brother at Cincinnati, and in 1848 went to Chicago where he superintended the manufacture of the machinery. He made many improvements in the machine which made his family famous. In 1871, he presented an observatory together with a 24-inch refracting telescope to the University of Virginia.