where

$$\Delta\delta_z = \delta_{z_{n+1}} - \delta_{z_n}$$
$$\Delta RA_z = RA_{z_{n+1}} - RA_{z_n}$$
$$\Delta\Omega = \Omega'_{n+1} - \Omega_n'$$
$$\Delta\iota = \iota_{n+1} - \iota_n$$

Then

$$m_{n,n+1} = \frac{\Delta\lambda_{n,n+1}}{T_{n+1} - T_n}$$

Thus, without level, measures of the orientation of the Moon's pole and rotational rate have been found in the simplest possible manner.

This concludes the photogrammetric determination of the Moon's fundamental motions with satellite photography, simulation of these determinations with earth-bound photography, and the verification of these determinations with exposures made at the Moon's surface.

Ancient Indian Fishtraps in the Potomac River

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AN IMPORTANT "missing link" in archaeological studies in the Potomac River Basin was recently closed. In the course of the author's continuing efforts to develop aerial tactics in the war against water pollution, under a Research Grant sponsored by the Division of Water Supply and Pollution Control, U. S. Public Health Service, a series of ancient Indian fishtraps were discovered. The structures were discovered on 24 January, 1962, while on a flight from Washington National Airport to Martinsburg, West Virginia, in company with Mr. C. B. Diamond, of East Coast Flying Service.

A total of seven fishtraps were sighted. Two are located near Mason Island, just south of the Dickerson, Maryland, Potomac Electric Power Company thermal electric plant, in that part of the river adjacent to the Virginia shore. An additional five were sighted between Mason Island, and the B&O Railroad bridge at Brunswick, Maryland. Two were sighted immediately downstream from the railroad bridge.

At that time, the Potomac River was quite low, and the water much clearer than usual. Very little silt was evident. Conditions were more favorable than usual for observation of subsurface features.

The fishtraps appear to be made of stone. They are in the form of elongated "V"s, open end upstream. The wings of each structure lie at an angle to the normal bedding of the tilted sedimentary rock formations characteristic of the area. In form, they correspond to primitive fishtraps previously sighted by the author, and familiar to most photo-interpreters who have studied photography taken of islands in the Southwestern Pacific Ocean area.

Contact was made with the U. S. Army Corps of Engineers personnel who are currently conducting an extensive study of the entire Potomac River Basin. They knew of no structures of the form described in the river, which at least confirmed that the structures are not weirs of recent origin.

Subsequent investigation confirmed that the structures were fishtraps, most of them of ancient origin. Mr. Nicholas Yinger, Presi-

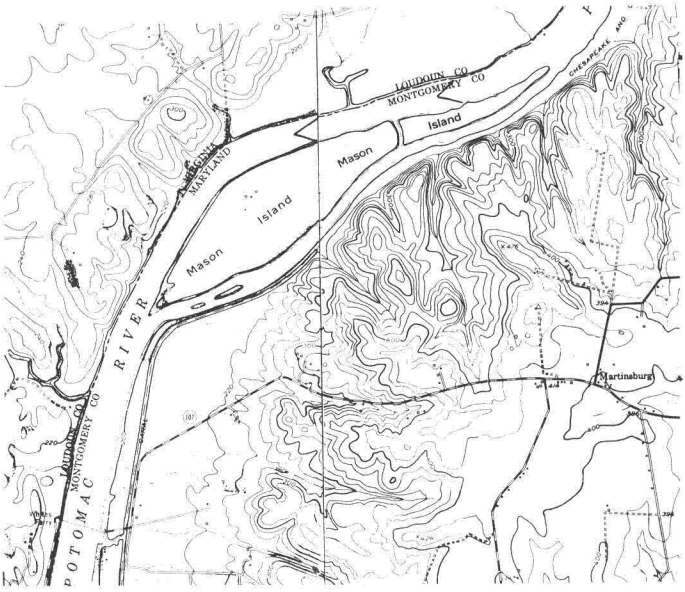

FIG. 1. This map, comprised of sections of the Poolesville, Maryland, and Waterford, Virginia, USGS 7½′ Quadrangles, shows the location of the southernmost two of the seven possible ancient Indian fishtraps described in the report.

These two structures are illustrated in Figure 2. They appear as faint dark "V"s pointing downstream. They extend all the way across the main channel of the Potomac, on the north side of Mason Island, just a short distance upstream from White's Ferry.

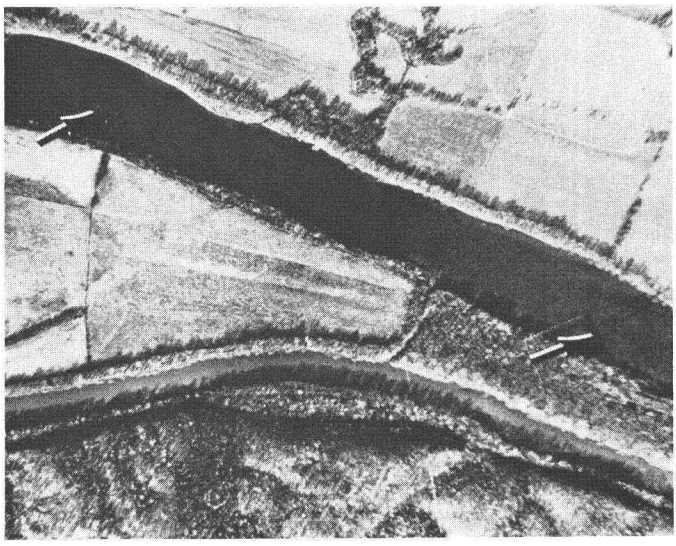

FIG. 2. The section of Air Photographics, Inc., aerial photograph V6112-35 shown above illustrates the appearance of the two possible ancient Indian fishtraps plotted on the map comprising Figure 1.

The structures can be seen near the heads of the arrows, as elongated "V"s pointing downstream.

In size and shape, these structures correspond to many confirmed primtive fishtraps, found in many parts of the world.

In use, "beaters" drove the fish downstream into a corral-like enclosure at the head of the "V," where they were speared or scooped out of the trap.

The foliage pattern which may indicate an ancient village site is located in the approximate upper-center of the picture.

dent of the Frederick County (Maryland) Historical Society, in examination of early records, found that one of them was in use in 1724, when a Mr. William Nelson, the first white settler, visited the area.

The aerial photographic print library of Air Photographics, Inc., Wheaton, Maryland, was searched for aerial photographic coverage of the area. Print number V6112-35, taken in December, 1961, covering Mason Island, was located. Two of the "V" shaped structures are clearly visible in the photograph. They lie along the north side of the island, extending across the main channel of the river, to the Virginia shore. Unfortunately, stereoscopic coverage taken during low and/or clear water flows has not been located.

Irregular growth patterns in the vegetation on the crest of the bluff on the Maryland shore may indicate the location of an ancient Indian village. The pattern is similar to that observed in aerial coverage of confirmed ancient Indian village sites.

The pattern may, however, mark the location of Union fortifications, probably constructed at the time of the Battle of Ball's Bluff, which took place not far from that location.

In subsequent field investigation, no confirming evidence was located of either an ancient village or of Civil War gun positions overlooking the river at that point, although vegetation patterns indicated that either or both may have once existed.

The Mason Island area is not far from the site of a confirmed ancient village near Seneca, Maryland. The local chapter of the Maryland Archaeological Society made a "dig" at that village a few years ago, recovering a great number of artifacts, and at least 14 bodies. The village was established to be about 2,000 years old.

The Maryland Archaeological Society, to whom the find of the fishtraps was reported, had long suspected the existence of fishtraps in the river, but none had been found in ground investigation. Midden heaps adjacent to each of the several ancient villages along the Potomac contain large quantities of fish bones, indicating that fish were a major part of the diet of the village occupants.

A few miles to the south, near the village of Potomac, Maryland, the author in 1959 found a large midden heap, largely composed of oyster shells. A probable stone implement manufacturing site was found near the midden heap. A few broken arrowheads, scrapers. and many quartzite chips were found. Unfortunately, a housing development was constructed there the following year (1960), obliterating all traces of prehistoric culture.

A Transparent Aerial Photo Scale for Measuring Distance Between Any Conjugate Points

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ABSTRACT: *This paper presents a transparent scale which permits measurement of Absolute Stereoscopic Parallax (P) under the pocket stereoscope. It is intended to solve the problem of measuring image-parallax in any type of terrain without pinpricking or otherwise marking both of the conjugate images.*

IN ORDER to make aerial photo height measurements by means of a parallax bar or wedge, the absolute stereoscopic parallax (P) of the point must be established. When local relief is not excessive, an average of the photo bases of the stereo-pair will suffice. If the country is mountainous, however, such readings will often be incorrect and it will be