

made along the boundary yet to be surveyed in order to decide upon definite plans for producing the line and transporting supplies. A knowledge of the available water routes for transportation in a case of this kind is invaluable and saves considerable expense and time and avoids much worry.

Perhaps the most interesting and the most useful part of the trip was north from Pas to the Churchill river and to the camp of the surveyor mapping the waterways of the district; the most interesting because of the wonderful views obtained of this country of lakes; the most useful because of experimental photographic work which we were able to do. Flying over the course of the survey oblique photographs were taken by the K2 camera at intervals of about two minutes. In some of the photographs the survey pickets are clearly discernible and in all of them the prominent land features surveyed can be accurately located. Using the survey of these main features as a control the details of the shore line, the intricate mass of islands can be filled in from the photographs with accuracy consistent with the requirements. The surveyors were obliged to spend considerable time mapping

the shore-line details and islands and even then could only obtain what was confined between the two shores. With the plane, the time required to get in the details, can be estimated in minutes instead of hours and some cases days, and the scope of the camera widens the survey to several miles on either side of the waterway and includes lakes and topographical features which otherwise would be left unmapped.

As a result of this trip I am of the opinion that invaluable service to surveying in unexplored and unmapped territories will be rendered in the future by the seaplane; in transporting supplies and men, thereby saving for the work many days of the working season, which is already short enough; in permitting reconnaissance and exploratory flights for purposes of planning surveys; in keeping in communication with the surveyors during the season; and in taking photographs along the course of the survey for filling in detail. To these who have a thorough knowledge of the ground conditions and experience in sketching and mapping such as surveyors have, the value of flights over the districts to be surveyed can scarcely be overestimated.

During the course of this flight we flew over a series of base lines and meridians which I had surveyed years ago. At that time very little was known about the country in the immediate neighbourhood of the line and considerable difficulty was experienced in determining the best locations for the caches and the lines were produced with no knowledge of what was to be expected ahead. Considerable time was necessary to locate and map the waterways and important topographical features. This year in approximately one hour in the plane all these features were observed clearly and many more within the reach of the survey. Had this flight been possible before the survey had been taken much time and expense could have been saved and considerable worry eliminated and what is true of this survey is equally true of all other surveys of this nature.

USING OLD HORNS

The cast-off horns of deer, elk and moose which annually fall off are gathered in the forests of the Northwest and manufactured into napkin rings, umbrella and knife handles.

VICKERS "VIKING" AMPHIBIAN

Brief Specification:

"VIKING" MARK IV, Six passengers and baggage or 1,360 lbs.
Freight RANGE: 340 miles, SPAN: 50ft. HEIGHT: 15ft. 1 in.
LENGTH: 35 ft.

The 'Viking' was the winner of the First Prize of £10,000 for the Amphibian Class of Aircraft entered for the British Air Ministry Competition, Sept., 1920.

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