

RESOURCES

# Water Use Increasing

➤ MUCH talk on water resources of the world is scheduled for the UNSCCUR meeting to be held at Lake Success, N. Y., in August, it was revealed. Threatened shortages due to increasing uses are beginning to create widespread interest in the best procedures for conservation and use. At least a score of papers on various phases of the subject will be presented by outstanding authorities.

The phenomenal increase in the use of water in the city, on the farm, and by industry has been an impelling force in accelerating the inventory and appraisal of water resources in the United States. C. G. Paulsen of the U. S. Geological Survey will tell this international group whose full name is the United Nations Scientific Conference on the Conservation and Utilization of Resources.

Fortunately, in large parts of the earth the supplies of fresh water are comparatively plentiful. However, in many places the development of our industrial and social economy has created water demands of a magnitude and variety that have exceeded all previous ideas or expectations, he will state. Consequently, supplies which have until recently been considered as essentially

inexhaustible are now recognized to have limits which, either immediately or prospectively, fix the extent of development.

In developing a program for a region, such as a river basin, adequate knowledge of the occurrence and characteristics of the available water resources is a prerequisite to wise planning and successful operations. It is pertinent to the development of the resources of the region no less than is the adequate coverage of the area by suitable maps and by knowledge of the geologic formations and conditions which affect both surface water runoff and ground water movement and storage.

Increased activities in fundamental water investigations will be urged by Mr. Paulsen. They would be concerned not only with water supplies but with the fluctuations in the supplies. In water investigations there is a need to recognize the importance of every phase of the hydrologic cycle, he will state. This cycle is the system of never-ending circulation of water by movement through streams and underground formations, by evaporation and transpiration from the earth to the atmosphere, and its return as rain or snow.

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AERONAUTICS-METEOROLOGY

# Plane Time-Saving Routes

➤ THE fastest airplane time between two points is not always by way of the shortest route, Kenneth J. Arrow, of the Air Weather Service in Washington, points out in the JOURNAL OF METEOROLOGY (April). Faster time is made by taking advantage of strong tail winds and the weaker head winds.

Between air terminals the short route follows a great circle, an imaginary line between the points which if continued around the globe would cut its surface in two halves. In short flights, the deviation from the great-circle route can not be very large, so that no great advantage can be obtained, except in unusual conditions. In longer flight, some 1,000 miles or more, deviation from the great-circle route may save considerable flight time.

With the steady increase in the effective range of modern planes, the possibilities and importance of saving time by suitable choice of the route grow, he states. While the principles involved are universally accepted, little attention has been paid to the determination of the exact route which can be flown in the minimum length of time. In the past few years, the development of the radio altimeter has stimulated discussion of determining the geostrophic wind from an airplane flight. Geostrophic winds are those whose directions are determined by

deflective forces which are caused by the rotation of the earth.

The solution of this problem, he continues, has led to a method of determining a single heading such that an airplane starting from a given origin with that heading will, without change of heading, reach a desired destination. A single-heading flight has obvious advantages from the standpoint of the pilot.

The particular problem, which Mr. Arrow discusses, is that of determining which, among the various steerable routes available, will require the least amount of time. Much mathematics are involved. Earlier work is quoted by the writer. The solution takes the form of a differential equation, understandable to the modern navigator, which the plane's heading is to satisfy.

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GENERAL SCIENCE

## Language, Poisonous Fish Included in SIM Program

➤ STUDIES ranging from language to poison fish will be made in the Trust Territory of the Pacific by a team of six American scientists.

Dr. I. Dyen of Yale University will do

research on the language spoken on the island of Yap as a part of a new program called SIM, scientific investigations in Micronesia.

Poisonous fish in the Palau will be the subject of studies by Miss Eugenie Clark of the American Museum of Natural History.

Other SIM scientists are: Dr. Robert K. Enders of Swarthmore College, who will seek scientific data on rat control on the islands; Dr. M. W. de Laubenfels, University of Hawaii, who will conduct a sponge survey of several islands; Sidney Glassman of the University of Oklahoma who will make a botanical survey of Ponape island; and Irwin Lane of the University of Hawaii, who will make a botanical survey in the Palau; Mrs. Ann Meredith of Radcliffe College, who will carry out research in social anthropology in the Truk area.

Ecological research for the Army Quartermaster Corps will be carried out by Dr. R. R. Frosberg of Catholic University, assisted by Donald Anderson, botanist of Honolulu. They will leave for the Trust Territory in September.

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## LINGUAPHONE



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