

Water Powers of the Empire

Aggregate Fifty to Seventy Million Horsepower, Says Preliminary Report of the Water Power Committee Appointed by the Conjoint Board of Scientific Societies of Great Britain—Principal Powers Must Be Developed To Help Lift Financial Burden Imposed by War

ACTIVE development of the principal water powers of the Empire is recommended in the preliminary report just issued by the Water Power Committee of the Conjoint Board of Scientific Societies of Great Britain. The chairman of this committee is Sir Dugald Clerk, and the secretary is Prof. A. H. Gibson. The other members are:—

John Ashford, C.E.; Sir John Benton, K.C.I.E.; Prof. E. David, C.M.G.; H. Wilson Fox, M.P.; W. Vaux Graham, C.E.; H. E. M. Kensit; A. E. Kitson; Lord Lamington; Sir Murdoch Macdonald, C.E.; Sir Douglas Mawson, D.Sc.; Prof. J. C. McLennan; Dr. H. R. Mill; A. Newlands, C.E.; Sir John Snell, C.E.; A. A. Campbell Swinton, F.R.S.; Lord Sydenham; Sir Joseph J. Thomson, Pres. R.S.; Prof. W. C. Unwin; and Prof. W. W. Watts.

The following is the complete text of the committee's preliminary report:—

This committee was appointed "to report on what is at present being done to ascertain the amount and distribution of water-power in the British Empire."

With this in view the committee has endeavored to collect all available relevant information.

The results have been both encouraging and disappointing. Encouraging because, in spite of the meagreness of the information regarding vast stretches of the Empire, sufficient data are available to show that its water-power resources are in the aggregate enormous; disappointing because, with the exception of Canada and New Zealand, Tasmania, New South Wales, and possibly South Africa, practically nothing has been or is being done on any systematic basis, to ascertain its true possibilities.

In this preliminary report the committee has thought it desirable to exceed somewhat its terms of reference, and, in view of the great importance of the matter, to devote some little space to the general question of water-power and its utilization.

Needs of the Empire

To enable the Empire to recover, with any degree of rapidity, from the financial burden imposed by the war, it will be necessary to develop, in a much greater degree than heretofore, its latent resources. The wealth embodied in its mineral resources, its wheat areas, its forests, and the hundred products of its tropical dependencies is almost incalculably great. But it must be realized that without an ample supply of cheap energy much of this wealth must always remain latent.

Energy is required to enable the mineral ores to be won and refined. It is required for the adequate fertilization of the land, as well as for the harvesting and transportation of its crops and products; and any scheme for the extensive development of the Empire's resources as a whole, must depend upon the preliminary development of its energy supplies.

The available sources of energy are, for practical purposes, few in number. They comprise our fossil fuels, our oil-fields and oil shale deposits, and our water-powers.

In considering the relative value and importance of these sources of energy, it is to be remembered that while the solid and liquid fuels are convenient to handle; can be easily and cheaply transported to any convenient locality, and in many cases form, at present, the most convenient and cheap source of power; yet their supplies are strictly limited, and their ultimate depletion is assured. Fortunately public opinion is now awakening in some degree to the necessity for their conservation. Still, long before the supplies are actually exhausted, increasing scarcity is bound to put up their cost to a level much higher than that now obtaining.

In view of this, the utilization, to the utmost possible degree, of the water-powers of the Empire, becomes of paramount importance. Excepting the comparatively small and inconvenient supply of energy obtainable from vegetable growth, either by direct combustion or through the medium of alcohol, these at present provide our only practical perennial source of energy.

The economic development of many of our tropical dependencies, whose latent wealth is practically untapped, is directly inter-connected with the development of their water-power resources. Not only would an abundant supply of cheap power enable railroads to be operated, irrigation schemes to be developed, and mineral deposits to be tapped and worked, but it would go far to solve the labor problem which promises to be one of some difficulty in the near future.

The World's Present Power Demand

It is impossible to estimate with any pretensions to accuracy, the power now being used in the various countries of the world.

Independent estimates,* based on such data as are available, tend, however, to show that it is of the order of 120 million h.p. made up approximately as follows:—

World's factories, including electric lighting and street railways.....	75	million h.p.
World's railways	21	" "
World's shipping	24	" "
Total	120	" "

This includes all steam, gas, and water-power.

Of the 75 million h.p. used for factories and general industrial and municipal activities, a rough approximation of the most probable distribution would appear to be—

	United Kingdom.	Continental Europe.	United States.	British Dominions and Dependencies.	Asia and S. America.
Millions of h.p. ..	13	24	29	6	3

An estimate by the Dominion Water-Power Branch of the Canadian Department of the Interior, outlines the hydraulic situation of the various countries, as follows:—

*"The World's Supplies of Fuel and Motive Power." Hawksley Lecture. Inst. Mech. Engineers, 1915. Sir Dugald Clerk.

"Natural Sources of Energy." A. H. Gibson. Cambridge University Press, 1914.