

The Engineer's Library

RELATION OF FORESTS TO HYGIENE

REVIEWED BY R. O. WYNNE-ROBERTS
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FORESTS, WOODS AND TREES IN RELATION TO HYGIENE—
By Prof. Augustine Henry, Dublin. London: Constable &
Co. Cloth; 6 by 8½ in.; pp. 305; 18s.

This volume is an addition to the Chadwick Library, named after Edwin Chadwick, a distinguished sanitarian. As the author states in the preface, the book was written in an effort to interest the statesman, the student of economics, the engineer, the physician and the layman, as well as the forester. The author sets out to describe the influences of forests and trees on climate, flow of water, erosion of soil, shelter from wind, purity of air and water, etc. Such influences affect directly the health and comfort of man.

Afforestation should be a most vital problem of the hour in Canada, because the country is destined to be one of the principal suppliers of lumber for different purposes to other parts of the world. The report of evidence submitted before a special committee at Washington indicates the importance of our lumber resources, and pulpwood supply from Canada may some day constitute a political issue of importance.

Apart from the questions of supply of lumber, which should warrant careful consideration on the part of our statesmen, there is the matter of conserving the health of the people, the afforestation for the shelter of stock and the preservation of the amenities, which are valuable assets of the nation. Prof. Henry points out that Bosnia, with its forests, has a summer temperature four degrees F. cooler than Herzegovina, which is denuded of trees.

When we consider forests in relation to water supply, we are confronted by theories and arguments advanced by different authorities which are difficult to reconcile. The author points out that forests retain snow and prevent it melting quickly, thus retarding the stream flows, minimizing floods and equalizing the passage of underground water. M. O. Leighton, of the United States Geological Survey, is quoted as contending that, during the last twenty to thirty years, there has been increased flooding in the tributaries of the Ohio River, due to constant and rapid deforestation. Similar views are held by Messrs. Hall and Maxwell, of the United States Forest Service.

On the other hand, Prof. Daniel W. Mead, in Bulletin 423 of the University of Wisconsin, expresses the view that, so far as Wisconsin is concerned, deforestation had no material effect, either favorable or adverse, on the flow of streams.

The author contends that the effect of forests is to depress the underground water level. For example, in the forest of Mondon, near Nancy, in France, the underground water stands relatively 12 in. lower than in the neighboring cultivated lands.

The afforestation of water catchment areas is becoming more and more recognized as a means of preserving the purity of the water, and also as an investment. The United States Department of Agriculture reports that a forest furnishes the best possible cover for watersheds. For this reason, fully as much as for the financial one, several water companies and authorities are planting extensively in the eastern States.

The relation between the British government and the municipal corporation appears to be one worthy of consideration in Canada. The treasury provides the money necessary for planting trees, while the corporations give the land and pay the expenses of management. In this partnership the produce of the forests will be ultimately divided between the two parties in proportion to the capital invested by each. One advantage of the arrangement is that the work of reforestation proceeds uninterruptedly, whereas, if the work

was solely in the hands of the municipalities, it would be more sporadic.

The volume under review largely deals with conditions as they obtain in the British Isles, but the same information is illuminating as to what could be done in Canada and elsewhere. A large amount of work has been devoted by the author to collecting and assimilating the data.

DETAILS OF HIGHWAY CONSTRUCTION AND MAINTENANCE IN CONVENIENT FORM

REVIEWED BY GEO. HOGARTH
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HIGHWAY INSPECTORS' HANDBOOK—By Prevost Hubbard, U.S. Bureau of Public Roads. New York; Wiley & Sons; Flexible "Fabrikoid"; 4¼ by 7 in.; pp. 372; 55 figures; \$2.50.

Efficient inspection of highway construction by properly-instructed and capable men is necessary in order that the specifications may be properly interpreted and so applied that sound satisfactory and faithful work may be secured.

Mr. Hubbard has, in this handbook, presented the duties of the inspector and the essential details governing the inspection of sand, stone, cement and bituminous materials, together with the requirements of proper construction and maintenance for sand-clay, gravel, broken stone, brick and block, concrete, bituminous concrete and sheet asphalt roadways. The main details of inspecting miscellaneous work and materials are also given and include bituminous expansion joints, paving adjacent to car tracks, cold patching, pipe culverts, concrete structures, metal reinforcing, dust preventives, mensuration, field equipment for testing and sampling, records and reports and cost data.

Information as to sampling, tests, uses, quality and adaptability of the various kinds of stone used for highway purposes is concise. The classification and field tests of gravel sand and clay, will be found useful. The testing of Portland and natural cements is explained in detail. Full data are given on the use of bituminous materials, dust preventives, carpeting mediums, seal coating materials, bituminous cement, bituminous fillers, and bituminous aggregates and their manufacture, method of shipment and proper use explained. The various kinds of petroleum and asphalt products, and their adaptability to different works, are explained in detail with the proper methods of use. Tar products, liquid and semi-solid, pitch fillers and creosoting oils with methods of sampling, testing and payment, are given in detail, and an exhaustive description of laboratory tests with data on interpretation and value of results, will be found useful.

The inspection instructions covering the actual construction and maintenance of sand-clay roads, gravel roads with the use of sandy gravel, or clay gravel and macadam roads, emphasize the essential methods which must be followed to secure results. Bituminous surface treatments are explained and the use of dust preventives and maintenance of the surface of such roads clearly defined. Bituminous macadam, both as to methods of construction and materials used, is fully covered.

Extensive data on concrete foundations, concrete pavements, bituminous concrete and sheet asphalt pavements with a complete chapter on bituminous paving plants, will be found of value by those engaged in paving.

Brick and block pavements with points needing inspection, and the requirements of wood block paving, completes the chapters dealing essentially with paving. Miscellaneous inspection of details connected with paving and highway work, such as bituminous expansion joints, paving near car tracks, culverts, concrete structures, mensuration and useful typical specification requirements, complete the book.

As a concise, practical and complete handbook of present practice this work will be found of interest to the contractor, inspector, designer and engineer engaged in constructing or maintaining modern highways.