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The Control of Water Resources.

IN June, 1918, a Committee, with Sir John Snell as chairman, was appointed by the Board of Trade and the Ministry of Reconstruction "to examine and report upon the water-power resources of the United Kingdom and the extent to which they can be made available for industrial purposes." The Committee issued an Interim Report early in 1919, directing attention to nine large sources of water-power in Scotland which could be developed at once so as to supply electrical energy at economic rates. It was no doubt while investigating the conditions of water-power that the complexity of the general problem of the use of natural water was appreciated by the Committee, for in October, 1919, the terms of reference were extended by the Board of Trade to "consider what steps should be taken to ensure that the water resources of the country are properly conserved and fully and systematically utilised for all purposes." At the same time the Committee was strengthened by the addition of two officials of the Ministry of Health and three eminent water engineers. The enlarged Committee has issued a Report[1] dealing with the special subject of the new reference. It should be remembered that water for potable supplies must be delivered in a high state of purity, so that it cannot be collected from the surface in urban or agricultural areas. Water subject to organic impurities may, indeed, be rendered potable by chemical and bacteriological means, as Sir Alexander Houston has demonstrated on the citizens of Greater London. But many communities demand a natural and untreated supply, and this, in default of deep wells, can be obtained only from uncultivated moorlands, most of which in England and Wales have already been appropriated.

The present method of allocating supplies is for a local authority to select a suitable gathering ground and then to promote a private Bill in Parliament. The proposed scheme, after being found to conform to Standing Orders, is examined in turn by a Committee of each House, the members of which may or may not have some knowledge of water supply and of parliamentary usage. An able counsel urges the necessity and perfection of the scheme on the Committee and brings forward experts to prove that the selected area can yield enough water and no more than is required. Certain Government Departments have the right to report upon the Bill, *e.g.* the Ministry of Health with regard to the quality of the supply and the needs of the population, the Ministry of Agriculture and Fisheries with regard to land drainage and possible damage to fish, and the Board of Trade or Ministry of Transport with regard to any possible effect on navigation. If the promoters succeed in arriving at an arrangement with the public bodies and private persons who appear as opponents, their scheme is likely to be passed by the Committee without any very critical inquiry, and it may be that broad national aspects of the case are never considered at all.

In Scotland there is in most cases an alternative to the promotion of a private Bill, by obtaining a provisional Order from the Scottish Office after an inquiry by a joint Committee of both Houses of Parliament sitting in the locality, and not at Westminster. In the absence of opposition the Order is confirmed by Parliament without further examination. A multitude of public and private opponents have a *locus standi* with regard to a Water Bill, but the fundamental idea appears to be that opposition is a matter for individual interests, and that it is not the business of any impartial authority to ascertain the facts of any particular case in the public interest alone. Selfish opposition often makes the passage of a Water Supply Bill difficult, and in the case of water-power the difficulty is much greater, as alternative sources of power are merely a matter of price.

The Report before us gives the considered

[1] Board of Trade. Second Interim Report of the Water-Power Resources Committee. Presented to Parliament by Command of His Majesty. Pp. 28. Cmd. 776. (London: H.M. Stationery Office, 1920.) Price 4*d*.

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opinion of the Committee on the question of the most desirable mechanism of control for the whole water resources of the country, and it is evident that some diversity of opinion had to be reconciled in arriving at it. One member, Mr. W. A. Tait, of Edinburgh, submits a Minority Report in which he considers that all the reforms required can be secured by improving the present system, both by assimilating the law of England to that of Scotland and by making certain simplifications in procedure. He holds that there is no justification for a new central water authority. One member signs the Majority Report with a reservation in which he deprecates the creation of a Water Commission, on the ground that the Ministry of Health, if strengthened, can deal adequately with the matter. Another signs with the reservation that he would have preferred a Central Department to deal with all water interests. The remaining seventeen members found the terms of the Majority Report sufficiently comprehensive and guarded to express their views.

One might imagine that the easiest way to simplify the confusion of contending water interests would be to create a Central Department for the United Kingdom to which all existing Departments should transfer their duties as regards water, and in which any additional powers which might be required should be vested. By the constitution of the Committee the water problem in Ireland was referred to a special Irish Sub-Committee, and recent events naturally confirm the policy of keeping Irish interests by themselves. But the Committee has not found it possible or expedient even to recommend the retention of Great Britain as a unit, and the scheme outlined refers in its entirety to England and Wales, Scottish interests being left to the Scottish Office.

It seems unfortunate, in the present state of public feeling, that a rearrangement of duties could not have been suggested which should avoid adding to the present number of officials; but, on the other hand, it is necessary to bear in mind that the Committee set itself to devise a practicable scheme which could be got to work with the minimum disturbance of existing Departments. Viewed as a workable compromise, the plan suggested by the Committee has sound qualities which probably compensate its obvious theoretical deficiencies.

The Committee points out that nine previous Royal Commissions and Select Committees which had considered water problems between 1866 and 1910 had concurred in recommending the creation of a central water authority to control the allocation of water, to act as an advisory body to Parliament, and to collect information as to water resources. Much fresh evidence was called by the Committee, and the final scheme for control put forward in this Report is as follows.

The allocation of sources of water in England and Wales should be entrusted to a body of four Commissioners appointed by the Minister of Health, to whom their responsibility should be direct. The chairman of the Commission should be a Civil Servant or lawyer having ripe experience of administration and legislation. The other three should be technical members, all to be paid and to devote their whole time to the work. An Inter-departmental Committee representing the "multiplicity of interests to be reconciled" and including representatives of various scientific services should be set up by statute to assist the Commissioners.

In order that the Commission may perform its duty of allocating water, its first concern is held to be to acquire all necessary information on the subject. This should be obtained from the Departments already engaged in collecting such data, particularly the Ordnance Survey, the Geological Survey, and the Meteorological Office; but as these do not cover the whole ground the Commission should be empowered to set up a Hydrometric Survey. The Commission should consult with the Scottish and Irish authorities with a view to the compilation of all records on a uniform system.

It is recommended that every proposal to take water from the surface or from underground, except for private domestic use, should be submitted to the Commission for its licence. If the Commission sees cause to withhold its consent, the promoters can still proceed by means of a private Bill; but if a licence is issued, they need apply only to the Department dealing with the particular use of water, and this Department should be empowered to grant an Order which, if unopposed, should take effect without confirmation by Parliament. Existing Departments are empowered to deal with all uses of water except water-power, and it is proposed to create either in the Board of Trade or under the Electricity Commissioners a new Department for the study, control, and encouragement of the use of water-power in Great Britain. Encouragement should include the grant of temporary financial assistance to promising power

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schemes. This subject is to have fuller treatment in the final Report of the Committee.

In addition to new allocations the Water Commission should have power to revise existing allocations, including the compensation water already prescribed by Act of Parliament. Another duty would be the setting-up of local Rivers Boards to control individual rivers as a whole.

One further safeguard is suggested, namely, the appointment by the Commission of an advisory committee, or committees, consisting of "representatives of water undertakings and scientific institutions, consulting engineers, and other qualified persons." Presumably the services of these specialists are to be solicited gratuitously, for the Commission "also" ask to be empowered "to obtain and pay for professional advice in connection with their investigations."

Perhaps one might be inclined to doubt whether the Committee has always kept clearly in mind the essential distinction between scientific and technical advice; but in one respect at least the Report will be welcome to scientifically minded people. It places in the forefront of the duties of the Water Commissioners the investigation by scientific study of the actual water resources of the country and the strengthening of existing agencies by the creation of a hydrometric survey of rivers. One cannot help regretting that the various survey bodies are not united under one scientific Department, for it would be a natural development if the Department of Scientific and Industrial Research were to add to the care of the Geological Survey that of the Ordnance Survey, the Meteorological Office, and the proposed Hydrometric Survey. In these matters, however, simplification comes slowly, and it is a great matter to find a clear statement of the truth, which is not self-evident to all our legislators, that one must first ascertain what our resources are before we proceed to distribute them.

We have endeavoured to state the conclusions as briefly and simply as possible, but the Report goes into much detail and requires careful reading. The system suggested is, we believe, as simple and efficient as it could be made, bearing in mind the initial determination to work so far as possible through existing agencies. But it is open to doubt the wisdom of that determination and to ask whether the creation of a Central Department dealing with all water questions, and with water questions only, might not, after all, be a simpler, cheaper, and more efficient solution of the problem.

The Mathematician as Anatomist.

Department of Applied Statistics, University of London, University College: Drapers' Company Research Memoirs. Biometric Series, x.: A Study of the Long Bones of the English Skeleton. By Karl Pearson and Julia Bell. Text: Part i., The Femur. Chaps. i. to vi. Pp. v+224. Atlas: Part i., The Femur. Pp. vii+plates lix+Tables of Measurements and Observations. (Cambridge: At the University Press, 1919.) Price, Text and Atlas, Part i., 30*s.* net.

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IF in the rapid increase of knowledge at the present time there is a tendency for men to limit their labours more and more to one narrow field of investigation, there is also, we are glad to note, an opposite tendency leading men who have become eminent in their own particular subject to cross professional frontiers and to carry war, seldom peace, into neighbouring or even distant specialities. In the present two great publications, devoted chiefly to the human thigh-bone, containing more than a quarter of a million words, with tables which give the results of at least 70,000 measurements, and illustrated by 105 anatomical plates, we find Prof. Karl Pearson, the mathematician, definitely settling himself in the front bench of speculative anatomists. He cannot have expected a warm welcome in his new quarters, for there are few British anatomists who do not bear the mark of at least one of those biometrical brickbats at the throwing of which Prof. Pearson has manifested very considerable skill. They did not hurt any the less because they were meant kindly! In spite of all their scars, however, British anatomists—nay, anatomists of every country—who study these volumes will forget their past sores and be glad to welcome him to their membership for the great service he has rendered to their subject, not only in this, but also in previous memoirs.

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